KOLAR Document ID: 1366022

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: Robert Hendrix
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 #:

06/27/2017 Spud Date or Recompletion Date
07/06/2017 Date Reached TD
07/27/2017 Completion Date or Recompletion Date

API No.: 15-023-21466-00-00
Spot Description:
NW - NW - SE - SE Sec. 24 Twp. 1 S. R. 37 ☐ East ☑ West
1210 Feet from ☐ North / ☑ South Line of Section
1240 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: CAROLYN 'A' Well #: 2-24
Field Name:
Producing Formation: Foraker
Elevation: Ground: 3247 Kelly Bushing: 3252
Total Vertical Depth: 4750 Plug Back Total Depth:
Amount of Surface Pipe Set and Cemented at: 205 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: 1000 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: 09/15/2017
☑ **Confidential Release Date:** 09/15/2019
☑ **Wireline Log Received** ☑ **Drill Stem Tests Received**
☑ **Geologist Report / Mud Logs Received**
☐ **UIC Distribution**
ALT ☑ **I** ☐ **II** ☐ **III** **Approved by:** Karen Ritter **Date:** 09/15/2017

Operator Name: Murfin Drilling Co., Inc. Lease Name: CAROLYN 'A' Well #: 2-24

Sec. 24 Twp. 1 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 *(Attach Additional Sheets)*	☑ Yes	☐ No
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	17.5	13.375	23	205	Common	400	3% cc, 2% gel
Production	7.875	5.500	15.5	4733	H-Com, H-Long	500	1/2# flo-cel, 10% salt, 5% cal-seal, 1/2# f

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: 09/01/2017

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

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity
	50		50		

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
3739	4246

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	3739	3746			1050g 20% MCA
4	4234	4237			300g 20% MCA,1000g 20% MCA
4	4240	4246			300g 20% MCA, 1000g 20% MCA

TUBING RECORD: Size: 2.375 Set At: 4286 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	CAROLYN 'A' 2-24
Doc ID	1366022

All Electric Logs Run

DIL
DUCP
MEL
BHCS

Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	CAROLYN 'A' 2-24
Doc ID	1366022

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	17.5	13.375	23	205	Common	400	3% cc, 2% gel
Production	7.875	5.500	15.5	4733	H-Com, H-Long	500	1/2# flo-cel, 10% salt, 5% cal-seal, 1/2# per sx flo-cel, 1/4% D-AIR, 3/4% CFR-1

	MDCI Carolyn 'A' #2-24 1210' FSL 1240' FEL Sec. 24-T1S-R37W 3252' KB					
Formation	Sample top	Datum	Ref	Log Top	Datum	Ref
Anhydrite	3155	+97	-9	3156	+96	-10
B/Anhydrite	3185	+67	-3	3185	+67	-3
Neva	3612	-360	+8	3624	-372	-4
Red Eagle	3676	-424	+11	3692	-440	-7
Foraker	3722	-470	+11	3739	-487	-6
Stotler	3880	-628	+8	3892	-640	-4
Topeka	3953	-701	+9	3968	-716	-6
Oread	4086	-834	+5	4094	-842	-3
Lansing	4169	-917	+4	4176	-924	-3
Stark	4389	-1137	Flat	4394	-1142	-5
Mound City	4446	-1194	-3	4446	-1194	-3
Ft Scott	4565	-1313	-4	4574	-1322	-13
Oakley	4655	-1403	-7	4654	-1402	-6
Mississippi	DNR			DNR		
RTD	4750	-1498				
LTD				4752	-1500	

Robert D. Hendrix
Petroleum Geologist

GEOLOGIST'S REPORT
DRILLING TIME AND SAMPLE LOG

COMPANY: Murfin Drilling Company Inc.
LEASE: Carolyn 'A' #2-24
FIELD: Wildcat
LOCATION: 1210' fsl & 1240' fel
SEC: 24 TWSP: 1s RGE: 37w
COUNTY: Cheyenne STATE: Kansas
CONTRACTOR: Murfin Drilling Co. Inc. Rig #3
SPUD: 6/27/2017 COMP: 7/6/2017
RTD: 4750' LTD: 4752'
MUD UP: 3409' TYPE MUD: Chemical
SAMPLES SAVED FROM: 3520' TO: TD
DRILLING TIME KEPT FROM: 3520' TO: TD
SAMPLES EXAMINED FROM: 3520' TO: TD
GEOLOGICAL SUPERVISION FROM: 3471'
GEOLOGIST ON WELL: Robert D. Hendrix

ELEVATIONS
KB 3252'
DF
GL 3247'
Measurements Are All From Kelly Bushing

CASING
CONDUCTOR
SURFACE 13-3/8" at 205'
PRODUCTION 5 1/2"

ELECTRICAL SURVEYS
Dual induction/sual compensated porosity
Microlog/Sonic Pioneer wireline

FORMATION TOPS	ELECTRIC LOG	SAMPLE
Anhydrite	3154 (+98)	3155 (+97)
Neva	3623 (-371)	3629 (-377)
Foraker	3739 (-487)	3743 (-491)
Topeka	3967 (-765)	3971 (-719)
Oread	4094 (-842)	4086 (-834)
Lansing	4175 (-923)	4169 (-917)
BKC	4445 (-1193)	4446 (-1194)
Oakley	4653 (-1401)	4655 (-1403)

24

API# 15-023-21466

REMARKS:

LEGEND

Anhydrite, Sandstone, Limestone, Shale, Carb Sh, Cherty LS, Chert, Dolomite

DRILLING TIME IN MINUTES PER FOOT (Rate of Penetration Decreases →; 5, 10, 15)	DEPTH	LITHOLOGY	Hydrocarbon Shows	SAMPLE DESCRIPTION	REMARKS

3100

50

Anhydrite 3155 (+97)

Base Anhydrite 3186 (+66)

3200

Geologist on location 3471' at 5:30 pm 6/30/2017
Bit Trip at 3471' to change from PDC to button.
Strap out of hole was 0.58' short to board.

Shale: gray, green, red, soft silty

Limestone: white to tan, dense, sl chalky, sl fossiliferous, no vis por

Shale: gray, green, red, soft silty

Sandstone: white, t/t, sl. glauconitic, friable, fn-gr, subrnd, well sorted, pr interxln por, ns

Shale: red, sandy

Shale: red, silty, sandy

Shale: gray, green, red, soft silty

Neva 3629 (-377)

Limestone: tan to white, f-mxln, chalky, oolitic, fossiliferous, no vis por

Limestone: gray to tan, dense, sl pyritic, sl fossiliferous, vo vis por

Shale: red, gray, black, silty

Shale: red, silty, sandy

Sandstone: brown, dull green, glauconitic, friable, fn-gr, subrnd, well sorted, fr interxln por, ns

Red Eagle 3695 (-443)

Limestone: tan to brown, fxln, chalky, dense, fossiliferous, no vis por

Limestone: tan to white, fxln, chalky, cherty, granular in part, fossiliferous, no vis por

Shale: gray, soft, muddy

Shale: gray, silty, sl sandy

Foraker 3743 (-491)

Limestone: tan to white, f-mxln, chalky, oolitic in part, fossiliferous, sl pyritic, 15% sample gd vug por, dark sat stain, gdsfo, strong odor.

Limestone: gray, f-mxln, v-fossiliferous, sl cherty, 5% sample gd pp por, dark sat stain, pr-sfo, fr odor.

8:00am, 7/1/2017
wt 8.8, vis. 79, lcm 7#
Morgan Mud, Cade Lines

Shale: gray, green, red, black, blocky, silty

Limestone: tan to lt. gray, fxln, sl fossiliferous, dense, no vis por

DST #1
3709-3762
30-60-60-90
1st open: bob 9 min
1st shut in: built to 6 1/2"
2nd open: bob 11 min
2nd shut in: return built to 6 3/4"
Rec:
117' mco 30/70
541' co
260' gip
hydro: 1776-1759 psi
If: 42-150 psi
ff: 157-272 psi
sip: 827-806 psi
bht: 131° F
gravity: 24°

Shale: gray, black, blocky

Dolomite: tan, fxln, granular, sl fossiliferous, pr interxln por, ns

Shale: gray, green, red, silty

Limestone: tan to brown, f-mxln, oolitic, fossiliferous, pr vug por, ns

Shale: gray, green, red, black, silty

Limestone: tan, fxln, chalky, sl cherty, fossiliferous, no vis por

Shale: red, gray/green, black, silty, sandy

Limestone: white, fxln, chalky, granular, fossiliferous, no vis por

Limestone: white, fxln, chalky, micro oolitic, granular, fossiliferous, no vis por, ns

Shale: red, gray, green, silty

Limestone: tan to white, fxln, sl chalky, sl cherty, fossiliferous, no vis por

Shale: gray, green, red, silty

Stotler 3895 (-645)

Limestone: white to lt gray, f-mxln, sl chalky, v-fossiliferous, fr pp por, Dark spotty stain, nfo, no odor

Shale: red, gray, green, silty

Limestone: white to lt gray, f-mxln, sl chalky, v-fossiliferous, calcite replacement in part fr pp por, ns

Limestone: white, f-mxln, sl chalky, oolitic, fossiliferous, 10% sample scattered sl pp to interxln por, spotty black stain, pr show heavy black oil, faint odor

Shale: gray, green, red, silty

Limestone: white to lt gray, f-mxln, sl chalky, fossiliferous, no vis por, ns

Shale: gray, green, red, silty

Topeka 3971 (-719)

Limestone: white to lt gray, fxln, fossiliferous, oolitic, 1% sample sl interxln por, black spotty stain, slsfo on black break, no odor

wt 8.8, vis. 59, lcm 7#
Morgan Mud, Dave Lines

Limestone: white, f-mxln, chalky, fossiliferous, abundant calcite replacement, no vis por

8:00am, 7/2/2017

Limestone: white, f-mxln, sl chalky, fossiliferous oolitic, fr oolicastic por, ns

Shale: purple, red, gray, blocky, silty

DST #2
4039-4104
30-60-30-60
1st open: weak blow died 17 min
2nd open: no blow
no returns
Rec:
2' ocm 4/96
hydro: 2052-1974 psi
If: 16-16 psi
ff: 16-17 psi
sip: 30-25 psi
bht: 131° F

Shale: red, gray, green, biotitic, silty

Limestone: white, fxln, chalky, dense, sl fossiliferous, no vis por

Shale: purple, red, gray, silty

Shale: gray, red, silty

Oread 4086 (-834)

Limestone: white to tan, fxln, chalky, dense, sl fossiliferous, no vis por, ns

Limestone: white, f-mxln, oolitic, fossiliferous, pyritic, 20% sample fr pp to vug por, good spotty & sat stain, gdsfo, fr odor

8:00am, 7/3/2017
wt 8.9, vis. 59, lcm 8#
Morgan Mud, Dave Lines

Limestone: white to tan, fxln, pyritic, dense, fossiliferous, no vis por, ns

Shale: red, silty, black, gray

Sandstone: brown, friable, fn-vfngr, rnd, well sorted, fr interxln por, ns

Shale: red, gray, silty, sl sandy

Lansing 4169 (-917)

Limestone: tan, fxln, oolitic in part, sl pyritic, fossiliferous, 5% sample pr vug por, spotty dark sat stain, slsfo, no odor

DST #3
4129-4245
30-60-60-90
1st open: bob 16 1/2 min
1st shut in: built to 1 1/4"
2nd open: bob 16 1/2 min
2nd shut in: bob 32 min
Rec:
514' gmco 15/20/65
496' gip
hydro: 2060-2057 psi
If: 57-134 psi
ff: 155-225 psi
sip: 985-964 psi
bht: 136° F
gravity: 20°

Limestone: tan, micro-xln, sl chalky, no vis por

Sandstone: brown stained, friable, vfn-gr, subrnd, well sorted, pr intergrn por, gd dark sat stain, slow bleed prsfo, faint odor

Shale: gray, green, red, blocky, silty

Limestone: white, fxln, sl chalky, fossiliferous, 1% sample pr vug por, fr sat stain, slsfo, faint odor

Shale: red, gray, green

Limestone: white, fxln, fossiliferous, sl pyritic, oolitic in part, 20% sample gd vug to oolimoldic por, gdsfo (dark), gd dark sat stain, gd odor

8:00am, 7/4/2017
wt 9.0, vis. 58, lcm 7#
Morgan Mud, Dave Lines

Shale: red, gray, green

Limestone: white to tan, fxln, chalky, sl fossiliferous, no vis por

Shale: gray, green, red, hard, blocky

Limestone: white to tan, fxln, chalky, fossiliferous, no vis por

Limestone: white to tan, f-mxln, chalky, fossiliferous, sl pyritic, 5% sample fr pp to fossiliferous por, lt spotty to sat stain, frsfo (bleeding), faint odor

Shale: gray, blocky, silty

Limestone: tan to brown, mxln, sl chalky, fossiliferous, 5% sample, pr pp to interxln por, dark sat stain, prsfo (dark)

Shale: black, gray, silty, blocky

DST #4
4336-4388
30-60-30-60
1st open: built to 3/4" died back in 18 min
2nd open: no blow
no returns
Rec:
7' osm 2/98
hydro: 2174-2110 psi
If: 14-17 psi
ff: 20-24 psi
sip: 1223-1151 psi
bht: 138° F

Limestone: white to tan, fxln, sl chalky, v-fossiliferous, sl pyritic, no vis por, no show

Shale: red, gray

Limestone: tan, f-mxln, v-fossiliferous, pr interxln por, ns

Shale: red, gray, soft, silty

Limestone: white to tan, f-mxln, sl chalky, fossiliferous, sl pyritic, 3% sample fr pp to sl vug por, lt to dark sat stain, prsfo, fair odor

8:00am, 7/5/2017
wt 9.2, vis. 55, lcm 5#
Morgan Mud, Dave Lines

Stark 4389 (-1137)

Shale: dark gray, black, blocky

Shale: gray, red, green silty, blocky

Limestone: white, f-mxln, oolitic, mostly dense, no vis por, ns

Shale: red, gray, green

Limestone: tan to white, fxln, sl chalky, granular, sl fossiliferous, no vis por

Mound City (BKC) 4446 (-1194)

Shale: red, gray, green

Limestone: white to tan, fxln, dense, v-fossilierous, no vis por, ns

Shale: red, gray, silty

Limestone: white to lt gray, fxln, sl chalky, sl cherty, granular, no vis por

Shale: red, gray, green

Limestone: tan to lt gray, fxln, sl chalky, fossiliferous, no vis por

Limestone: white, fxln, sl chalky, v-fossiliferous, no vis por, ns

Limestone: tan to gray, mxln, sl chalky, oolitic, fossiliferous, granular, no vis por

Shale: gray, green, soft, silty

Ft Scott (Pawnee) 4565 (-1313)

Limestone: white to tan, f-mxln, sl chalky, oolitic in part, fossiliferous, no vis por, ns

Limestone: tan to gray, fxln, oolitic in part, fossiliferous, sl cherty, no vis por

Shale: black, gray, green

Limestone: lt gray, f-mxln, fossiliferous, sl cherty, no vis por

Limestone: gray to brown, f-mxln, sl cherty, fossiliferous, oolitic, no vis por, ns

Shale: lt to dark gray, sl red

Limestone: tan to brown, fxln, sl chalky, mostly dense, oolitic in part, no vis por, ns

Oakley (Cherokee Shale) 4655 (-1403)

Shale: black, lt to dark gray, sl amt of red, silty, blocky

Limestone: tan, fxln, sl chalky, dense, sl fossiliferous, calcite replacement, no vis por

Sandstone: white, biotitic, t/t, md-gr, sub rnd, mod sorted, calcite cemented, no vis por, ns

CFS

8:00am, 7/6/2017
wt 9.2, vis. 53, lcm 4#
Morgan Mud, Dave Lines

Limestone: tan, fxln, sl chalky, v-fossiliferous, no vis por

Shale: red, gray, silty

Limestone: tan to white, fxln, fossiliferous, dense, with an abundant amount of calcite replacement, no vis por

Shale: red, gray, silty

4700

Limestone: white to tan, fxln, fossiliferous, dense, 1 piece with lt sat stain, nfo, no odor, no vis por

Shale: dark gray, brick red, dark green, blocky

Limestone: tan to brown, v-fxln, dense, fossiliferous, no vis por

Shale: dark gray, brick red, dark green, blocky

Sandstone: yellow to red, md-gr, sub rnd to rnd, mod sorted, argillaceous, Fr intergranular por, ns

Shale: dark gray, green, red, fossil remnants

Sandstone: clear, opaque to t/t, argillaceous, md-fngr, sub rnd to rnd, poorly sorted, sl amt of calcareous cement, no vis por, ns

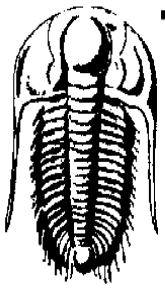
Shale: dark gray, green, red, fossil remnants

50

RTD 4750 (-1498)

Geologist offsite at 8:20pm, 7/6/2017

Murfin Drilling Co Inc
Carolyn 'A' #2-24
1210'fsl & 1240'fel
24-1-37w, Cheyenne County, Kansas
KB=3252', GL=3247'
API: 15-023-21466



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

Carolyn " A " 2-24

24 1s 37w Cheyenne KS

Start Date: 2017.07.01 @ 10:50:00
End Date: 2017.07.01 @ 20:47:00
Job Ticket #: 64043 DST #: 1

Trilobite Testing, Inc
1515 Commerce Parkway Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.07.06 @ 14:12:39

DRILL STEM TEST REPORT

Murfin Drilling Co Inc

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64043 **DST#: 1**

Test Start: 2017.07.01 @ 10:50:00

GENERAL INFORMATION:

Formation: **Foraker**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 13:16:30
Time Test Ended: 20:47:00

Test Type: Conventional Bottom Hole (Initial)
Tester: Jim Svaty
Unit No: 76

Interval: 3709.00 ft (KB) To 3762.00 ft (KB) (TVD)
Total Depth: 3762.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

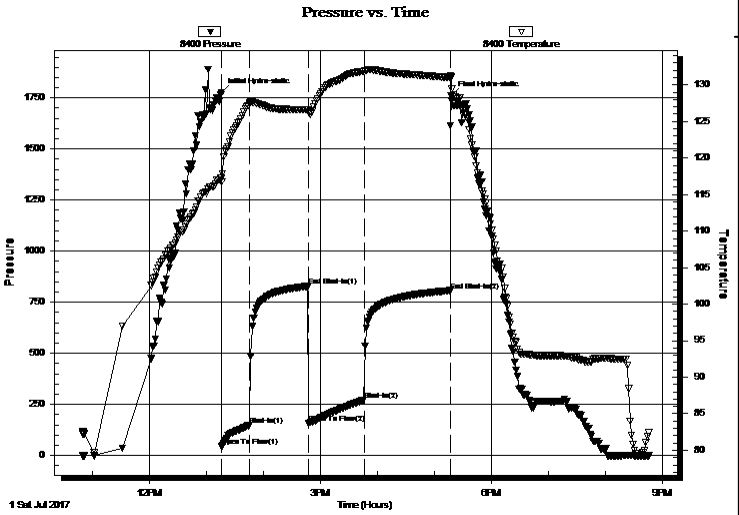
Reference Elevations: 3252.00 ft (KB)
3247.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8400 **Outside**

Press@RunDepth: 272.33 psig @ 3712.00 ft (KB)
Start Date: 2017.07.01 End Date: 2017.07.01
Start Time: 10:50:01 End Time: 20:46:30

Capacity: 8000.00 psig
Last Calib.: 2017.07.01
Time On Btm: 2017.07.01 @ 13:16:00
Time Off Btm: 2017.07.01 @ 17:17:30

TEST COMMENT: 30-IFP- BOB in 9 min.
60-Surface Blow in 1 1/2 min. Building to 6 1/2"
60-FFP- BOB in 11 min.
90-FSIP- Surface Blow in 1 min. Building to 6 3/4"



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1776.57	117.24	Initial Hydro-static
1	42.94	116.74	Open To Flow (1)
30	150.20	127.52	Shut-In(1)
92	827.54	126.66	End Shut-In(1)
92	157.72	126.36	Open To Flow (2)
150	272.33	131.84	Shut-In(2)
241	806.69	131.02	End Shut-In(2)
242	1759.15	131.05	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
117.00	MCO 30%m 70%o	0.58
541.00	CO 100%	6.80
0.00	GIP 260	0.00

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 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64043 **DST#: 1**

Test Start: 2017.07.01 @ 10:50:00

GENERAL INFORMATION:

Formation: **Foraker**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 13:16:30
Time Test Ended: 20:47:00

Test Type: Conventional Bottom Hole (Initial)
Tester: Jim Svaty
Unit No: 76

Interval: 3709.00 ft (KB) To 3762.00 ft (KB) (TVD)
Total Depth: 3762.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

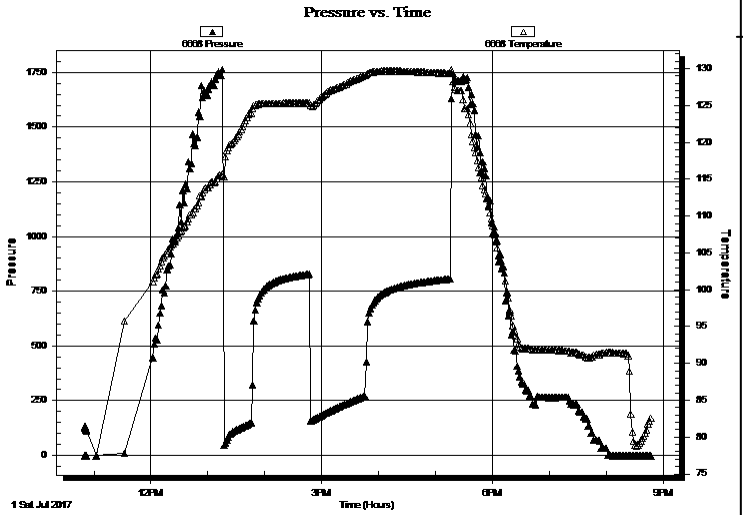
Reference Elevations: 3252.00 ft (KB)
3247.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 6668 **Inside**

Press@RunDepth: psig @ 3712.00 ft (KB)
Start Date: 2017.07.01 End Date: 2017.07.01
Start Time: 10:50:01 End Time: 20:47:00

Capacity: 8000.00 psig
Last Calib.: 2017.07.01
Time On Btm:
Time Off Btm:

TEST COMMENT: 30-IFP- BOB in 9 min.
60-Surface Blow in 1 1/2 min. Building to 6 1/2"
60-FFP- BOB in 11 min.
90-FSIP- Surface Blow in 1 min. Building to 6 3/4"



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
117.00	MCO 30%m 70%o	0.58
541.00	CO 100%	6.80
0.00	GIP 260	0.00

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 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64043 **DST#: 1**

Test Start: 2017.07.01 @ 10:50:00

Tool Information

Drill Pipe:	Length:	3493.00 ft	Diameter:	3.80 inches	Volume:	49.00 bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	2.75 inches	Volume:	0.00 bbl	
Drill Collar:	Length:	204.00 ft	Diameter:	2.25 inches	Volume:	1.00 bbl	
					Total Volume:	50.00 bbl	

Drill Pipe Above KB:	16.00 ft
Depth to Top Packer:	3709.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	53.00 ft
Tool Length:	81.00 ft
Number of Packers:	2 Diameter: 6.75 inches

Tool Weight:		2500.00 lb
Weight set on Packer:		25000.00 lb
Weight to Pull Loose:		65000.00 lb
Tool Chased		0.00 ft
String Weight:	Initial	60000.00 lb
	Final	62000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Change Over Sub	1.00			3682.00		
Shut In Tool	5.00			3687.00		
Hydraulic tool	5.00			3692.00		
Jars	5.00			3697.00		
Safety Joint	2.00			3699.00		
Packer	5.00			3704.00	28.00	Bottom Of Top Packer
Packer	5.00			3709.00		
Stubb	1.00			3710.00		
Perforations	2.00			3712.00		
Recorder	0.00	6668	Inside	3712.00		
Recorder	0.00	8400	Outside	3712.00		
Perforations	14.00			3726.00		
Change Over Sub	1.00			3727.00		
Blank Spacing	31.00			3758.00		
Change Over Sub	1.00			3759.00		
Bullnose	3.00			3762.00	53.00	Bottom Packers & Anchor
Total Tool Length:	**81.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64043 **DST#: 1**

Test Start: 2017.07.01 @ 10:50:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	24 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	ppm
Viscosity:	79.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.36 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	700.00 ppm				
Filter Cake:	7.00 inches				

Recovery Information

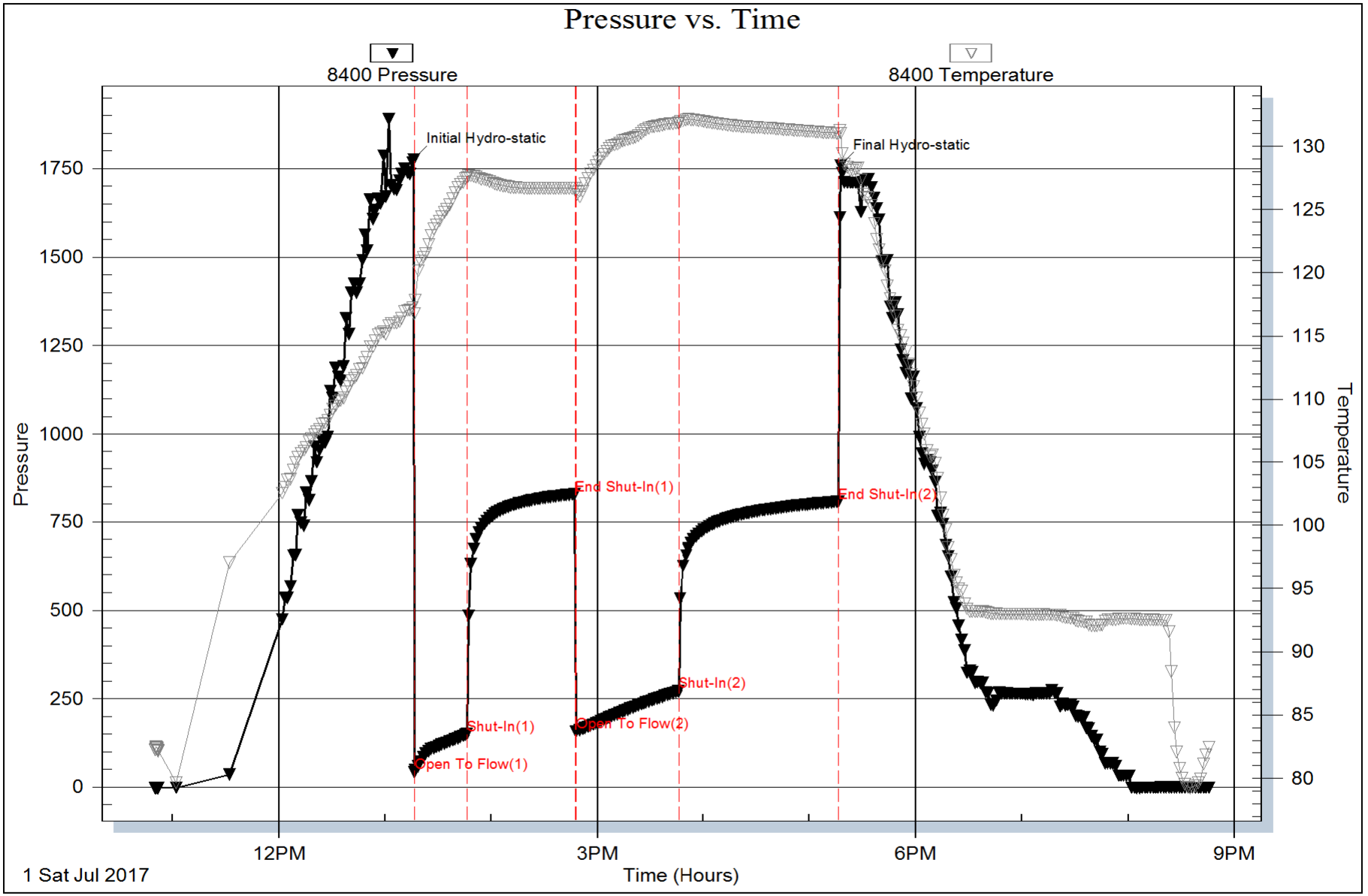
Recovery Table

Length ft	Description	Volume bbl
117.00	MCO 30%m 70%o	0.575
541.00	CO 100%	6.796
0.00	GIP 260	0.000

Total Length: 658.00 ft Total Volume: 7.371 bbl

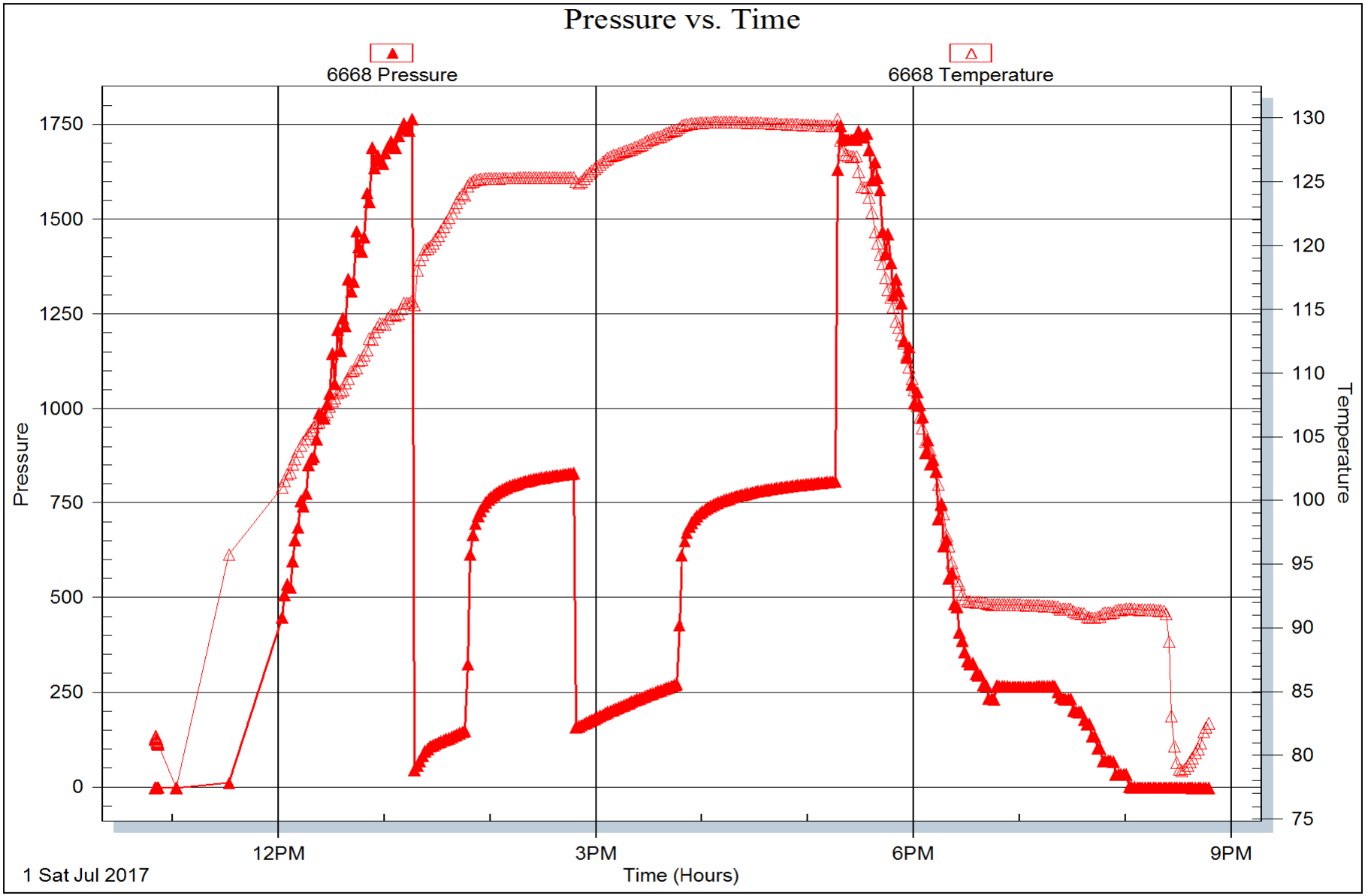
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8400 **Outside** Murfin Drilling Co Inc Carolyn " A " 2-24 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 64043 Printed: 2017.07.06 @ 14:12:40

Serial #: 6668 **Inside** Murfin Drilling Co Inc Carolyn " A " 2-24 DST Test Number: 1



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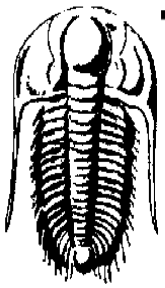


TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

Carolyn " A " 2-24

24 1s 37w Cheyenne KS

Start Date: 2017.07.02 @ 20:45:00
End Date: 2017.07.03 @ 05:13:00
Job Ticket #: 64044 DST #: 2

Trilobite Testing, Inc
1515 Commerce Parkway Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.07.06 @ 14:12:14

DRILL STEM TEST REPORT

Murfin Drilling Co Inc

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64044 **DST#: 2**

Test Start: 2017.07.02 @ 20:45:00

GENERAL INFORMATION:

Formation: **Oread**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 00:05:30
Time Test Ended: 05:13:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 76

Interval: 4039.00 ft (KB) To 4104.00 ft (KB) (TVD)
Total Depth: 4104.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

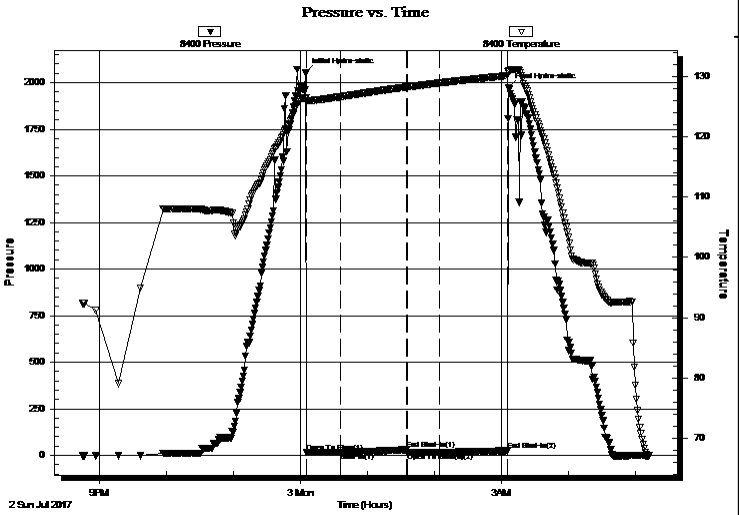
Reference Elevations: 3252.00 ft (KB)
3247.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8400 **Outside**

Press@RunDepth: 17.63 psig @ 4044.00 ft (KB)
Start Date: 2017.07.02 End Date: 2017.07.03
Start Time: 20:45:01 End Time: 05:12:00

Capacity: 8000.00 psig
Last Calib.: 2017.07.03
Time On Btm: 2017.07.03 @ 00:05:00
Time Off Btm: 2017.07.03 @ 03:06:30

TEST COMMENT: 30-IFP- 1/4" Blow Dead in 1 7min.
60-ISIP- No Blow
30-FFP- No Blow
60-FSIP- No Blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2052.21	126.42	Initial Hydro-static
1	16.38	125.84	Open To Flow (1)
31	16.66	126.62	Shut-In(1)
90	30.35	128.24	End Shut-In(1)
91	16.93	128.24	Open To Flow (2)
120	17.63	128.92	Shut-In(2)
180	25.55	130.11	End Shut-In(2)
182	1974.70	130.81	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
2.00	OCM 4%o 96%m	0.01

* 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 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64044 **DST#: 2**

Test Start: 2017.07.02 @ 20:45:00

GENERAL INFORMATION:

Formation: **Oread**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 00:05:30
Time Test Ended: 05:13:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 76

Interval: 4039.00 ft (KB) To 4104.00 ft (KB) (TVD)
Total Depth: 4104.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

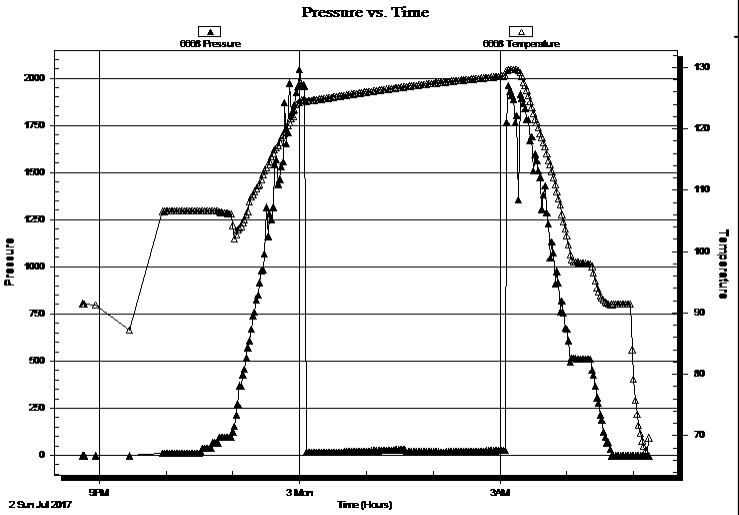
Reference Elevations: 3252.00 ft (KB)
3247.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 6668 **Inside**

Press@RunDepth: psig @ 4044.00 ft (KB)
Start Date: 2017.07.02 End Date: 2017.07.03
Start Time: 20:45:01 End Time: 05:13:30

Capacity: 8000.00 psig
Last Calib.: 2017.07.03
Time On Btm:
Time Off Btm:

TEST COMMENT: 30-IFP- 1/4" Blow Dead in 1 7min.
60-ISIP- No Blow
30-FFP- No Blow
60-FSIP- No Blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
2.00	OCM 4%o 96%m	0.01

* 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 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64044 **DST#: 2**

Test Start: 2017.07.02 @ 20:45:00

Tool Information

Drill Pipe:	Length:	3834.00 ft	Diameter:	3.80	inches	Volume:	53.78	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:	25000.00 lb
Drill Collar:	Length:	204.00 ft	Diameter:	2.25	inches	Volume:	1.00	bbl	Weight to Pull Loose:	68000.00 lb
						Total Volume:	54.78	bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		27.00 ft							String Weight: Initial	60000.00 lb
Depth to Top Packer:		4039.00 ft							Final	60000.00 lb
Depth to Bottom Packer:		ft								
Interval betw een Packers:		65.00 ft								
Tool Length:		93.00 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			4012.00		
Shut In Tool	5.00			4017.00		
Hydraulic tool	5.00			4022.00		
Jars	5.00			4027.00		
Safety Joint	2.00			4029.00		
Packer	5.00			4034.00	28.00	Bottom Of Top Packer
Packer	5.00			4039.00		
Stubb	1.00			4040.00		
Perforations	3.00			4043.00		
Change Over Sub	1.00			4044.00		
Recorder	0.00	6668	Inside	4044.00		
Recorder	0.00	8400	Outside	4044.00		
Blank Spacing	31.00			4075.00		
Change Over Sub	1.00			4076.00		
Perforations	25.00			4101.00		
Bullnose	3.00			4104.00	65.00	Bottom Packers & Anchor
Total Tool Length:	**93.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64044 **DST#: 2**

Test Start: 2017.07.02 @ 20:45:00

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:	59.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.37 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	700.00 ppm				
Filter Cake:	7.00 inches				

Recovery Information

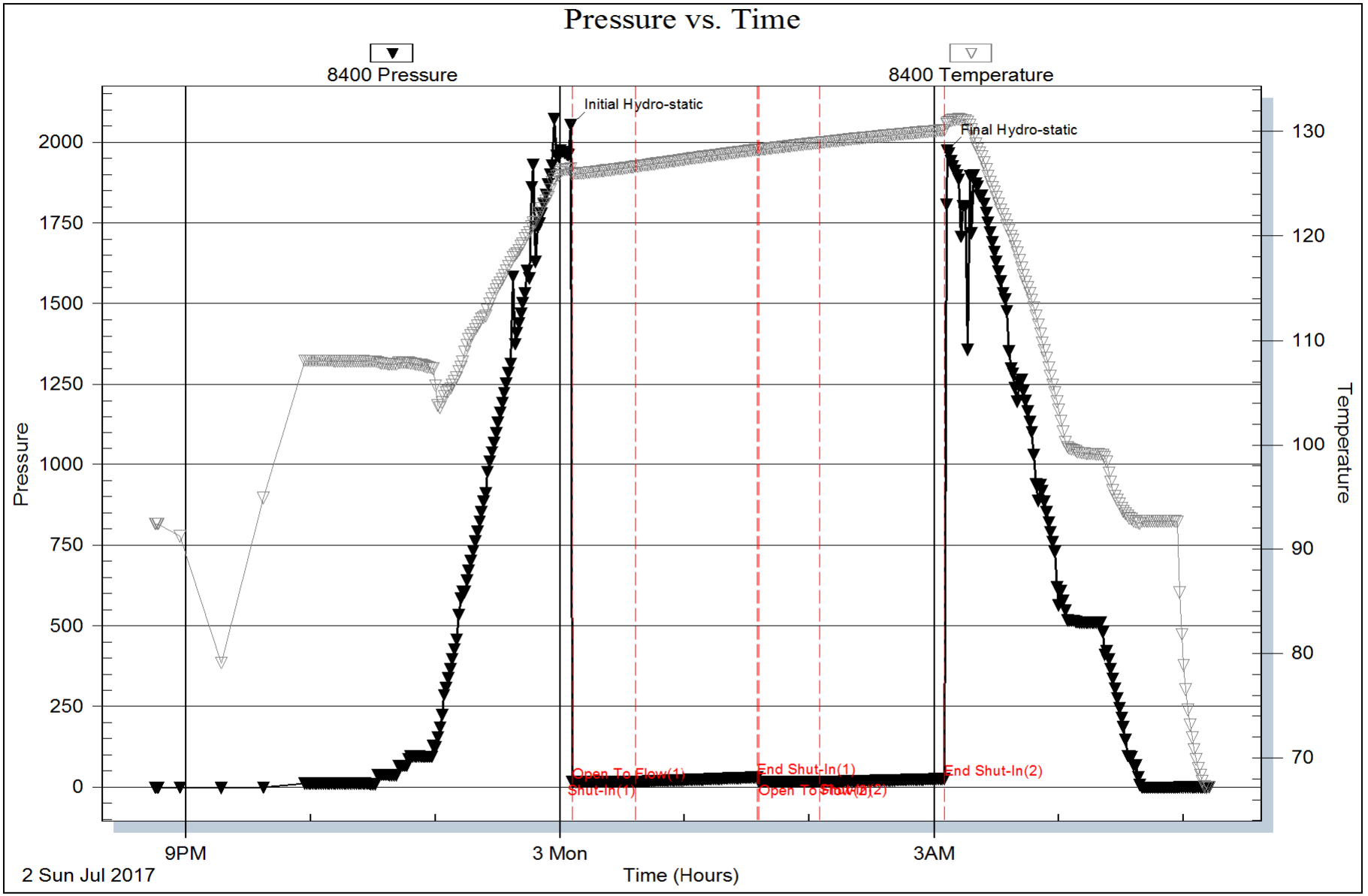
Recovery Table

Length ft	Description	Volume bbl
2.00	OCM 4%o 96%m	0.010

Total Length: 2.00 ft Total Volume: 0.010 bbl

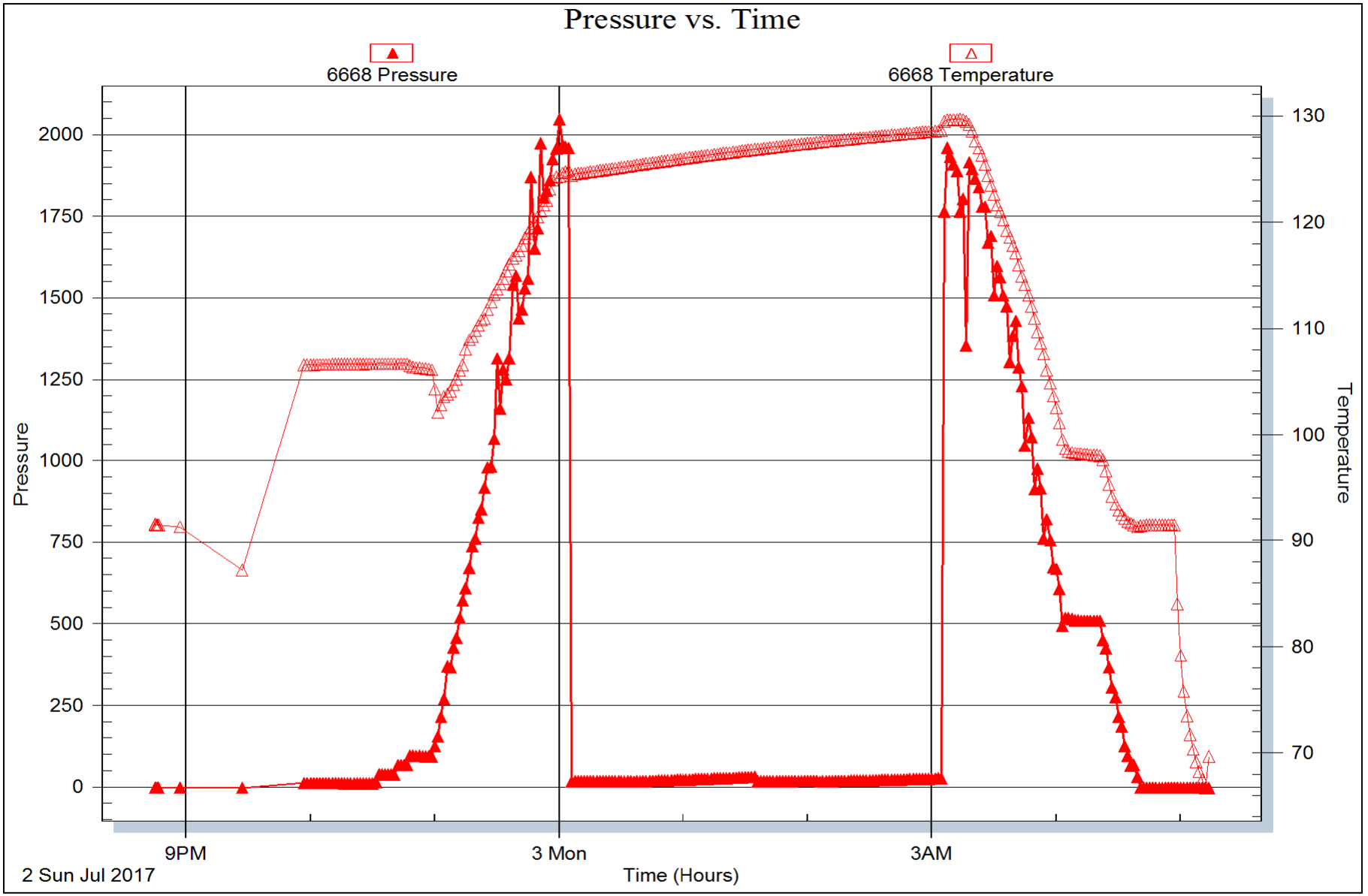
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8400 **Outside** Murfin Drilling Co Inc Carolyn " A " 2-24 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 64044 Printed: 2017.07.06 @ 14:12:14

Serial #: 6668 **Inside** Murfin Drilling Co Inc Carolyn " A " 2-24 DST Test Number: 2



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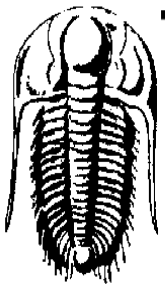


TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

Carolyn " A " 2-24

24 1s 37w Cheyenne KS

Start Date: 2017.07.03 @ 21:15:00
End Date: 2017.07.04 @ 06:28:00
Job Ticket #: 64045 DST #: 3

Trilobite Testing, Inc
1515 Commerce Parkway Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.07.06 @ 14:11:37

DRILL STEM TEST REPORT

Murfin Drilling Co Inc

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64045 **DST#: 3**

Test Start: 2017.07.03 @ 21:15:00

GENERAL INFORMATION:

Formation: **LKC " A - D "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 23:37:00
Time Test Ended: 06:28:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 76

Interval: 4129.00 ft (KB) To 4245.00 ft (KB) (TVD)
Total Depth: 4245.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

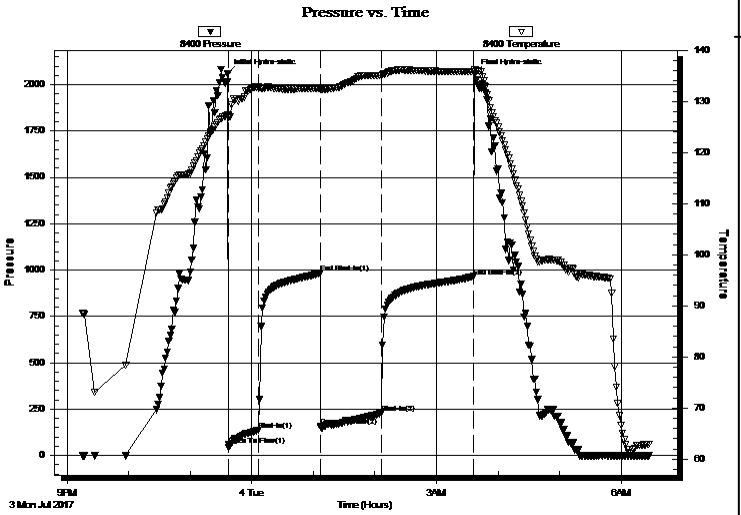
Reference Elevations: 3252.00 ft (KB)
3247.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8400 **Outside**

Press@RunDepth: 225.79 psig @ 4132.00 ft (KB)
Start Date: 2017.07.03 End Date: 2017.07.04
Start Time: 21:15:01 End Time: 06:27:30

Capacity: 8000.00 psig
Last Calib.: 2017.07.04
Time On Btm: 2017.07.03 @ 23:36:30
Time Off Btm: 2017.07.04 @ 03:37:30

TEST COMMENT: 30-IFP- BOB in 16 1/2 min.
60-ISIP- Surface Blow in 2min. Building to 1 1/4" In 44 min.
60-FFP- BOB in 16 1/2 min.
90-FSIP- BOB in 32 min.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2060.35	127.37	Initial Hydro-static
1	57.02	127.13	Open To Flow (1)
30	134.51	132.78	Shut-In(1)
90	985.87	132.58	End Shut-In(1)
91	155.55	132.34	Open To Flow (2)
150	225.79	135.07	Shut-In(2)
240	964.58	135.86	End Shut-In(2)
241	2057.19	136.26	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
514.00	GMCO 15%g 20%m 65%o	5.35
0.00	GIP 496	0.00

* 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 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64045 **DST#: 3**

Test Start: 2017.07.03 @ 21:15:00

GENERAL INFORMATION:

Formation: **LKC " A - D "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 23:37:00
Time Test Ended: 06:28:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 76

Interval: 4129.00 ft (KB) To 4245.00 ft (KB) (TVD)
Total Depth: 4245.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

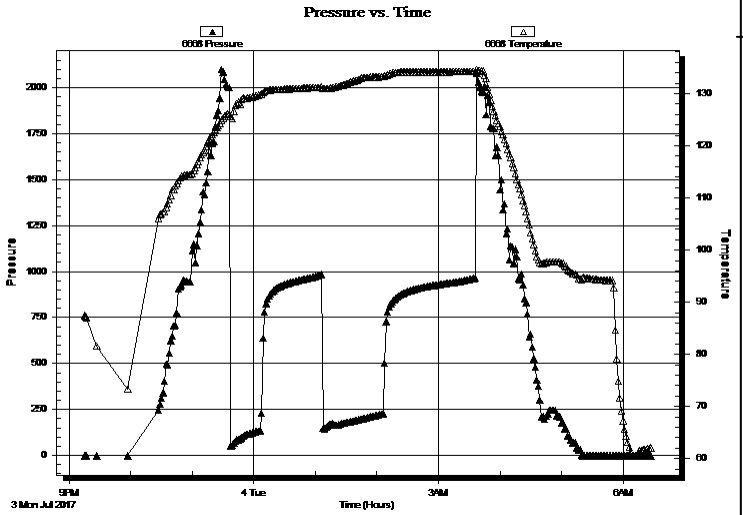
Reference Elevations: 3252.00 ft (KB)
3247.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 6668 **Inside**

Press@RunDepth: psig @ 4132.00 ft (KB)
Start Date: 2017.07.03 End Date: 2017.07.04
Start Time: 21:15:01 End Time: 06:28:00

Capacity: 8000.00 psig
Last Calib.: 2017.07.04
Time On Btm:
Time Off Btm:

TEST COMMENT: 30-IFP- BOB in 16 1/2 min.
60-ISIP- Surface Blow in 2min. Building to 1 1/4" In 44 min.
60-FFP- BOB in 16 1/2 min.
90-FSIP- BOB in 32 min.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
514.00	GMCO 15%g 20%m 65%o	5.35
0.00	GIP 496	0.00

* 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 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64045 **DST#: 3**

Test Start: 2017.07.03 @ 21:15:00

Tool Information

Drill Pipe:	Length:	3930.00 ft	Diameter:	3.80	inches	Volume:	55.13	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:	25000.00 lb
Drill Collar:	Length:	204.00 ft	Diameter:	2.25	inches	Volume:	1.00	bbl	Weight to Pull Loose:	67000.00 lb
						Total Volume:	56.13	bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		33.00 ft							String Weight: Initial	60000.00 lb
Depth to Top Packer:		4129.00 ft							Final	62000.00 lb
Depth to Bottom Packer:		ft								
Interval betw een Packers:		116.00 ft								
Tool Length:		144.00 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			4102.00		
Shut In Tool	5.00			4107.00		
Hydraulic tool	5.00			4112.00		
Jars	5.00			4117.00		
Safety Joint	2.00			4119.00		
Packer	5.00			4124.00	28.00	Bottom Of Top Packer
Packer	5.00			4129.00		
Stubb	1.00			4130.00		
Perforations	2.00			4132.00		
Recorder	0.00	6668	Inside	4132.00		
Recorder	0.00	8400	Outside	4132.00		
Perforations	15.00			4147.00		
Change Over Sub	1.00			4148.00		
Blank Spacing	93.00			4241.00		
Change Over Sub	1.00			4242.00		
Bullnose	3.00			4245.00	116.00	Bottom Packers & Anchor
Total Tool Length:	**144.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64045 **DST#: 3**

Test Start: 2017.07.03 @ 21:15:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	20 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	ppm
Viscosity:	59.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	5.98 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	700.00 ppm				
Filter Cake:	8.00 inches				

Recovery Information

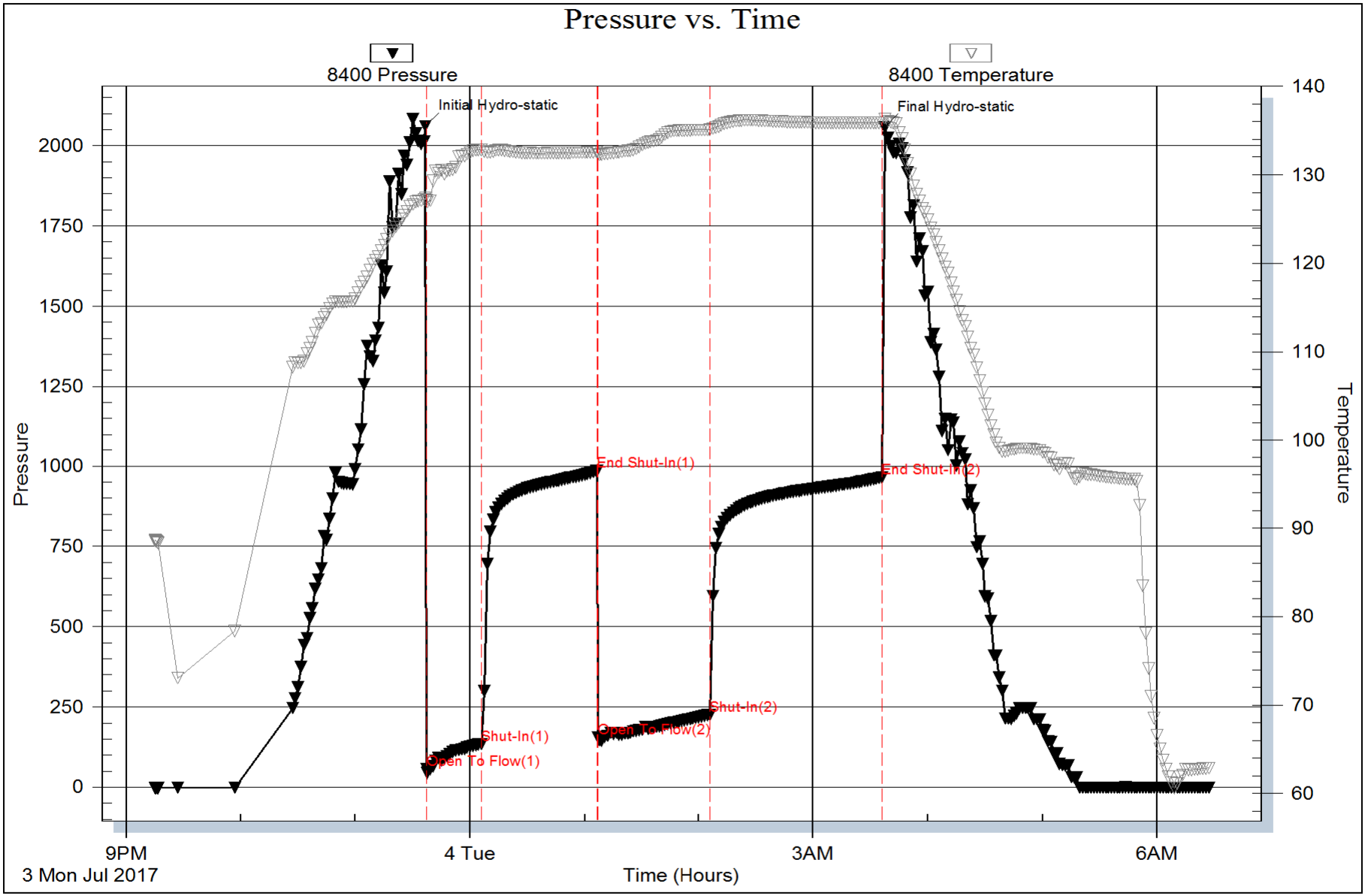
Recovery Table

Length ft	Description	Volume bbl
514.00	GMCO 15%g 20%m 65%o	5.352
0.00	GIP 496	0.000

Total Length: 514.00 ft Total Volume: 5.352 bbl

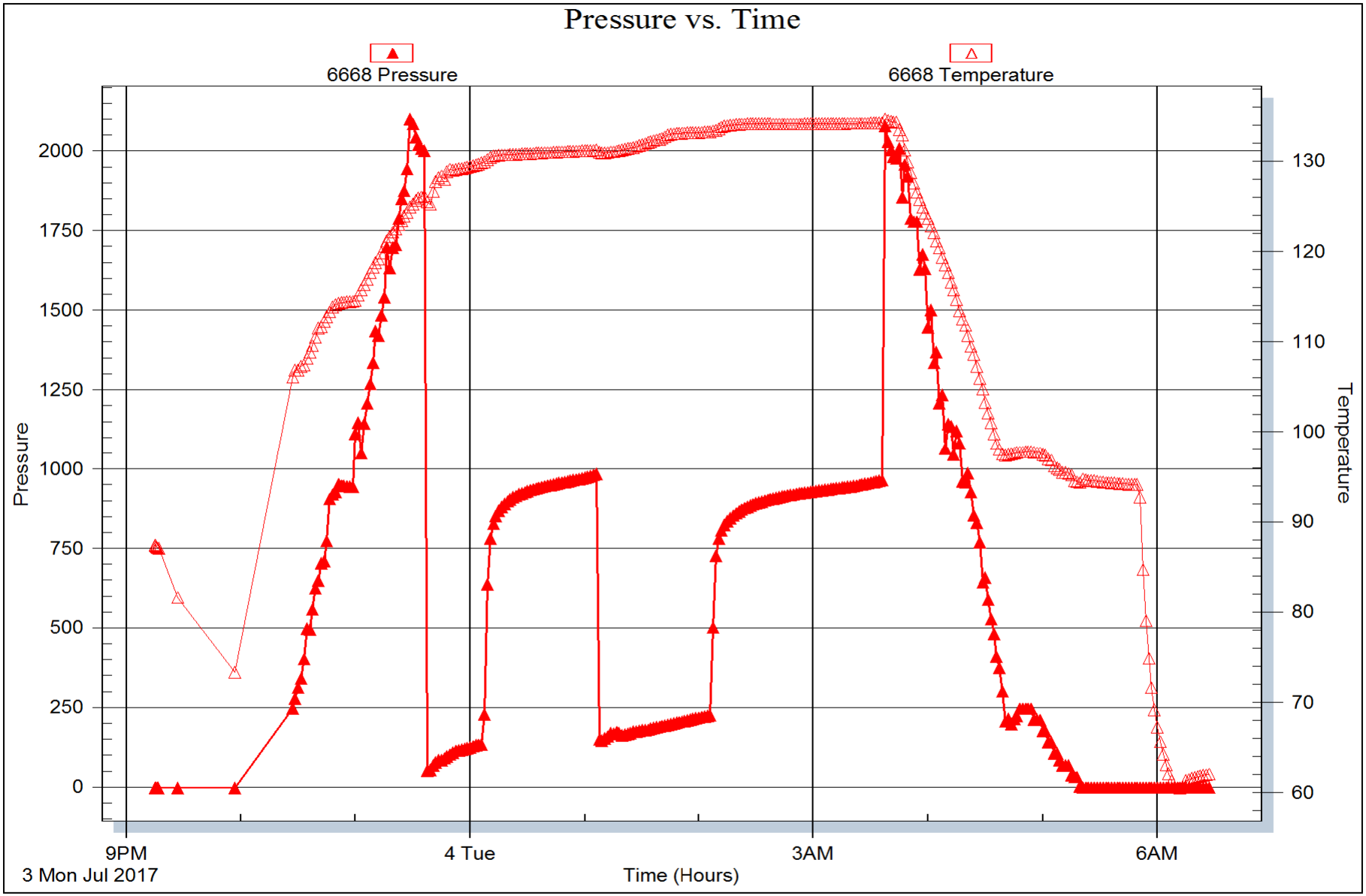
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8400 **Outside** Murfin Drilling Co Inc Carolyn " A " 2-24 DST Test Number: 3

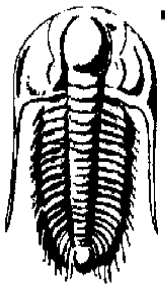


Trilobite Testing, Inc Ref. No: 64045 Printed: 2017.07.06 @ 14:11:39

Serial #: 6668 **Inside** Murfin Drilling Co Inc Carolyn " A " 2-24 DST Test Number: 3



Trilobite Testing, Inc Ref. No: 64045 Printed: 2017.07.06 @ 14:11:39



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co Inc**

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

Carolyn " A " 2-24

24 1s 37w Cheyenne KS

Start Date: 2017.07.04 @ 22:53:00
End Date: 2017.07.05 @ 06:44:00
Job Ticket #: 64046 DST #: 4

Trilobite Testing, Inc
1515 Commerce Parkway Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2017.07.06 @ 14:09:21

DRILL STEM TEST REPORT

Murfin Drilling Co Inc

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64046 **DST#: 4**

Test Start: 2017.07.04 @ 22:53:00

GENERAL INFORMATION:

Formation: **LKC " J "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 01:16:30
Time Test Ended: 06:44:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 76

Interval: 4336.00 ft (KB) To 4388.00 ft (KB) (TVD)
Total Depth: 4388.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

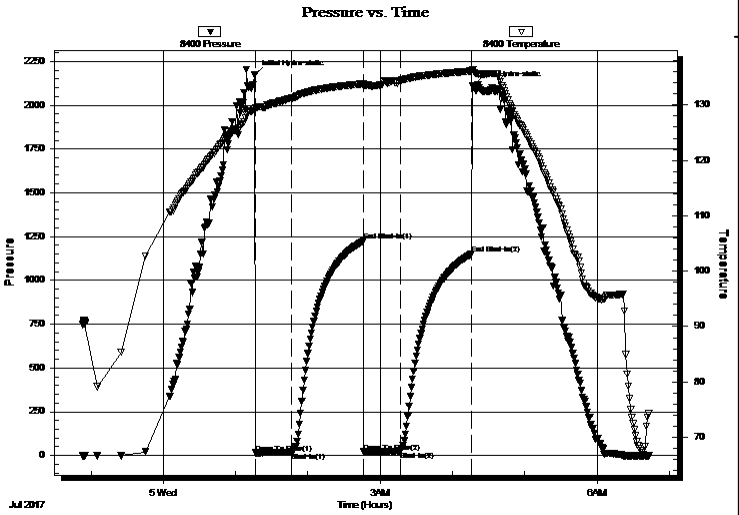
Reference Elevations: 3252.00 ft (KB)
3247.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8400 **Outside**

Press@RunDepth: 24.44 psig @ 4337.00 ft (KB)
Start Date: 2017.07.04 End Date: 2017.07.05
Start Time: 22:53:01 End Time: 06:43:30

Capacity: 8000.00 psig
Last Calib.: 2017.07.05
Time On Btm: 2017.07.05 @ 01:16:00
Time Off Btm: 2017.07.05 @ 04:17:00

TEST COMMENT: 30-IFP- Surface Blow Building to 3/4" Died Back in 18 min.
60-ISIP- No Blow
30-FFP- No Blow
60-FSIP- No Blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2174.45	129.34	Initial Hydro-static
1	14.92	129.42	Open To Flow (1)
31	17.94	131.22	Shut-In(1)
90	1223.79	133.81	End Shut-In(1)
91	20.29	133.54	Open To Flow (2)
121	24.44	134.40	Shut-In(2)
180	1151.41	136.12	End Shut-In(2)
181	2110.16	136.42	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
7.00	Oil Speck Mud 2%o 98%m	0.03

* 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 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64046 **DST#: 4**

Test Start: 2017.07.04 @ 22:53:00

GENERAL INFORMATION:

Formation: **LKC " J "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 01:16:30
Time Test Ended: 06:44:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 76

Interval: 4336.00 ft (KB) To 4388.00 ft (KB) (TVD)
Total Depth: 4388.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

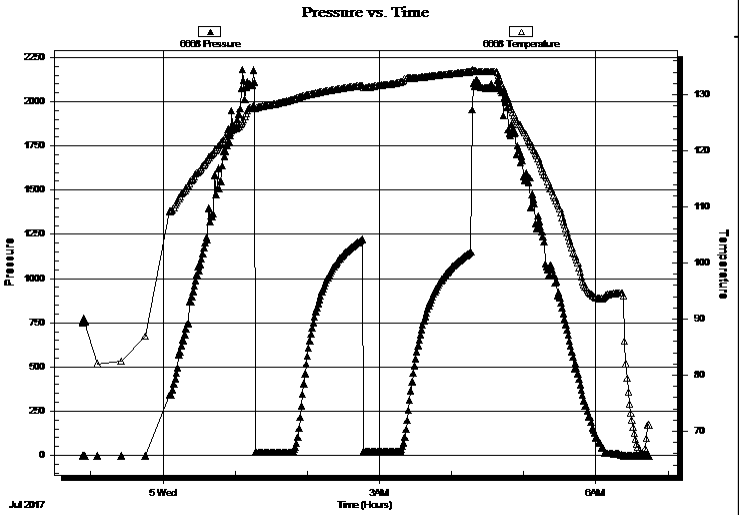
Reference Elevations: 3252.00 ft (KB)
3247.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 6668 **Inside**

Press@RunDepth: psig @ 4337.00 ft (KB)
Start Date: 2017.07.04 End Date: 2017.07.05
Start Time: 22:53:01 End Time: 06:44:00

Capacity: 8000.00 psig
Last Calib.: 2017.07.05
Time On Btm:
Time Off Btm:

TEST COMMENT: 30-IFP- Surface Blow Building to 3/4" Died Back in 18 min.
60-ISIP- No Blow
30-FFP- No Blow
60-FSIP- No Blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
7.00	Oil Speck Mud 2%o 98%m	0.03

* 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 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64046 **DST#: 4**

Test Start: 2017.07.04 @ 22:53:00

Tool Information

Drill Pipe:	Length:	4116.00 ft	Diameter:	3.80	inches	Volume:	57.74	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:	25000.00 lb
Drill Collar:	Length:	204.00 ft	Diameter:	2.25	inches	Volume:	1.00	bbl	Weight to Pull Loose:	65000.00 lb
						Total Volume:	58.74	bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		12.00 ft							String Weight: Initial	62000.00 lb
Depth to Top Packer:		4336.00 ft							Final	62000.00 lb
Depth to Bottom Packer:		ft								
Interval betw een Packers:		52.00 ft								
Tool Length:		80.00 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			4309.00		
Shut In Tool	5.00			4314.00		
Hydraulic tool	5.00			4319.00		
Jars	5.00			4324.00		
Safety Joint	2.00			4326.00		
Packer	5.00			4331.00	28.00	Bottom Of Top Packer
Packer	5.00			4336.00		
Stubb	1.00			4337.00		
Recorder	0.00	6668	Inside	4337.00		
Recorder	0.00	8400	Outside	4337.00		
Perforations	15.00			4352.00		
Change Over Sub	1.00			4353.00		
Blank Spacing	31.00			4384.00		
Change Over Sub	1.00			4385.00		
Bullnose	3.00			4388.00	52.00	Bottom Packers & Anchor
Total Tool Length:	**80.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co Inc

250 N Water Ste 300
Wichita KS 67202-1216

ATTN: Robert Hendrix

24 1s 37w Cheyenne KS

Carolyn " A " 2-24

Job Ticket: 64046 **DST#: 4**

Test Start: 2017.07.04 @ 22:53:00

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:	58.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	5.99 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	700.00 ppm				
Filter Cake:	7.00 inches				

Recovery Information

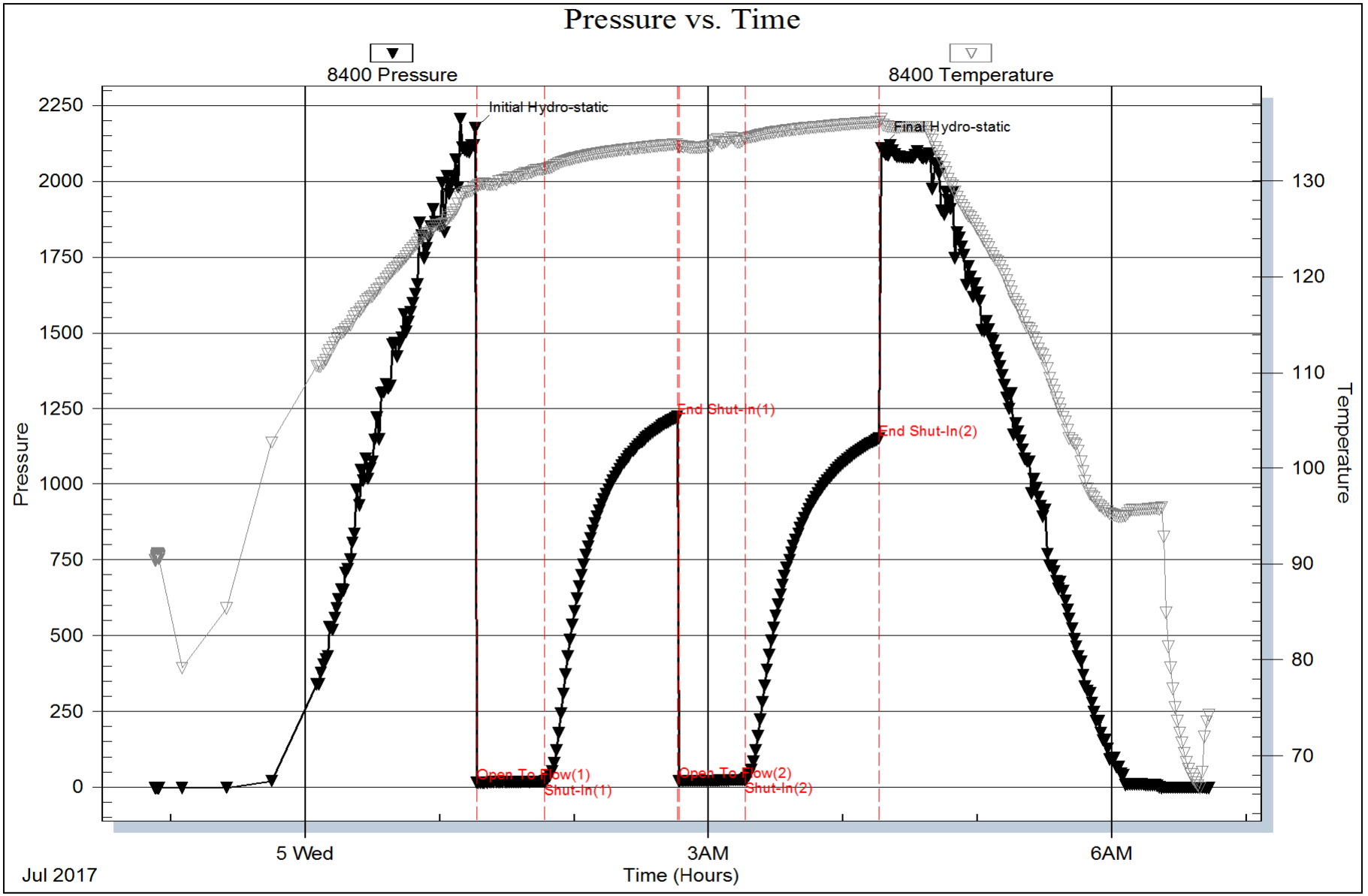
Recovery Table

Length ft	Description	Volume bbl
7.00	Oil Speck Mud 2%o 98%m	0.034

Total Length: 7.00 ft Total Volume: 0.034 bbl

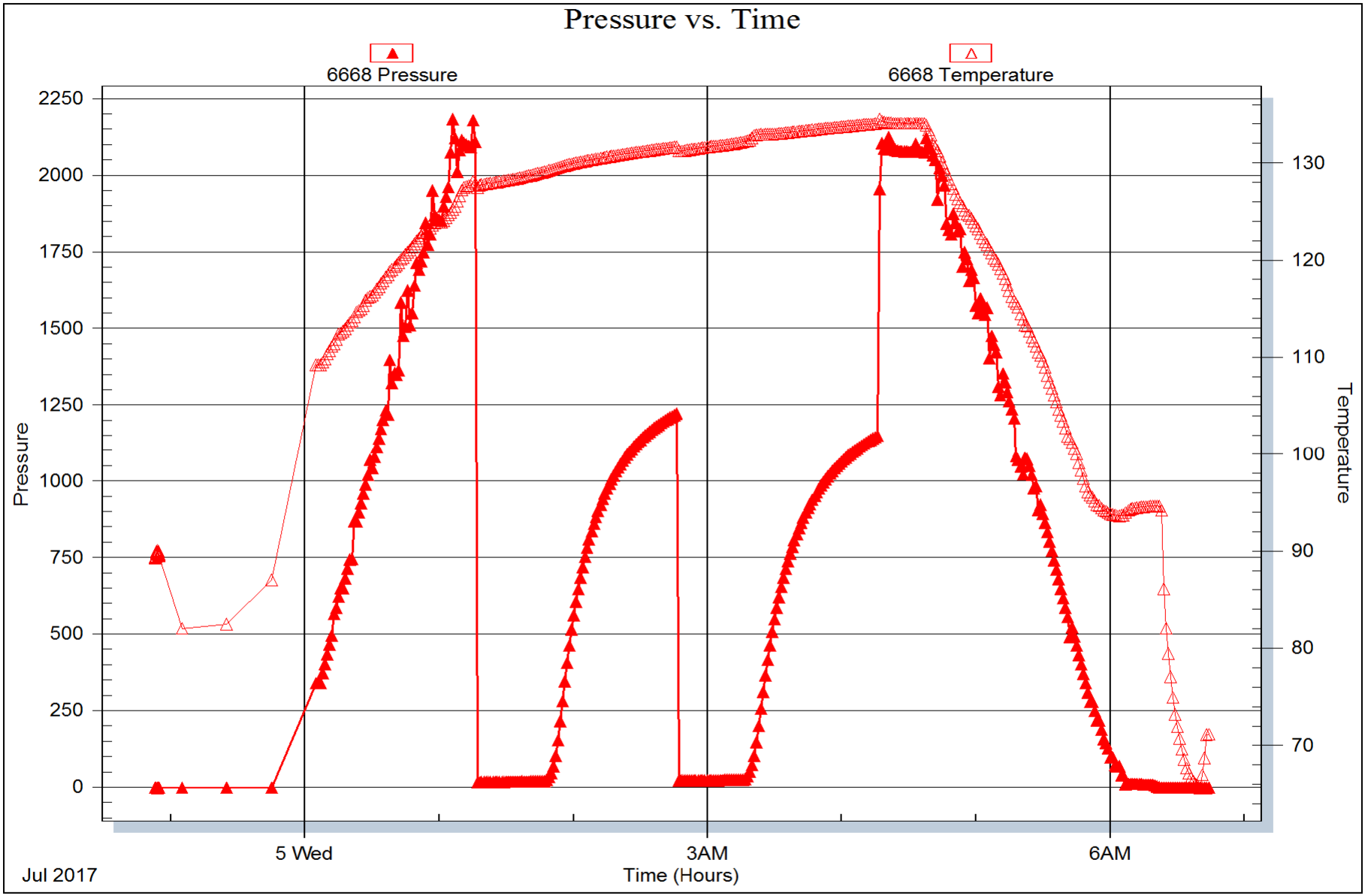
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8400 **Outside** Murfin Drilling Co Inc Carolyn " A " 2-24 DST Test Number: 4



Trilobite Testing, Inc Ref. No: 64046 Printed: 2017.07.06 @ 14:09:22

Serial #: 6668 **Inside** Murfin Drilling Co Inc Carolyn " A " 2-24 DST Test Number: 4



Trilobite Testing, Inc Ref. No: 64046 Printed: 2017.07.06 @ 14:09:22

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 64043

Well Name & No. Carolyn "A" 2-24 Test No. 1 Date 7-1-17

Company Murfin Drilling Co. Inc. Elevation 3252 KB 3247 GL

Address 250 N. Water Ste. 300 Wichita KS 67202-1216

Co. Rep / Geo. Robert Hendrix Rig Murfin 3

Location: Sec. 24 Twp. 15 Rge. 37 W Co. Cheyenne State KS

Interval Tested 3709-3762 Zone Tested Foraker

Anchor Length 53 Drill Pipe Run 3493 Mud Wt. 8.8

Top Packer Depth 3704 Drill Collars Run 204 Vis 79

Bottom Packer Depth 3709 Wt. Pipe Run 0 WL 6.4

Total Depth 3762 Chlorides 700 ppm System LCM 7

Blow Description IFP- BOB in 9min

ISIP-Surface Blow in 1½min. Building to 6½in.

FFP- BOB in 11min.

FSIP-Surface Blow in 6min. Building to 6¾in.

Rec 117	Feet of MCO	%gas 5	%oil 70	%water	30	%mud
Rec 541	Feet of CO	%gas 100	%oil	%water		%mud
Rec	Feet of	%gas	%oil	%water		%mud
Rec	Feet of SIP 260	%gas	%oil	%water		%mud
Rec	Feet of	%gas	%oil	%water		%mud

Rec Total 658 BHT 131 Gravity 24 API RW @ °F Chlorides ppm

(A) Initial Hydrostatic	1776	☒ Test 1050	T-On Location 9:45
(B) First Initial Flow	42	☒ Jars 250	T-Started 10:50
(C) First Final Flow	150	☒ Safety Joint 75	T-Open 13:17
(D) Initial Shut-In	827	☒ Circ Sub 50	T-Pulled 17:17
(E) Second Initial Flow	157	☐ Hourly Standby	T-Out 20:47
(F) Second Final Flow	272	☒ Mileage 91.50 x 22 RT	Comments
(G) Final Shut-In	806	☐ Sampler	
(H) Final Hydrostatic	1759	☐ Straddle	☐ Ruined Shale Packer
		☐ Shale Packer	☐ Ruined Packer
Initial Open	30	☐ Extra Packer	☐ Extra Copies
Initial Shut-In	60	☐ Extra Recorder	Sub Total 0
Final Flow	60	☐ Day Standby	Total 1516.50
Final Shut-In	90	☐ Accessibility	MP/DST Disc't
		Sub Total 1516.50	

Approved By Our Representative

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.

7856395864

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 64044

Well Name & No. Carolyn A 2-24 Test No. 2 Date 7-2-17

Company Murfin Drilling Co. Inc Elevation 3252 KB 3247 GL

Address 250 N. Water Ste 300 Wichita KS 67202-1216

Co. Rep / Geo. Robert Hendrix Rig Murfin 3

Location: Sec. 24 Twp. 1S Rge. 37W Co. Cheyenne State KS

Interval Tested 4039-4104 Zone Tested Oread

Anchor Length 65 Drill Pipe Run 3834 Mud Wt. 8.8

Top Packer Depth 4034 Drill Collars Run 204 Vis 59

Bottom Packer Depth 4039 Wt. Pipe Run 0 WL 6.4

Total Depth 4104 Chlorides 700 ppm System LCM 7

Blow Description IFP- 1/4 in. Blow Dead in 17 min.
ISIP- No Blow
FFP- No Blow
FSIP- No Blow

Rec 2	Feet of 0cm	%gas 4	%oil	%water 96	%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 2 BHT 131 Gravity ____ API RW ____ @ ____ °F Chlorides ____ ppm

(A) Initial Hydrostatic 2052

(B) First Initial Flow 16

(C) First Final Flow 16

(D) Initial Shut-In 30

(E) Second Initial Flow 16

(F) Second Final Flow 17

(G) Final Shut-In 25

(H) Final Hydrostatic 1974

Initial Open 30

Initial Shut-In 60

Final Flow 30

Final Shut-In 60

- [x] Test 1150
- [x] Jars 250
- [x] Safety Joint 75
- [ ] Circ Sub
- [ ] Hourly Standby
- [x] Mileage 91.50
- [ ] Sampler
- [ ] Straddle
- [ ] Shale Packer
- [ ] Extra Packer
- [ ] Extra Recorder
- [ ] Day Standby
- [ ] Accessibility

Sub Total 1566.50

T-On Location 18:37

T-Started 20:45

T-Open 00:06

T-Pulled 03:06

T-Out 05:13

Comments

- [ ] Ruined Shale Packer
- [ ] Ruined Packer
- [ ] Extra Copies

Sub Total 0

Total 1566.50

MP/DST Disc't

Approved By ____ Our Representative ____

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 64045

Well Name & No. Carolyn A 2-24 Test No. 3 Date 7-3-17

Company Murfin Drilling Co. Inc Elevation 3252 KB 3247 GL

Address 250 N. Water St. Ste 300 Wichita KS 67202-1216

Co. Rep / Geo. Robert Hendrix Rig Murfin 3

Location: Sec. 24 Twp. 13 Rge. 37W Co. Cheyenne State KS

Interval Tested 4129-4245 Zone Tested LKC "A-D"

Anchor Length 116 Drill Pipe Run 3930 Mud Wt. 8.9

Top Packer Depth 4124 Drill Collars Run 204 Vis 59

Bottom Packer Depth 4129 Wt. Pipe Run 0 WL 6

Total Depth 4245 Chlorides 700 ppm System LCM 8

Blow Description IFP- BOB in 16 1/2 min.
ISIP- Surface Blow in 2 min. Building to 1 1/4 in. In 44 min.
FFP- BOB in 16 1/2 min.
FSIP- BOB in 32 min.

Rec 514	Feet of Gmco	15 %gas	65 %oil	%water 20	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	
Rec	Feet of 496 GIP	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	

Rec Total 514 BHT 136 Gravity 20 API RW ____ @ ____ °F Chlorides ____ ppm

(A) Initial Hydrostatic 2060	☒ Test 1150	T-On Location 19:46	
(B) First Initial Flow 57	☒ Jars 250	T-Started 21:15	
(C) First Final Flow 134	☒ Safety Joint 75	T-Open 23:37	
(D) Initial Shut-In 985	☐ Circ Sub	T-Pulled 03:37	
(E) Second Initial Flow 155	☐ Hourly Standby	T-Out 06:28	
(F) Second Final Flow 225	☒ Mileage 91.50	Comments	
(G) Final Shut-In 964	☐ Sampler		
(H) Final Hydrostatic 2057	☐ Straddle	☐ Ruined Shale Packer	
	☐ Shale Packer	☐ Ruined Packer	
Initial Open 30	☐ Extra Packer	☐ Extra Copies	
Initial Shut-In 60	☐ Extra Recorder	Sub Total 0	
Final Flow 60	☐ Day Standby	Total 1566.50	
Final Shut-In 90	☐ Accessibility	MP/DST Disc't	
	Sub Total 1566.50		

Approved By ____ Our Representative ____

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 64046

Well Name & No. Carolyn A 2-24 Test No. 4 Date 7-4-17

Company Murfin Drilling Co. Inc. Elevation 3252 KB 3247 GL

Address 250 N Water Ste 300 Wichita KS 67202-1216

Co. Rep / Geo. Robert Hendrix Rig Murfin 3

Location: Sec. 24 Twp. 15 Rge. 37W Co. Cheyenne State KS

Interval Tested 4336-4388 Zone Tested LKC "J"

Anchor Length 52 Drill Pipe Run 4116 Mud Wt. 9

Top Packer Depth 4331 Drill Collars Run 204 Vis 58

Bottom Packer Depth 4336 Wt. Pipe Run ~~0~~ WL 6

Total Depth 4388 Chlorides 700 ppm System LCM 7

Blow Description IFP- Surface Blow Building to 3/4 in. Died Back in 18 min.
ISIP- No Blow
FFP- No Blow
FSIP- No Blow

Rec 7	Feet of Oil Speck Mud	%gas 2	%oil	%water 98	%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 7 BHT 136 Gravity ____ API RW ____ @ ____ °F Chlorides ____ ppm

(A) Initial Hydrostatic 2174	☒ Test 1150	T-On Location 21:53	
(B) First Initial Flow 14	☒ Jars 250	T-Started 22:53	
(C) First Final Flow 17	☑ Safety Joint 75	T-Open 01:17	
(D) Initial Shut-In 1223	☐ Circ Sub	T-Pulled 04:17	
(E) Second Initial Flow 20	☐ Hourly Standby	T-Out 06:44	
(F) Second Final Flow 24	☒ Mileage X 2 183	Comments	
(G) Final Shut-In 1151	☐ Sampler		
(H) Final Hydrostatic 2110	☐ Straddle	☐ Ruined Shale Packer	
	☐ Shale Packer	☐ Ruined Packer	
Initial Open 30	☐ Extra Packer	☐ Extra Copies	
Initial Shut-In 60	☐ Extra Recorder	Sub Total 0	
Final Flow 30	☐ Day Standby	Total 1658	
Final Shut-In 60	☐ Accessibility	MP/DST Disc't	
	Sub Total 1658		

Approved By ____ Our Representative [signature]

TREATMENT REPORT

HURRICANE SERVICES INC

Customer:	Murfin Drillind Company		Date:	6/28/2017	Ticket No.: 100759
Field Rep:	Bo Farr				
Address:					
City, State:					
County, Zip:					

				Perf Depths (ft)		Perfs
Field Order No.:	100759	Open Hole:				
Well Name:	Carolyn A #2-24	Casing Depth:	205.4			
Location:	McDondald	Casing Size:	13 3/8 48 Lb			
Formation:		Tubing Depth:				
Type of Service:	Conductor	Tubing Size:				
Well Type:	Oil	Liner Depth:				
Age of Well:	New	Liner Size:				
Packer Type:		Liner Top:				
Packer Depth:		Liner Bottom:				
Treatment Via:	Casing	Total Depth:	208'		Total Perfs	0

TIME	INJECTION RATE FLUID	INJECTION RATE N2/CO2	PRESSURE STP	PRESSURE ANNULUS	REMARKS	PROP (lbs)	HCL (gls)	FLUID (bbls)
3:00 PM					Called Out 6-27-17			
10:00 PM					On Location W/Trucks Hold Safety Meeting			
					Spot & Set Up Trucks			
					TD=208' TP=205.40 Leave 20' In Casing			
12:30 AM					Start Casing			
2:45 AM	5.0				Csg On Bottom Hook Up To Csg Break circulation W/Rig			
3:05 AM	4.0		150.0		Start Pumping H20			10.00
	4.0		150.0		Start Mix & Pump 400 Sacks Common 2%Gel 3% CC			
					1/2 lb/sk Phenoseal			98.89
	4.0		170.0		Start Diplacement H20			
3:45 AM			200.0		Plug Down			29.10
					Close Vavle on Casing			
					Good Circuation thru Job			
					Circulate Cement To Pit			
					Wash Up & Rack Up Truck			
4:15 AM					Off Location			
					Thank You Please Call Again			
					Tony Cody Sheldon			
					TOTAL:	-	-	136.99

SUMMARY

Max Fl. Rate	Avg Fl. Rate	Max PSI	Avg PSI
5.0	4.3	200.0	167.5

PRODUCTS USED

400 Sx Common 2%Gel 3%CC 1/2#/Sx Pheno-Seal

Treater: Tony

Customer: Bo Farr

TREATMENT REPORT

HURRICANE SERVICES INC

Customer:	Murfin Drilling Company Inc.	Date: 7/7/2017	Ticket No.: 100763
Field Rep:	Nathan Witt		
Address:			
City, State:			
County, Zip:			

				Perf Depths (ft)		Perfs
Field Order No.:	100763	Open Hole:				
Well Name:	Carolyn A # 2-24	Casing Depth:	4740'			
Location:	McDonald	Casing Size:	5.5 15.5 Lb			
Formation:		Tubing Depth:				
Type of Service:	Longstring	Tubing Size:				
Well Type:	Oil	Liner Depth:				
Age of Well:	New	Liner Size:				
Packer Type:		Liner Top:				
Packer Depth:		Liner Bottom:				
Treatment Via:	Casing	Total Depth:	4750'		Total Perfs	0

TIME	INJECTION RATE FLUID	INJECTION RATE N2/CO2	PRESSURE STP	PRESSURE ANNULUS	REMARKS	PROP (lbs)	HCL (gls)	FLUID (bbls)
4:00 AM					Called Out			
5:30 AM					On Location With Float Equipment			
					Run 113 Jt's 5.5 15.5 Lb			
					TD= 4750' TP= 4740' SJ= 21.70 AFU Float Shoe S			
					Turbolizers on Jt's1-2-3-4-5-6-7-8-9-10-11-12-13-34-44			
					Cemenent Baskets Jt's 11-35-45- Scratcher 11-13-25			
6:00 AM					Trucks On Location			
7:15 AM					Start Casing			
9:10 AM					Casing On Bottom Drop Ball			
9:15 AM					Hook Up To Casing Break Circulation W/Rig Rotate 1 Hr			
10:07 AM					Start Pumping Prefiushes			
	4.0		150.0		5 BBL's H20			5.00
	4.0		150.0		12 BBl's Mud Flush			12.00
	4.0		150.0		5 BBL's H20			5.00
10:16 AM	2.0		100.0		Plug Rat & Mouse Holes 50 Sacks Lead			
10:27 AM	4.3		320.0		Start Mix & Pump Lead @ 12 Lb/Gal Yield 2.61			116.00
11:58 AM	4.3				Start Mix & Pump Tal @ 14.8 Lb/Gal Yield 1.50			53.43
					Shut Down Clear Pump & Lines Drop LD Plug			15.00
					TOTAL:	-	-	320.97

SUMMARY

Max Fl. Rate	Avg Fl. Rate	Max PSI	Avg PSI
6.5	4.0	2,200.0	613.3

PRODUCTS USED

300 Sacks H-Con 200 Sacks H-Long

Treater: Todd Seba

Customer: Nathan Witt

TREATMENT REPORT

HURRICANE SERVICES INC

TIME	INJECTION RATE FLUID	INJECTION RATE N2/CO2	PRESSURE STP	PRESSURE ANNULUS	REMARKS	PROP (lbs)	HCL (gls)	FLUID (bbls)
11:26 AM	6.5		200.0		Start Displacement 2% KCL			
	5.0		800.0		Lift Psi Slow Rate			
	3.0		1,450.0		Slow Rate			
11:45 AM	3.0		2,200.0		Plug Down & Psi Up			114.54
					Release Psi & Float Held			
					1 BBL Back			
					Cement In Cellar			
					Wash Up & Rack Up Truck			
12:16 PM					Off Location			
					Thank You			
					Please Call Again			
					Todd Cody Sheldon Darren			
					300 Sacks Lead H-Con 3% C.C. 1/2 Lb/sk pheno-Seal			
					12 Lb/Gal Yield 2.61			
					200 Sacks H-Long 1% Gel 10% Salt 5 Lb/Sk Koseal			
					.6% CFL-160 .25% CAF-38			
					14.8 Lb/Gal Yield 1.50			

Activity provided on this page is calculated in the summary and totals on page 1