

JAMES C. MUSGROVE

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Mai Oil Operations
Tieperman #1
NE-SE-SW-SW (393' FNL & 1113' FWL)
Section 29-21s-12w
Stafford County, Kansas

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5 1/2" Production Casing Set

- Contractor:** Southwind Drilling Co. (rig #3)
- Commenced:** November 22, 2016
- Completed:** December 2, 2016
- Elevation:** 1867' K.B., 1865' D.F., 1859' G.L.
- Casing program:** Surface; 8 5/8" @ 647'
Production, 5 1/2" @ 3700'
- Sample:** Samples saved and examined 2800' to the Rotary Total Depth.
- Drilling time:** One (1) foot drilling time recorded and kept 2800' to the Rotary Total Depth.
- Measurements:** All depths measured from the Kelly Bushing.
- Drill Stem Tests:** There were four (4) Drill Stem Tests ran by Trilobite Testing Co.
- Electric Log:** By Eli Wireline Services, Dual Induction, Compensated Density/Neutron Log and Micro Log

<u>Formation</u>	<u>Log Depth</u>	<u>Sub-Sea Datum</u>
Anhydrite	666	+1201
Base Anhydrite	687	+1180
Heebner	3124	-1257
Toronto	3141	-1271
Douglas	3155	-1288
Brown Lime	3253	-1386
Lansing	3268	-1401
Base Kansas City	3490	-1623
Viola	3502	-1635
Simpson Shale	3548	-1681
Arbuckle	3598	-1731
Rotary Total Depth	3710	-1843
Log Total Depth	3710	-1843

(All tops and zones corrected to Electric Log Measurement)

SAMPLE ANALYSIS, SHOWS OF OIL, TESTING DATA, ETC.

TORONTO SECTION

3141-3150' Limestone, tan, white, finely crystalline, few fossiliferous, chalky, plus white chalk, no shows.

LANSING SECTION

- 3268-3280' Limestone, gray, fossiliferous, chalky, poor visible porosity, gray, black stain, no show of free oil and fair odor in fresh samples.
- 3285-3298' Limestone, white, gray, oolitic, poorly developed porosity, gray, black to brown stain, no show of free oil and faint odor in fresh samples.
- 3305-3312' Limestone, gray, white, finely crystalline, oolitic/fossiliferous, scattered porosity, brown to gray stain and saturation; no show of free oil and faint odor in fresh samples.
- 3324-3328' Limestone, gray, fossiliferous, poor porosity, chalky in part, brown to golden brown stain, no show of free oil and no odor in fresh samples.
- 3334-3338' Limestone, gray, oolitic/fossiliferous, increase in porosity, brown stain, weak show of free oil.
- 3346-3350' Limestone, gray, tan, fossiliferous, oolitic, oomoldic, poor to fair oomoldic porosity, brown stain, trace of free oil and faint odor in fresh samples.
- 3356-3370' Limestone, gray, sub-oomoldic, poorly developed porosity, trace poor black stain, no show of free oil and no odor in fresh samples.
- 3391-3397' Limestone, cream, white, oolitic, fair porosity, fair light brown/golden brown stain and saturation, trace of free oil and faint odor in fresh samples.
- 3406-3416' Limestone, gray, white, oolitic/fossiliferous, fair porosity, brown to black stain, weak show of free oil and faint to fair odor in fresh samples.
- 3427-3432' Limestone, white, gray, finely crystalline, chalky, few fossiliferous, black stain and saturation, no show of free oil and faint odor.
- 3453-3460' Limestone, gray, white, fossiliferous, chalky, black stain, no show of free oil or odor in fresh samples

Drill Stem Test #1

3378-3470

Times: 30-45-45-60

Blow: Strong; Gas to surface (31 mins)

Gas gauged as follows:

Final Flow	gas to surface immediately
10' mins	70,440 cfgpd
20' mins	70,440 cfgpd
30' mins	86,300 cfgpd
40' mins	98,990 cfgpd

Recovery: 3279' gas in pipe
90' very slightly oil cut mud
(2% oil; 98% mud)
Pressures: ISIP 1025 psi
FSIP 1018 psi
IFP 40-104 psi
FFP 47-94 psi
HSH 1737-1641 psi

3465-3480' Limestone, white, gray, oolitic, chalky; poor visible porosity, trace black stain, no show of free oil and no odor in fresh samples.

VIOLA SECTION

3502-3520' Chert, white, gray, opaque, few semi-tripolitic, brown and gray and black stain, no show of free oil and faint odor in fresh samples.

3520-3548' Chert, as above; plus grains, opaque cherts, no shows.

ARBUCKLE SECTION

3598-3601' Dolomite, white, pink, tan, finely crystalline, sucrosic in part; dense

3601-3610' Dolomite, tan, sucrosic, fair pinpoint porosity, good stain and saturation, good show of free oil and good odor in fresh samples.

Drill Stem Test #2 3540-3610

Times: 30-30-45-45

Blow: Weak-fair

Recovery: 200' gas in pipe
50' oil cut mud
(10% oil; 90% mud)

Pressures: ISIP 669 psi
FSIP 1036 psi
IFP 16-21 psi
FFP 21-36 psi
HSH 1809-1693 psi

3611-3619' Dolomite, gray, with, fine and medium crystalline, fair inter-crystalline porosity, fair stain and saturation, show of free oil and good odor in fresh samples.

Drill Stem Test #3 **3609-3621**

Times: 30-30-45-45

Blow: Strong

Recovery: 208' gas in the pipe
 40' oil and gas
 (10% gas; 20% oil; 70% mud)
 806' gassy oil
 62' oil cut water
 (10% oil; 90 % water)
 310' water

Pressures: ISIP 1256 psi
 FSIP 1255 psi
 IFP 29-236 psi
 FFP 236-467 psi
 HSH 1878-1706 psi

3620-3630' Dolomite, gray, white, medium crystalline, scattered porosity, brown stain, show of free oil and faint odor in fresh samples.

3630-3650' Dolomite, as above, light brown stain, show of free oil and faint odor in fresh samples.

Drill Stem Test #4 **3645-3660**

Times: 15-30-30-30

Blow: Strong

Recovery: 124' mud cut water
 (76% water; 24% mud)
 1736' water

Pressures: ISIP 1268 psi
 FSIP 1264 psi
 IFP 118-472 psi
 FFP 456-966 psi
 HSH 1809-1769 psi

3650-3660' Dolomite, gray, tan, medium crystalline, scattered inter-crystalline to vuggy type porosity, fair brown stain; show of free oil and good odor in fresh samples.

3660-3670' Dolomite, tan, finely crystalline, slightly cherty, poor visible porosity plus white/opaque chert.

3670-3680' Dolomite, gray, white, finely crystalline, few sucrosic, few medium crystalline, fair porosity, trace gray and brown stain, no show of free oil; plus abundant white chalk.

Mai Oil Operations
Tieperman #1
NE-SE-SW-SW (393' FNL & 1113' FWL)
Section 29-21s-12w
Stafford County, Kansas

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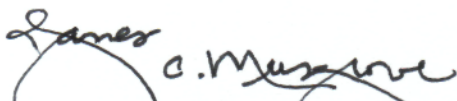
3683-3690'	Dolomite, tan, gray, oomoldic; fair oomoldic and vuggy porosity, brown and light brown stain; show of free oil and fair odor in fresh samples.
3690-3710'	Dolomite, gray, tan, medium crystalline, few coarse crystalline, fair inter-crystalline porosity, black, gray and brown stain, show of free oil and faint odor in fresh samples.

Rotary Total Depth	3710 (-1843)
Log Total Depth	3710 (-1843)

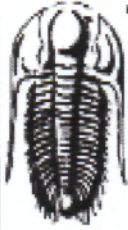
Recommendations:

The 5 1/2" production casing was set and cemented on Mai Oil Operations Inc., Tieperman #1.

Respectfully yours,


James C. Musgrove
Petroleum Geologist





**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Mai Oil Operations
8411 Preston Rd Ste 800
Dallas, TX 75225
ATTN: Jim Musgrove

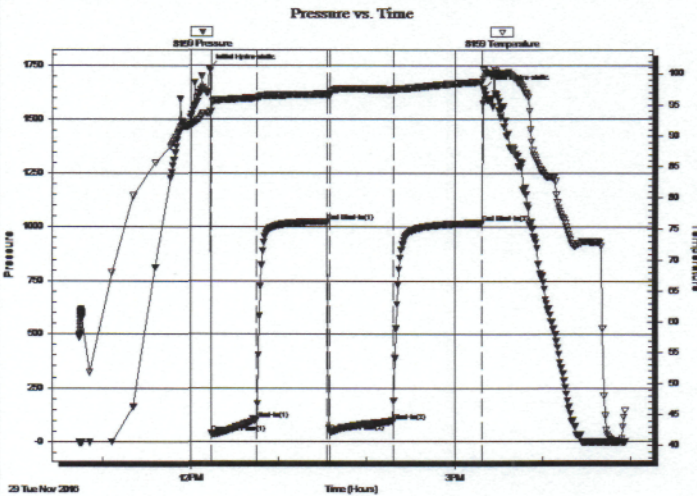
29-21S-12W Stafford,KS
Tieperman #1
Job Ticket: 57974 **DST#: 1**
Test Start: 2016.11.29 @ 10:44:17

GENERAL INFORMATION:

Formation: **LKC H-K**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 12:14:02
Time Test Ended: 16:56:32
Interval: **3378.00 ft (KB) To 3470.00 ft (KB) (TVD)**
Total Depth: 3470.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good
Test Type: Conventional Bottom Hole (Initial)
Tester: Leal Cason
Unit No: 74
Reference Elevations: 1867.00 ft (KB)
1859.00 ft (CF)
KB to GR/CF: 8.00 ft

Serial #: 8159 **Inside**
Press@RunDepth: 94.27 psig @ 3379.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2016.11.29 End Date: 2016.11.29 Last Calib.: 2016.11.29
Start Time: 10:44:18 End Time: 16:56:32 Time On Btm: 2016.11.29 @ 12:12:32
Time Off Btm: 2016.11.29 @ 15:19:47

TEST COMMENT: IF: Strong Blow , BOB in 20 seconds
IS: No Blow Back, GTS During Bleed Off
FF: Strong Blow , BOB & GTS Immeddiate, Gauged Gas
FS: No Blow Back



PRESSURE SUMMARY

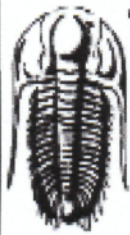
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1736.61	93.72	Initial Hydro-static
2	39.55	93.94	Open To Flow (1)
33	103.77	96.16	Shut-In(1)
81	1025.15	96.75	End Shut-In(1)
83	47.52	96.58	Open To Flow (2)
126	94.27	97.44	Shut-In(2)
187	1018.08	98.70	End Shut-In(2)
188	1641.56	100.69	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	GTS	0.00
90.00	SOCM 2%O 98%M	1.26

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
First Gas Rate	0.25	30.00	70.44
Last Gas Rate	0.25	50.00	102.16
Max. Gas Rate	0.25	50.00	102.16



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations
8411 Preston Rd Ste 800
Dallas, TX 75225
ATTN: Jim Musgrove

29-21S-12W Stafford,KS
Tieperman #1
Job Ticket: 57974 **DST#: 1**
Test Start: 2016.11.29 @ 10:44:17

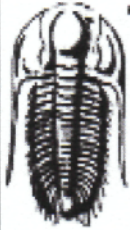
Tool Information

Drill Pipe:	Length: 3369.00 ft	Diameter: 3.80 inches	Volume: 47.26 bbl	Tool Weight: 2100.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 50000.00 lb
			<u>Total Volume: 47.26 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 42000.00 lb
Depth to Top Packer:	3378.00 ft			Final 42000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	92.00 ft			
Tool Length:	111.00 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			3364.00	
Hydraulic tool	5.00			3369.00	
Packer	5.00			3374.00	19.00 Bottom Of Top Packer
Packer	4.00			3378.00	
Stubb	1.00			3379.00	
Recorder	0.00	8159	Inside	3379.00	
Recorder	0.00	6806	Outside	3379.00	
Perforations	7.00			3386.00	
Change Over Sub	1.00			3387.00	
Drill Pipe	63.00			3450.00	
Change Over Sub	2.00			3452.00	
Perforations	15.00			3467.00	
Bullnose	3.00			3470.00	92.00 Bottom Packers & Anchor

Total Tool Length: 111.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations
8411 Preston Rd Ste 800
Dallas, TX 75225
ATTN: Jim Musgrove

29-21S-12W Stafford,KS
Tieperman #1
Job Ticket: 57974 **DST#: 1**
Test Start: 2016.11.29 @ 10:44:17

Mud and Cushion Information

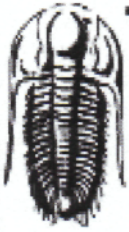
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 69.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.99 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 3700.00 ppm			
Filter Cake: 0.02 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
0.00	GTS	0.000
90.00	SOCM 2%O 98%M	1.262

Total Length: 90.00 ft Total Volume: 1.262 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:



**TRILOBITE
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DRILL STEM TEST REPORT

GAS RATES

Mai Oil Operations
8411 Preston Rd Ste 800
Dallas, TX 75225
ATTN: Jim Musgrove

29-21S-12W Stafford,KS
Tieperman #1
Job Ticket: 57974 **DST#: 1**
Test Start: 2016.11.29 @ 10:44:17

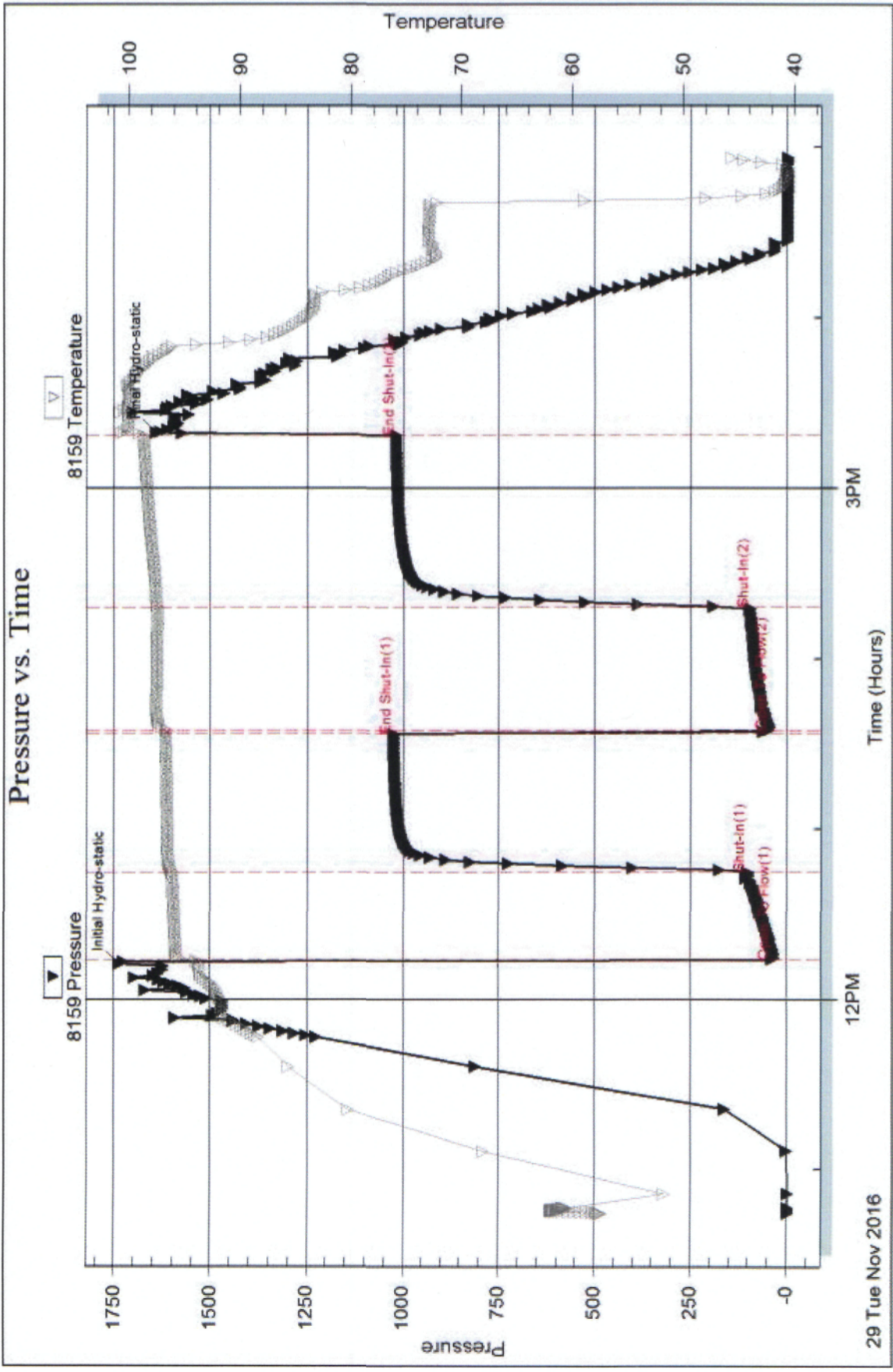
Gas Rates Information

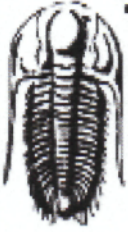
Temperature: 59 (deg F)
Relative Density: 0.65
Z Factor: 0.8

Gas Rates Table

Flow Period	Elapsed Time	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
2	10	0.25	30.00	70.44
2	20	0.25	40.00	86.30
2	30	0.25	48.00	98.99
2	40	0.25	50.00	102.16

Pressure vs. Time





TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

Mai Oil Operations
 8411 Preston Rd Ste 800
 Dallas, TX 75225
 ATTN: Jim Musgrove

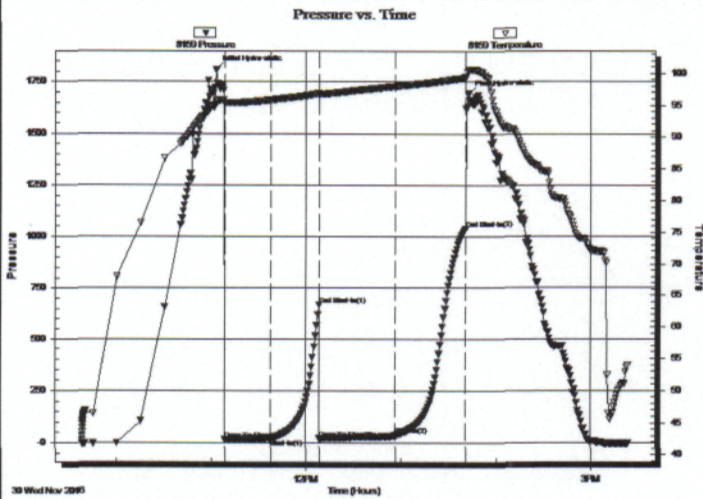
29-21S-12W Stafford,KS
Tieperman #1
 Job Ticket: 57975 **DST#: 2**
 Test Start: 2016.11.30 @ 09:38:46

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 11:08:46
 Time Test Ended: 15:23:31
 Interval: **3540.00 ft (KB) To 3610.00 ft (KB) (TVD)**
 Total Depth: 3610.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Leal Cason
 Unit No: 74
 Reference Elevations: 1867.00 ft (KB)
 1859.00 ft (CF)
 KB to GR/CF: 8.00 ft

Serial #: 8159 **Inside**
 Press@RunDepth: 36.17 psig @ 3541.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2016.11.30 End Date: 2016.11.30 Last Calib.: 2016.11.30
 Start Time: 09:38:47 End Time: 15:23:31 Time On Btm: 2016.11.30 @ 11:03:31
 Time Off Btm: 2016.11.30 @ 13:42:31

TEST COMMENT: IF: Weak Blow Built to 2"
 IS: No Blow Back
 FF: Weak Blow , Built to 3 1/2"
 FS: No Blow Back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1808.72	95.29	Initial Hydro-static
6	16.47	95.21	Open To Flow (1)
35	21.29	95.83	Shut-In(1)
65	668.87	96.86	End Shut-In(1)
65	21.11	96.68	Open To Flow (2)
113	36.17	98.00	Shut-In(2)
158	1036.48	99.30	End Shut-In(2)
159	1692.74	100.56	Final Hydro-static

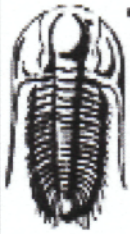
Recovery

Length (ft)	Description	Volume (bbl)
0.00	200 GIP	0.00
50.00	OCM 10%O 90%M	0.70

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations
8411 Preston Rd Ste 800
Dallas, TX 75225
ATTN: Jim Musgrove

29-21S-12W Stafford,KS
Tieperman #1
Job Ticket: 57975 **DST#: 2**
Test Start: 2016.11.30 @ 09:38:46

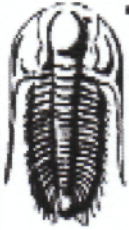
Tool Information

Drill Pipe:	Length: 3525.00 ft	Diameter: 3.80 inches	Volume: 49.45 bbl	Tool Weight: 2100.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 50000.00 lb
			<u>Total Volume: 49.45 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	4.00 ft			String Weight: Initial 42000.00 lb
Depth to Top Packer:	3540.00 ft			Final 42000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	70.00 ft			
Tool Length:	89.00 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			3526.00	
Hydraulic tool	5.00			3531.00	
Packer	5.00			3536.00	19.00 Bottom Of Top Packer
Packer	4.00			3540.00	
Stubb	1.00			3541.00	
Recorder	0.00	8159	Inside	3541.00	
Recorder	0.00	6806	Outside	3541.00	
Perforations	7.00			3548.00	
Change Over Sub	1.00			3549.00	
Drill Pipe	32.00			3581.00	
Change Over Sub	2.00			3583.00	
Perforations	24.00			3607.00	
Bullnose	3.00			3610.00	70.00 Bottom Packers & Anchor

Total Tool Length: 89.00



**TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations
8411 Preston Rd Ste 800
Dallas, TX 75225
ATTN: Jim Musgrove

29-21S-12W Stafford,KS
Tieperman #1
Job Ticket: 57975 **DST#: 2**
Test Start: 2016.11.30 @ 09:38:46

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: 69.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.98 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 3700.00 ppm			
Filter Cake: 0.02 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
0.00	200 GIP	0.000
50.00	OCM 10%O 90%M	0.701

Total Length: 50.00 ft Total Volume: 0.701 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:

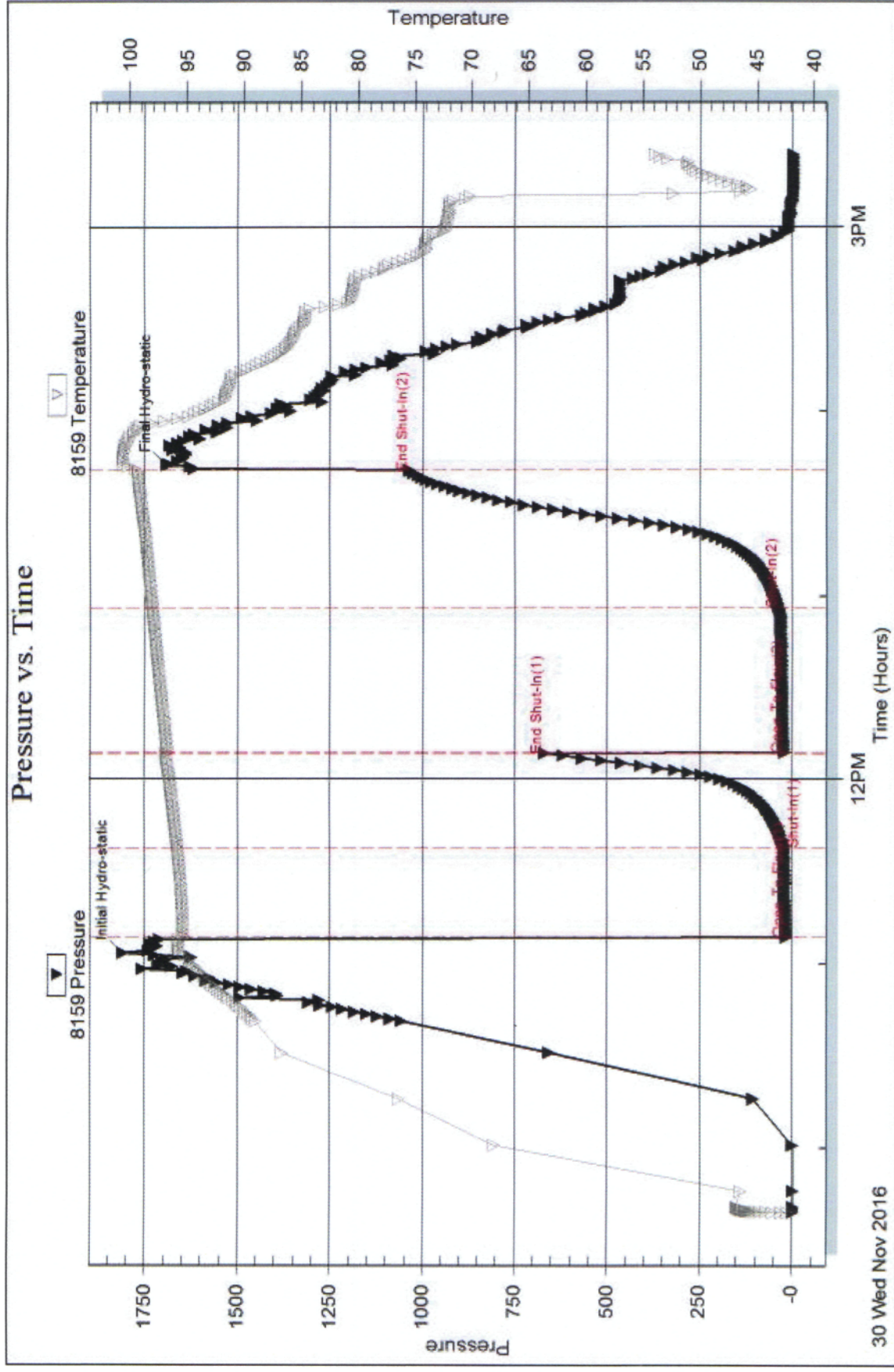
Serial #: 8159

Inside

Mai Oil Operations

Tieperman #1

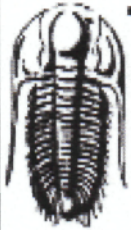
DST Test Number: 2



Tribolite Testing, Inc

Ref. No: 57975

Printed: 2016.12.02 @ 09:13:56



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Mai Oil Operations
8411 Preston Rd Ste 800
Dallas, TX 75225
ATTN: Jim Musgrove

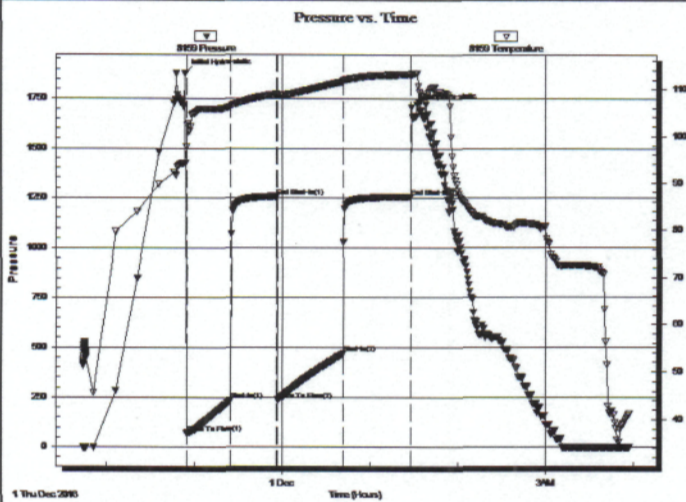
29-21S-12W Stafford,KS
Tieperman #1
Job Ticket: 63551 **DST#: 3**
Test Start: 2016.11.30 @ 21:43:58

GENERAL INFORMATION:

Formation: **Arbuckle**
Deviated: No Whipstock: ft (KB) Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened: 22:54:43 Tester: Leal Cason
Time Test Ended: 03:56:58 Unit No: 74
Interval: 3609.00 ft (KB) To 3621.00 ft (KB) (TVD) Reference Elevations: 1867.00 ft (KB)
Total Depth: 3621.00 ft (KB) (TVD) 1859.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Good KB to GR/CF: 8.00 ft

Serial #: 8159 Inside
Press@RunDepth: 467.35 psig @ 3610.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2016.11.30 End Date: 2016.12.01 Last Calib.: 2016.12.01
Start Time: 21:43:59 End Time: 03:56:58 Time On Btm: 2016.11.30 @ 22:53:58
Time Off Btm: 2016.12.01 @ 01:28:28

TEST COMMENT: IF: Strong Blow , BOB in 90 seconds
IS: Weak Surface Blow Back
FF: Strong Blow , BOBin 3 minutes
FS: 1" Blow Back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1878.72	94.29	Initial Hydro-static
1	69.59	97.73	Open To Flow (1)
31	236.61	106.21	Shut-In(1)
63	1256.19	108.94	End Shut-In(1)
63	236.99	108.62	Open To Flow (2)
108	467.35	111.61	Shut-In(2)
154	1255.44	113.08	End Shut-In(2)
155	1706.70	113.24	Final Hydro-static

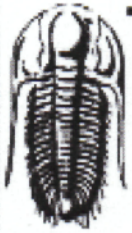
Recovery

Length (ft)	Description	Volume (bbl)
0.00	208 GIP	0.00
310.00	Water	4.35
62.00	OCW 10%O 90%W	0.87
806.00	GSY Oil 20%G 80%O	11.31
40.00	GOCM 10%G 20%O 70%M	0.56

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations

29-21S-12W Stafford,KS

8411 Preston Rd Ste 800
Dallas, TX 75225

Tieperman #1

Job Ticket: 63551

DST#: 3

ATTN: Jim Musgrove

Test Start: 2016.11.30 @ 21:43:58

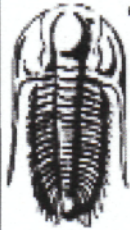
Tool Information

Drill Pipe:	Length: 3618.00 ft	Diameter: 3.80 inches	Volume: 50.75 bbl	Tool Weight: 2100.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 50000.00 lb
			<u>Total Volume: 50.75 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 42000.00 lb
Depth to Top Packer:	3609.00 ft			Final 44000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	12.00 ft			
Tool Length:	31.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3595.00	
Hydraulic tool	5.00			3600.00	
Packer	5.00			3605.00	19.00 Bottom Of Top Packer
Packer	4.00			3609.00	
Stubb	1.00			3610.00	
Recorder	0.00	8159	Inside	3610.00	
Recorder	0.00	6806	Outside	3610.00	
Perforations	8.00			3618.00	
Bullnose	3.00			3621.00	12.00 Bottom Packers & Anchor
Total Tool Length:	31.00				



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

29-21S-12W Stafford,KS

8411 Preston Rd Ste 800
Dallas, TX 75225

Tieperman #1

Job Ticket: 63551

DST#: 3

ATTN: Jim Musgrove

Test Start: 2016.11.30 @ 21:43:58

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

39.8 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

27000 ppm

Viscosity: 69.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.98 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3700.00 ppm

Filter Cake: 0.02 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
0.00	208 GIP	0.000
310.00	Water	4.348
62.00	OCW 10%O 90%W	0.870
806.00	GSY Oil 20%G 80%O	11.306
40.00	GOCM 10%G 20%O 70%M	0.561

Total Length: 1218.00 ft Total Volume: 17.085 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

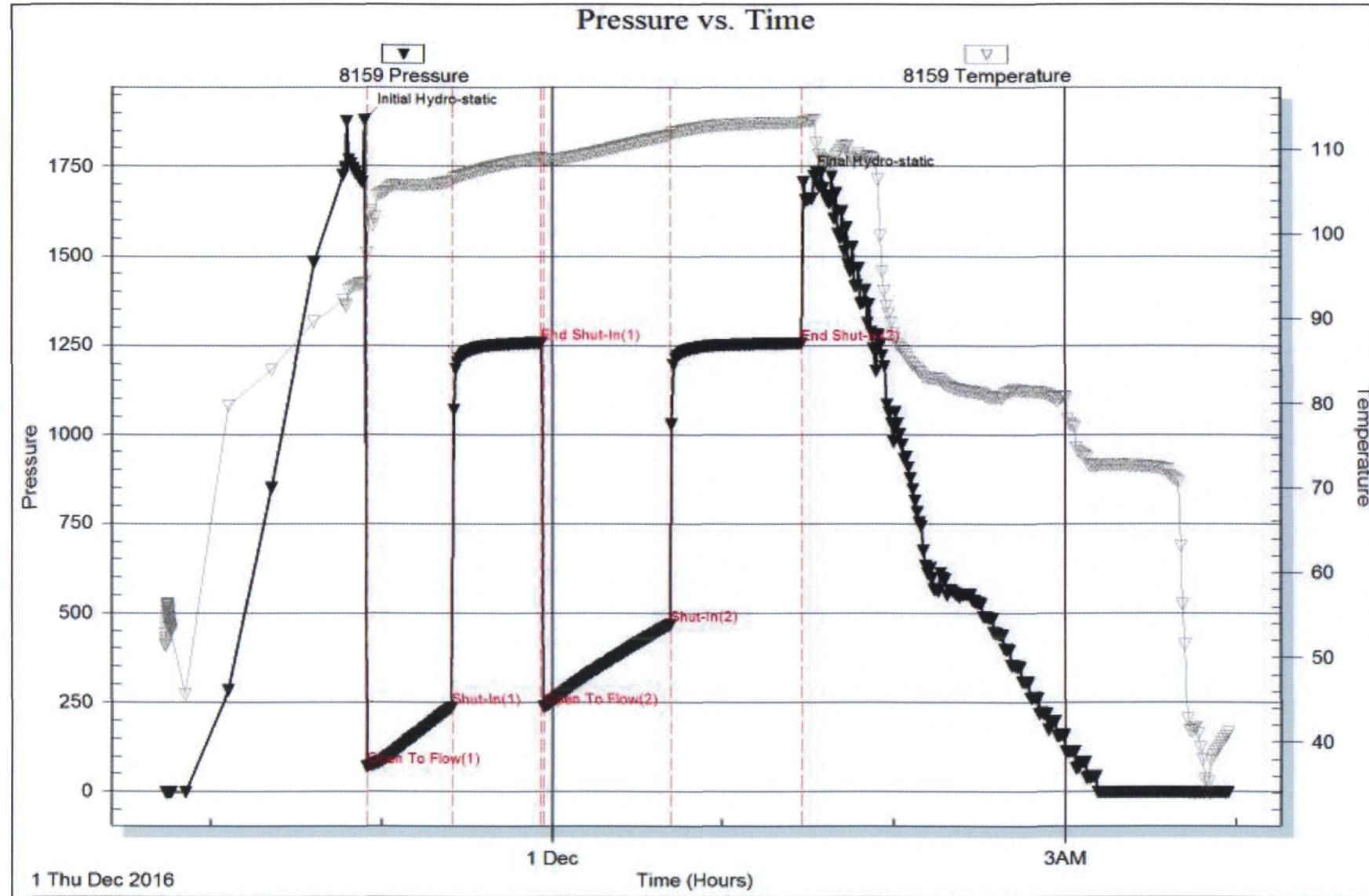
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Gravity w as 39 @ 32 degrees

RW w as .45 @ 40 degrees





TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations
 8411 Preston Rd Ste 800
 Dallas, TX 75225
 ATTN: Jim Musgrove

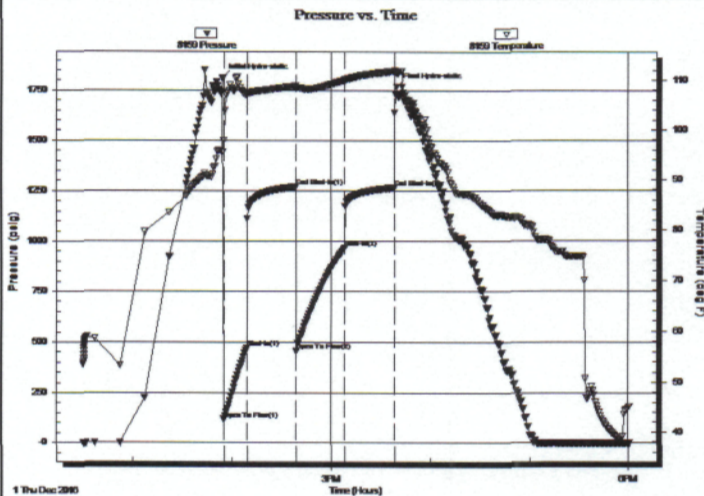
29-21S-12W Stafford,KS
Tieperman #1
 Job Ticket: 63552 **DST#: 4**
 Test Start: 2016.12.01 @ 12:30:28

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 13:55:13
 Time Test Ended: 18:00:58
 Interval: **3645.00 ft (KB) To 3660.00 ft (KB) (TVD)**
 Total Depth: 3660.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Leal Cason
 Unit No: 74
 Reference Elevations: 1867.00 ft (KB)
 1859.00 ft (CF)
 KB to GR/CF: 8.00 ft

Serial #: 8159 **Inside**
 Press@RunDepth: 965.76 psig @ 3646.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2016.12.01 End Date: 2016.12.01 Last Calib.: 2016.12.01
 Start Time: 12:30:29 End Time: 18:00:58 Time On Btm: 2016.12.01 @ 13:54:28
 Time Off Btm: 2016.12.01 @ 15:39:43

TEST COMMENT: IF: Strong Blow, BOB in 1 minute
 IS: No Blow Back
 FF: Strong Blow, BOB in 1 minute
 FS: No Blow Back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1809.96	95.53	Initial Hydro-static
1	117.84	97.92	Open To Flow (1)
15	472.49	106.98	Shut-In(1)
45	1267.82	108.79	End Shut-In(1)
45	456.35	108.31	Open To Flow (2)
74	965.76	109.98	Shut-In(2)
104	1263.62	111.75	End Shut-In(2)
106	1769.17	111.47	Final Hydro-static

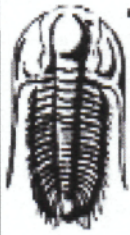
Recovery

Length (ft)	Description	Volume (bbl)
1736.00	Water	24.35
124.00	MCW 24%M 76%W	1.74

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations
8411 Preston Rd Ste 800
Dallas, TX 75225
ATTN: Jim Musgrove

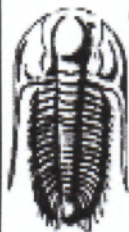
29-21S-12W Stafford,KS
Tieperman #1
Job Ticket: 63552 **DST#: 4**
Test Start: 2016.12.01 @ 12:30:28

Tool Information

Drill Pipe:	Length: 3651.00 ft	Diameter: 3.80 inches	Volume: 51.21 bbl	Tool Weight: 2100.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 51.21 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	25.00 ft			String Weight: Initial 42000.00 lb
Depth to Top Packer:	3645.00 ft			Final 50000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	15.00 ft			
Tool Length:	34.00 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			3631.00	
Hydraulic tool	5.00			3636.00	
Packer	5.00			3641.00	19.00 Bottom Of Top Packer
Packer	4.00			3645.00	
Stubb	1.00			3646.00	
Recorder	0.00	8159	Inside	3646.00	
Recorder	0.00	6806	Outside	3646.00	
Perforations	11.00			3657.00	
Bullnose	3.00			3660.00	15.00 Bottom Packers & Anchor
Total Tool Length:	34.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations
8411 Preston Rd Ste 800
Dallas, TX 75225
ATTN: Jim Musgrove

29-21S-12W Stafford,KS
Tieperman #1
Job Ticket: 63552 **DST#: 4**
Test Start: 2016.12.01 @ 12:30:28

Mud and Cushion Information

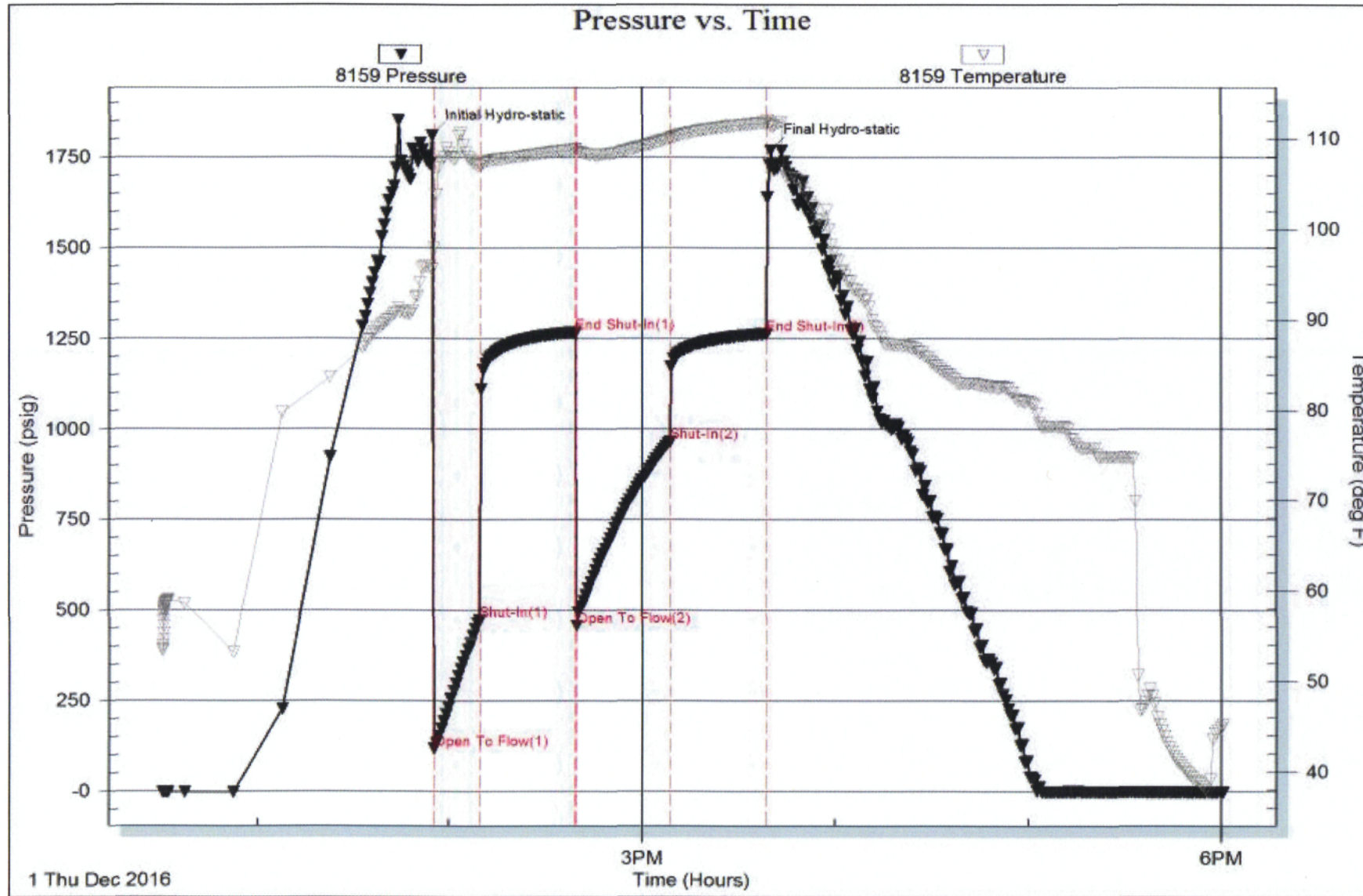
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	30000 ppm
Viscosity: 69.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.98 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 3700.00 ppm			
Filter Cake: 0.02 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1736.00	Water	24.352
124.00	MCW 24%M 76%W	1.739

Total Length: 1860.00 ft Total Volume: 26.091 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments: RW was .31 @ 53 degrees





QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025
Cell 785-324-1041

Home Office P.O. Box 32 Russell, KS 67665

No. 3038

Date	11-22-16	Sec.	29	Twp.	21	Range	12	County	Stafford	State	Ks	On Location		Finish	9:15 PM
------	----------	------	----	------	----	-------	----	--------	----------	-------	----	-------------	--	--------	---------

Location Dartmouth, 12 1/2 S E/Int

Lease	<u>Tieperman</u>	Well No.	<u>1</u>	Owner	To Quality Oilwell Cementing, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.
Contractor	<u>Southwind</u>		<u>3</u>	Charge To	<u>Main oil operations</u>
Type Job	<u>Surface</u>			Street	
Hole Size	<u>12 1/4"</u>	T.D.	<u>657'</u>	City	
Csg.	<u>8 5/8"</u>	Depth	<u>657'</u>	State	
Tbg. Size		Depth		The above was done to satisfaction and supervision of owner agent or contractor.	
Tool		Depth		Cement Amount Ordered	<u>450 60/40 3%CC 2%Gel</u>
Cement Left in Csg.	<u>15'</u>	Shoe Joint	<u>15'</u>	Meas Line	
		Displace	<u>40 3/4 BCS</u>		<u>1/2# Flo-seal</u>

EQUIPMENT

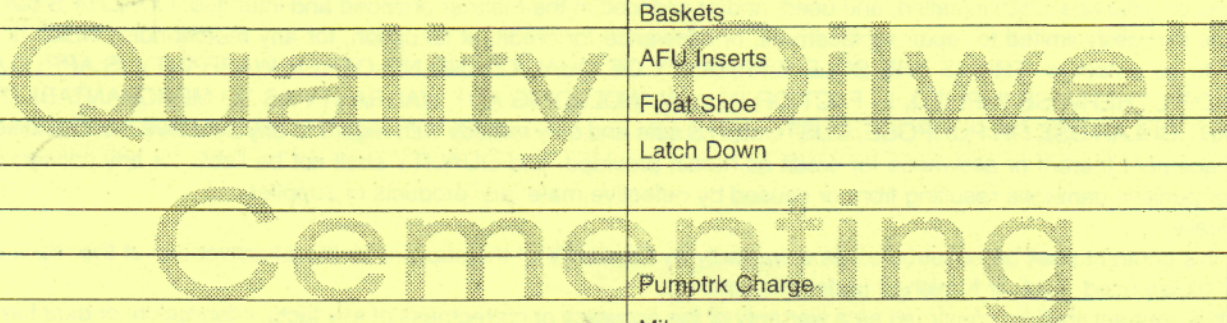
Pumptrk	<u>18</u>	No.		Cementer	<u>Nick</u>	Common
				Helper		
Bulktrk	<u>19</u>	No.		Driver	<u>Downy</u>	Poz. Mix
				Driver		Gel.
Bulktrk	<u>P.U.</u>	No.		Driver	<u>Rick</u>	Calcium
				Driver		

JOB SERVICES & REMARKS

Remarks:	<u>Cement did Circulate</u>	Hulls
Rat Hole		Salt
Mouse Hole		Flowseal
Centralizers		Kol-Seal
Baskets		Mud CLR 48
D/V or Port Collar		CFL-117 or CD110 CAF 38
		Sand
		Handling
		Mileage

FLOAT EQUIPMENT

Guide Shoe	<u>Rubber plug</u>
Centralizer	
Baskets	
AFU Inserts	
Float Shoe	
Latch Down	



Pumptrk Charge		Tax	
Mileage		Discount	
		Total Charge	

X Signature [Signature]

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025
Cell 785-324-1041

Home Office P.O. Box 32 Russell, KS 67665

No. 3040

Date	12-2-16	Sec.	29	Twp.	21	Range	12	County	Stafford	State	Ks	On Location		Finish	3:30 PM
------	---------	------	----	------	----	-------	----	--------	----------	-------	----	-------------	--	--------	---------

Location Darlington - 12 1/2 E 1/2

Lease	<u>Tieperman</u>	Well No.	<u>#1</u>	Owner	To Quality Oilwell Cementing, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.
Contractor	<u>Southwind</u>	#	<u>3</u>	Charge To	<u>Main oil operations</u>
Type Job	<u>Production</u>	T.D.	<u>3710'</u>	Street	
Hole Size	<u>7 7/8"</u>	Depth	<u>3705'</u>	City	State
Csg.	<u>5 1/2" 14# used</u>	Depth		The above was done to satisfaction and supervision of owner agent or contractor.	
Tbg. Size		Depth		Cement Amount Ordered	<u>160 60/40 10% Salt 2% Gels</u>
Tool		Depth		Meas Line	<u>Displace 89 1/2 BLS 1000 gal Mud Clear 48</u>
Cement Left in Csg.	<u>30.36'</u>	Shoe Joint	<u>30.36'</u>	EQUIPMENT	

Pumptrk	No.	Cementer		Hulls
		Helper	<u>Rick</u>	
	No.	Driver	<u>Stan</u>	
		Driver	<u>Shane</u>	
Bulktrk	No.	Driver		Salt
		Driver		
Bulktrk	No.	Driver		Flowseal
		Driver		

JOB SERVICES & REMARKS				Mud CLR 48
Remarks:				
Rat Hole				CFL-117 or CD110 CAF 38
Mouse Hole				Sand
Centralizers	<u>1-16</u>			Handling
Baskets	<u>1-16</u>			Mileage
D/V or Port Collar				FLOAT EQUIPMENT

pipe on bottom break
Circulation pump 1000 gal
mud clear 48 plug hole w/ 30 sy
Cement 5 1/2 casing w/ 130 sy
Cement shut down wash pump
+ lines displaced plug w/ 89 1/2 BLS
Released + held.

Lif + pressure	<u>650 #</u>	Guide Shoe	
Land plug to	<u>1500 #</u>	Centralizer	<u>16</u>
		Baskets	
		AFU Inserts	
		Float Shoe	<u>1</u>
		Latch Down	<u>1</u>

Shut in		Pumptrk Charge	
		Mileage	
		Tax	
		Discount	
		Total Charge	

X Signature Bill Horner

