

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 # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

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 #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

_____ - _____ - _____ Sec. _____ Twp. _____ S. R. _____ East West

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

GPS Location: Lat: _____, Long: _____
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ 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: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

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: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

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 <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No List All E. Logs Run:	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
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CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> 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

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> 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: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____			
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio Gravity

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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JAMES C. MUSGROVE

Petroleum Geologist, LLC
212 Main Street
P.O. Box 215
Claflin, KS 67525

Office (620) 588-4250

Res. Claflin (620) 786-0839

Mai Oil Operations Inc.
Christiansen #2
E/2-W/2-E/2-NW (1320' FNL & 1773' FWL)
Section 18-21s-12w
Stafford County, Kansas

Page 1

5 1/2" Production Casing Set

Contractor: Southwind Drilling Co. (rig #3)
Commenced: November 6, 2018
Completed: November 14, 2018
Elevation: 1872' K.B., 1870' D.F., 1864' G.L.
Casing program: Surface; 8 5/8" @ 700'
Production, 5 1/2" @ 3700'
Sample: Samples saved and examined 3000' to the Rotary Total Depth.
Drilling time: One (1) foot drilling time recorded and kept 3000' to the Rotary Total Depth.
Measurements: All depths measured from the Kelly Bushing.
Drill Stem Tests: There were five (5) Drill Stem Tests ran by Trilobite Testing Co.
Electric Log: By Eli; Dual Induction; Compensated Density/Neutron Log and Micro Log.

<u>Formation</u>	<u>Log Depth</u>	<u>Sub-Sea Datum</u>
Anhydrite	700	+1172
Base Anhydrite	722	+1150
Heebner	3145	-1273
Toronto	3162	-1290
Douglas	3178	-1306
Brown Lime	3272	-1400
Lansing	3288	-1416
Base Kansas City	3500	-1628
Conglomerate	3505	-1633
Simpson	3521	-1649
Arbuckle	3558	-1686
Rotary Total Depth	3700	-1828
Log Total Depth	3700	-1828

(All tops and zone(s) corrected to Electric Log Measurements)

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

TOPEKA SECTION

3050-3076' Limestone, gray and tan; fossiliferous, slightly cherty, trace gray opaque chert, no shows.

TORONTO SECTION

3162-3172' Limestone, white, gray, finely crystalline, chalky, trace gray, fossiliferous, opaque chert, no shows.

LANSING SECTION

3288-3294' Limestone, gray to tan, finely crystalline, poorly developed pinpoint type porosity, no shows.

3306-3316' Limestone, tan, fossiliferous/oolitic, chalky; dense.

3328-3340' Limestone, white, gray, few fossiliferous, chalky; trace iron pyrite, no shows.

3346-3352' Limestone, tan, finely crystalline, highly oolitic, dense.

3355-3360' Limestone, white, cream, fossiliferous, oolitic, chalky, increasingly cherty (dense)

3360-3380' Limestone, white, chalky; no shows

3380-3406' Limestone, tan, brown, dense.

3417-3426' Limestone, tan, sub-oomoldic, slightly cherty; poor visible porosity, no shows.

3428-3438' Limestone, white, cream, finely crystalline, oolitic, chalky; poorly developed porosity, trace brown and black tarry stain, no free oil and no odor in fresh samples.

3442-3454' Limestone, gray, white, finely crystalline, oolitic, sub-oomoldic, chalky; poor visible porosity; (barren)

3465-3473' Limestone, white, finely crystalline, fossiliferous, chalky; poor visible porosity, dark brown spotty stain, no show of free oil and no odor in fresh samples.

CONGLOMERATE SECTION

3508-3510' Sand, white, very fine grained, poor visible porosity, trace light brown stain, no show of free oil and no odor in fresh samples.

SIMPSON SECTION

3534-3542' Sand, tan, sub-rounded; friable in part, no shows.

ARBUCKLE SECTION

3558-3566' Dolomite, tan, cream, medium crystalline, fair inter-crystalline and vuggy type porosity, brown stain and saturation, fair show of free oil and fair odor in fresh samples. Trace of gas bubbles.

Drill Stem Test #1 **3481-3566**

Times: 30-30-45-45
Blow: Fair to good
Recovery: 10' gas in pipe
50' slightly oil and gas cut mud
(15% gas; 5% oil; 80% mud)
Pressures: ISIP 324 psi
FSIP 676 psi
IFP 20-38 psi
FFP 27-39 psi
HSH 1899-1686 psi

3566-3578' Dolomite, as above, plus dolomite, tan, sucrosic, scattered pinpoint porosity, brown stain and saturation, show free oil and fair to faint odor in fresh samples.

Drill Stem Test #2 **3561-3578**

Times: 30-30-60-60
Blow: Good
Recovery: 350' gas in pipe
50' oil and gas cut mud
(60% gas; 10% oil; 30% mud)
Pressures: ISIP 353 psi
FSIP 421 psi
IFP 17-25 psi
FFP 24-34 psi
HSH 1888-1788 psi

3579-3591' Dolomite, tan, gray, medium crystalline, sucrosic in part; fair inter-crystalline and vuggy porosity, brown stain and saturation; show of free oil and fair odor in fresh samples.

Drill Stem Test #3 **3579-3591**

Times: 30-30-45-45

Blow: Fair

Recovery: 40' oil and gas cut mud
(10% gas; 10% oil; 80% mud)

Pressures:

ISIP	101	psi
FSIP	155	psi
IFP	15-17	psi
FFP	14-22	psi
HSH	1888-1758	psi

3591-3605' Dolomite gray, tan; fine to medium crystalline; oomoldic, good oomoldic and inter-crystalline to vuggy type porosity; golden brown to brown stain and saturation; fair to good show of free oil and good odor in fresh samples.

Drill Stem Test #4 **3591-3605**

Times: 30-30-30-45

Blow: Strong

Recovery: 385' gas in pipe
62' gassy muddy oil
(30% gas; 40% oil; 30% mud)
124' oil and gas cut mud
(10% gas; 20% oil; 60% mud)

Pressures:

ISIP	907	psi
FSIP	989	psi
IFP	21-39	psi
FFP	42-59	psi
HSH	1846-1744	psi

3607-3627' Dolomite, white, gray, medium crystalline, fair inter-crystalline porosity; brown and gray stain, show of free oil and fair odor in fresh samples.

Drill Stem Test #5 **3607-3627**

Times: 30-30-45-45

Blow: Weak

Recovery: 90' gas in pipe
35' oil and gas cut mud
(5% gas; 10% oil; 85% mud)

Pressures:

ISIP	181	psi
FSIP	157	psi
IFP	15-18	psi
FFP	16-25	psi
HSH	1915-1838	psi

Mai Oil Operations Inc.
Christiansen #2
E/2-W/2-E/2-NW (1320' FNL & 1773' FWL)
Section 18-21s-12w
Stafford County, Kansas

Page 5

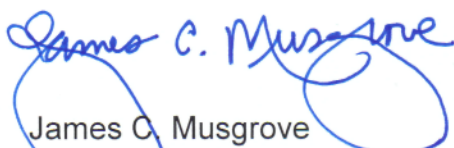
3627-3650'	Dolomite, gray, tan, fine to medium crystalline, scattered porosity, gray and brown and black stain, trace of free oil and faint odor in fresh samples, trace gray opaque chert.
3650-3670'	Dolomite, white, cream, finely crystalline, poor to fair pinpoint and inter-crystalline type porosity, black stain, no show of free oil and faint odor in fresh samples.
3673-3684'	Dolomite, tan and gray, cream, finely crystalline, few medium crystalline, abundant gray and white boney chert, no shows.
3684-3700'	Dolomite as above, plus iron pyrite, no shows.

Rotary Total Depth	3700' (-1828)
Log Total Depth	3700' (-1828)

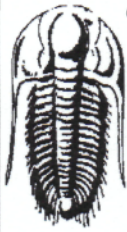
Recommendations:

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

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+5520
 ATTN: Jim Musgrove

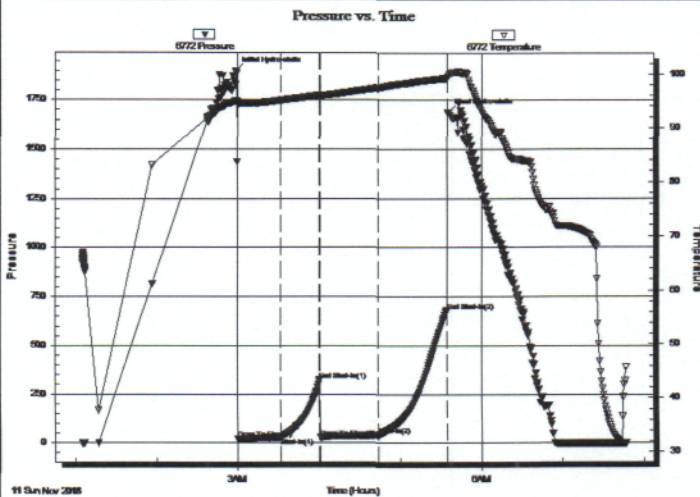
18-21s-12w Stafford,KS
Chistiansen #2
 Job Ticket: 53765 **DST#: 1**
 Test Start: 2018.11.11 @ 01:05:00

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 02:59:50
 Time Test Ended: 07:47:30
 Interval: **3481.00 ft (KB) To 3566.00 ft (KB) (TVD)**
 Total Depth: 3566.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Benny Mulligan
 Unit No: 66
 Reference Elevations: 1873.00 ft (KB)
 1865.00 ft (CF)
 KB to GR/CF: 8.00 ft

Serial #: 6772 Inside
 Press@RunDepth: 39.54 psig @ 3487.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.11.11 End Date: 2018.11.11 Last Calib.: 2018.11.11
 Start Time: 01:05:01 End Time: 07:47:30 Time On Btm: 2018.11.11 @ 02:58:40
 Time Off Btm: 2018.11.11 @ 05:35:40

TEST COMMENT: I.F.-30-Weak blow built to 5"
 I.S.I.-30- Weak blow back that died
 F.F.-45-Blow built to 10"
 F.S.I.-45-No blow



PRESSURE SUMMARY

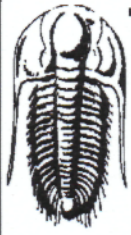
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1899.87	94.88	Initial Hydro-static
2	20.58	94.40	Open To Flow (1)
33	28.37	95.01	Shut-In(1)
62	324.09	96.03	End Shut-In(1)
63	27.94	95.94	Open To Flow (2)
105	39.54	97.38	Shut-In(2)
156	676.64	99.20	End Shut-In(2)
157	1686.06	99.63	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
50.00	GOCM 15%G 5%O 80%M	0.70
0.00	10' GIP	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations

18-21s-12w Stafford,KS

8411 Preston RD STE 800 Dallas TX 75225+5520

Christiansen #2

Job Ticket: 53765

DST#: 1

ATTN: Jim Musgrove

Test Start: 2018.11.11 @ 01:05:00

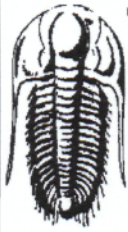
Tool Information

Drill Pipe:	Length: 3481.00 ft	Diameter: 3.80 inches	Volume: 48.83 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 52000.00 lb
			<u>Total Volume: 48.83 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 47000.00 lb
Depth to Top Packer:	3481.00 ft			Final 48000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	85.00 ft			
Tool Length:	105.00 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			3462.00	
Shut In Tool	5.00			3467.00	
Hydraulic tool	5.00			3472.00	
Packer	5.00			3477.00	20.00 Bottom Of Top Packer
Packer	4.00			3481.00	
Stubb	1.00			3482.00	
Perforations	4.00			3486.00	
Change Over Sub	1.00			3487.00	
Recorder	0.00	6772	Inside	3487.00	
Recorder	0.00	6769	Outside	3487.00	
Drill Pipe	64.00			3551.00	
Change Over Sub	1.00			3552.00	
Perforations	11.00			3563.00	
Bullnose	3.00			3566.00	85.00 Bottom Packers & Anchor

Total Tool Length: 105.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

18-21s-12w Stafford,KS

8411 Preston RD STE 800 Dallas TX 75225+5520

Chistiansen #2

Job Ticket: 53765

DST#: 1

ATTN: Jim Musgrove

Test Start: 2018.11.11 @ 01:05:00

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: 51.00 sec/qt

Cushion Volume:

bbl

Water Loss: 9.16 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 6500.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
50.00	GOCM 15%G 5%O 80%M	0.701
0.00	10' GIP	0.000

Total Length: 50.00 ft Total Volume: 0.701 bbl

Num Fluid Samples: 0

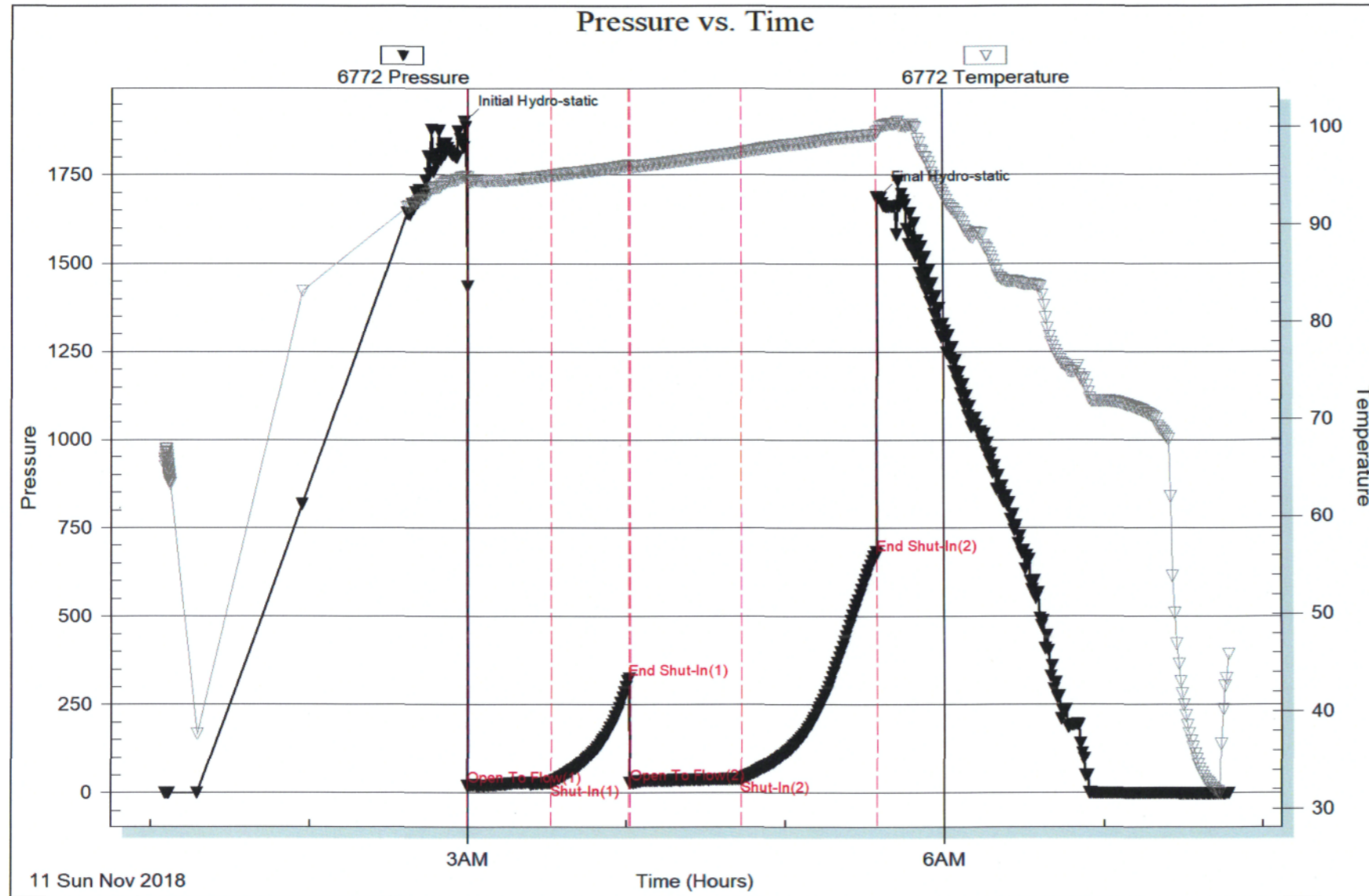
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: G.I.P 10ft





TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations
 8411 Preston RD STE 800 Dallas TX 75225+5520
 ATTN: Jim Musgrove

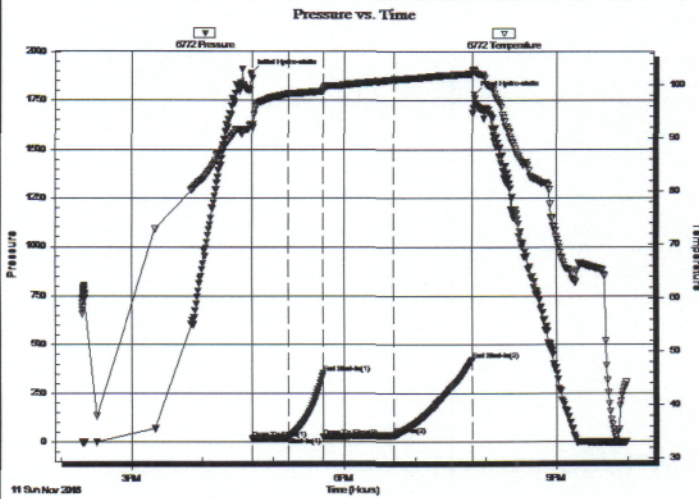
18-21s-12w Stafford,KS
Chistiansen #2
 Job Ticket: 53766 DST#: 2
 Test Start: 2018.11.11 @ 14:18:00

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 16:42:20
 Time Test Ended: 21:59:20
 Interval: **3561.00 ft (KB) To 3578.00 ft (KB) (TVD)**
 Total Depth: 3578.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Benny Mulligan
 Unit No: 66
 Reference Elevations: 1873.00 ft (KB)
 1865.00 ft (CF)
 KB to GR/CF: 8.00 ft

Serial #: 6772 Inside
 Press@RunDepth: 33.73 psig @ 3562.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2018.11.11 End Date: 2018.11.11 Last Calib.: 2018.11.11
 Start Time: 14:18:01 End Time: 21:59:20 Time On Btm: 2018.11.11 @ 16:41:00
 Time Off Btm: 2018.11.11 @ 19:50:00

TEST COMMENT: I.F.-30-BOB 21" total build of 15"
 I.S.I.-30-Weak surface blow back
 F.F.-45-BOB in 34 mins built to 17"
 F.S.I.-45-No blow back



PRESSURE SUMMARY

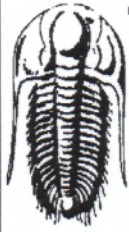
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1887.72	92.45	Initial Hydro-static
2	17.80	91.87	Open To Flow (1)
32	24.87	98.25	Shut-In(1)
61	353.05	98.77	End Shut-In(1)
62	24.28	99.28	Open To Flow (2)
121	33.73	100.92	Shut-In(2)
188	421.49	102.07	End Shut-In(2)
189	1778.52	102.73	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
50.00	VGOCM 60%G 10%O 30%M	0.70
0.00	375' GIP	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations

18-21s-12w Stafford,KS

8411 Preston RD STE 800 Dallas TX 75225+5520

Chistiansen #2

Job Ticket: 53766

DST#: 2

ATTN: Jim Musgrove

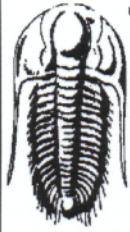
Test Start: 2018.11.11 @ 14:18:00

Tool Information

Drill Pipe:	Length: 3572.00 ft	Diameter: 3.80 inches	Volume: 50.11 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 50.11 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	31.00 ft			String Weight: Initial 45000.00 lb
Depth to Top Packer:	3561.00 ft			Final 45000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	17.00 ft			
Tool Length:	37.00 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			3542.00	
Shut In Tool	5.00			3547.00	
Hydraulic tool	5.00			3552.00	
Packer	5.00			3557.00	20.00 Bottom Of Top Packer
Packer	4.00			3561.00	
Stubb	1.00			3562.00	
Recorder	0.00	6772	Inside	3562.00	
Recorder	0.00	6769	Outside	3562.00	
Perforations	13.00			3575.00	
Bullnose	3.00			3578.00	17.00 Bottom Packers & Anchor
Total Tool Length:	37.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

18-21s-12w Stafford,KS

8411 Preston RD STE 800 Dallas TX 75225+5520

Chistiansen #2

Job Ticket: 53766

DST#: 2

ATTN: Jim Musgrove

Test Start: 2018.11.11 @ 14:18:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 61.00 sec/qt

Cushion Volume:

bbl

Water Loss: 11.96 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 9000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
50.00	VGOCM 60%G 10%O 30%M	0.701
0.00	375' GIP	0.000

Total Length: 50.00 ft Total Volume: 0.701 bbl

Num Fluid Samples: 0

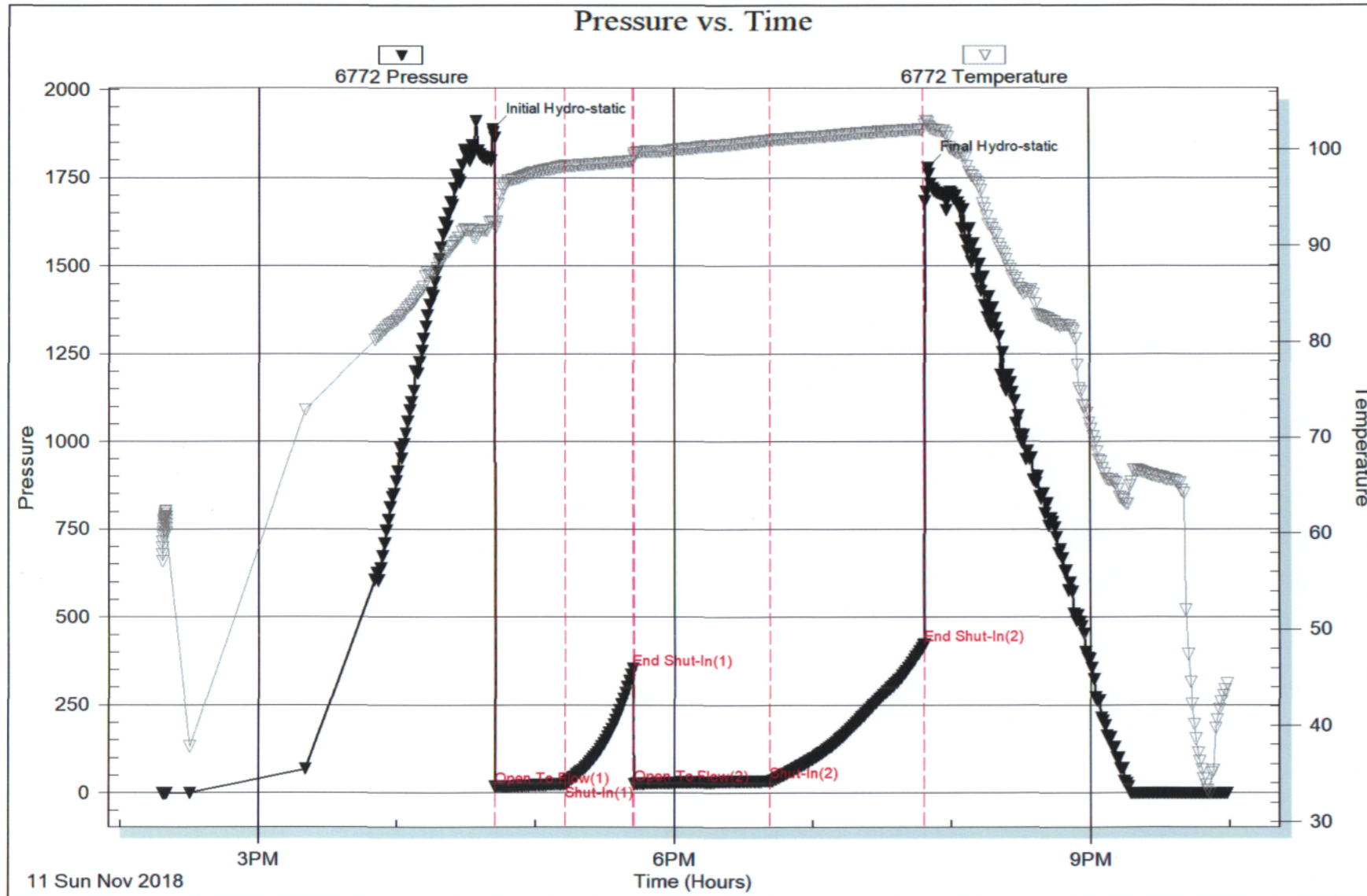
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Mai Oil Operations

18-21s-12w Stafford,KS

8411 Preston RD STE 800 Dallas TX 75225+5520

Chistiansen #2

ATTN: Jim Musgrove

Job Ticket: 53767

DST#: 3

Test Start: 2018.11.12 @ 06:21:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:15:50

Time Test Ended: 12:27:20

Test Type: Conventional Bottom Hole (Initial)

Tester: Benny Mulligan

Unit No: 66

Interval: **3579.00 ft (KB) To 3591.00 ft (KB) (TVD)**

Reference Elevations: 1873.00 ft (KB)

Total Depth: 3591.00 ft (KB) (TVD)

1865.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6772

Inside

Press@RunDepth: 22.07 psig @ 3580.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.11.12 End Date: 2018.11.12

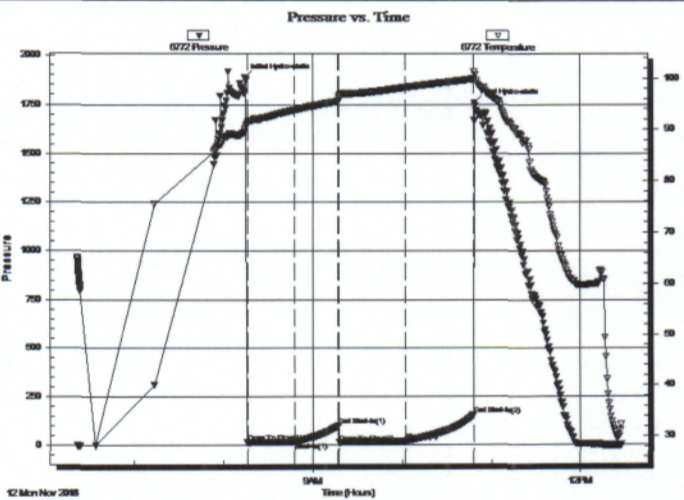
Last Calib.: 2018.11.12

Start Time: 06:21:01 End Time: 12:27:20

Time On Btm: 2018.11.12 @ 08:14:10

Time Off Btm: 2018.11.12 @ 10:48:39

TEST COMMENT: I.F.-30-Weak blow built to 4"
I.S.I.-30-No blow
F.F-45-Weak blow built to 7"
F.S.I-45 No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1887.69	89.85	Initial Hydro-static
2	15.36	91.23	Open To Flow (1)
34	17.17	93.79	Shut-In(1)
63	100.94	95.49	End Shut-In(1)
64	13.92	96.14	Open To Flow (2)
108	22.07	98.19	Shut-In(2)
154	155.43	99.81	End Shut-In(2)
155	1758.08	101.18	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
40.00	CSOCM10%G 10%O 80%M	0.56
0.00	80' GIP	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations

18-21s-12w Stafford,KS

8411 Preston RD STE 800 Dallas TX 75225+5520

Chistiansen #2

Job Ticket: 53767

DST#: 3

ATTN: Jim Musgrove

Test Start: 2018.11.12 @ 06:21:00

Tool Information

Drill Pipe:	Length: 3578.00 ft	Diameter: 3.80 inches	Volume: 50.19 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 68000.00 lb
			<u>Total Volume: 50.19 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	19.00 ft			String Weight: Initial 48000.00 lb
Depth to Top Packer:	3579.00 ft			Final 48000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	12.00 ft			
Tool Length:	32.00 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			3560.00	
Shut In Tool	5.00			3565.00	
Hydraulic tool	5.00			3570.00	
Packer	5.00			3575.00	20.00 Bottom Of Top Packer
Packer	4.00			3579.00	
Stubb	1.00			3580.00	
Recorder	0.00	6772	Inside	3580.00	
Recorder	0.00	6769	Outside	3580.00	
Perforations	8.00			3588.00	
Bullnose	3.00			3591.00	12.00 Bottom Packers & Anchor
Total Tool Length:	32.00				



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

18-21s-12w Stafford,KS

8411 Preston RD STE 800 Dallas TX 75225+5520

Chistiansen #2

Job Ticket: 53767

DST#: 3

ATTN: Jim Musgrove

Test Start: 2018.11.12 @ 06:21:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 61.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 11.96 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 9000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
40.00	CSOCM10%G 10%O 80%M	0.561
0.00	80' GIP	0.000

Total Length: 40.00 ft

Total Volume: 0.561 bbl

Num Fluid Samples: 0

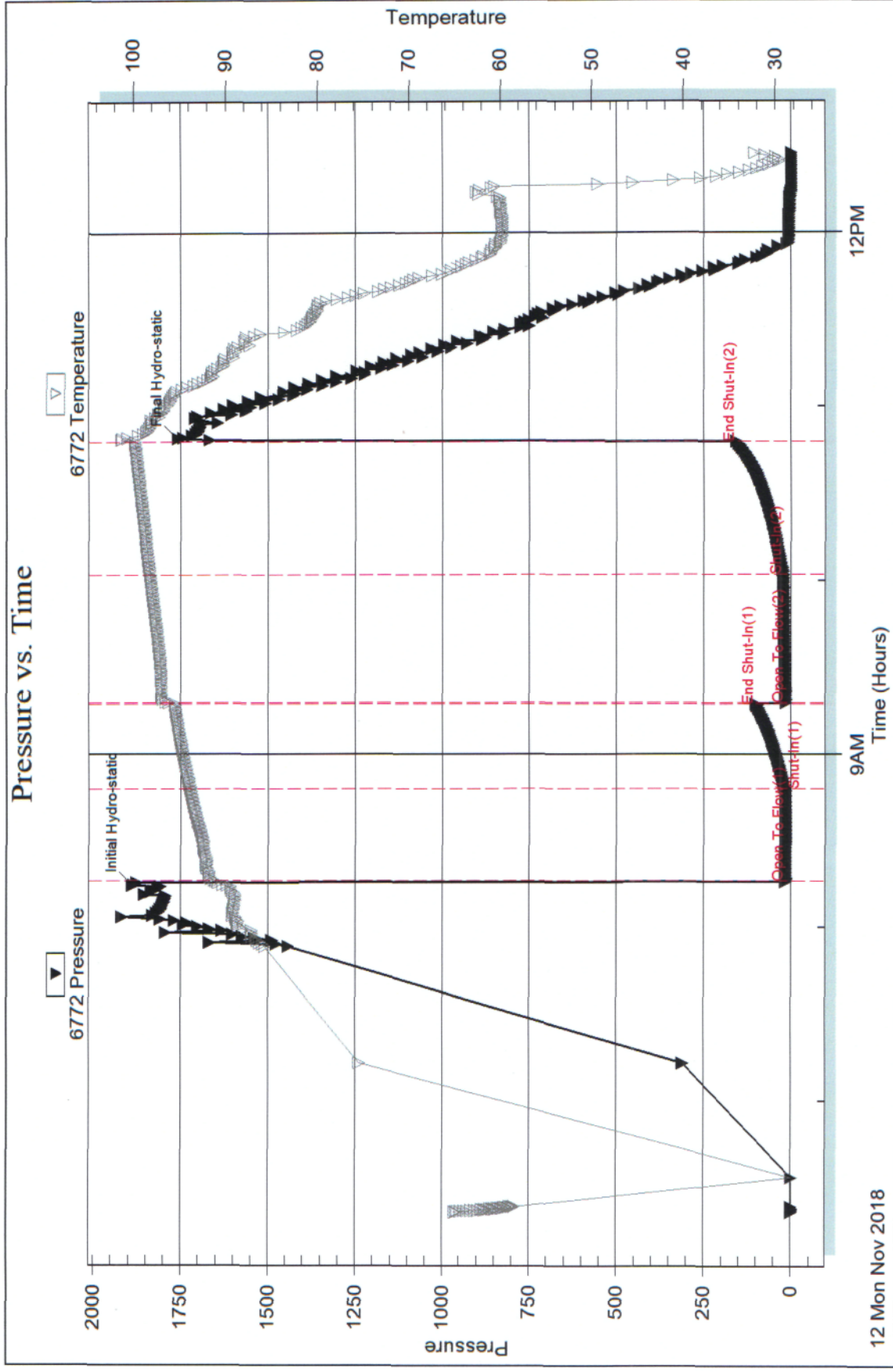
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations

18-21s-12w Stafford,KS

8411 Preston RD STE 800 Dallas TX 75225+5520

Christiansen #2

Job Ticket: 53768

DST#: 4

ATTN: Jim Musgrove

Test Start: 2018.11.12 @ 18:34:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:42:50

Time Test Ended: 02:07:09

Test Type: Conventional Bottom Hole (Initial)

Tester: Benny Mulligan

Unit No: 66

Interval: **3591.00 ft (KB) To 3605.00 ft (KB) (TVD)**

Reference Elevations: 1873.00 ft (KB)

Total Depth: 3605.00 ft (KB) (TVD)

1865.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6772

Inside

Press@RunDepth: 59.22 psig @ 3594.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.11.12

End Date:

2018.11.13

Last Calib.: 2018.11.13

Start Time: 18:34:01

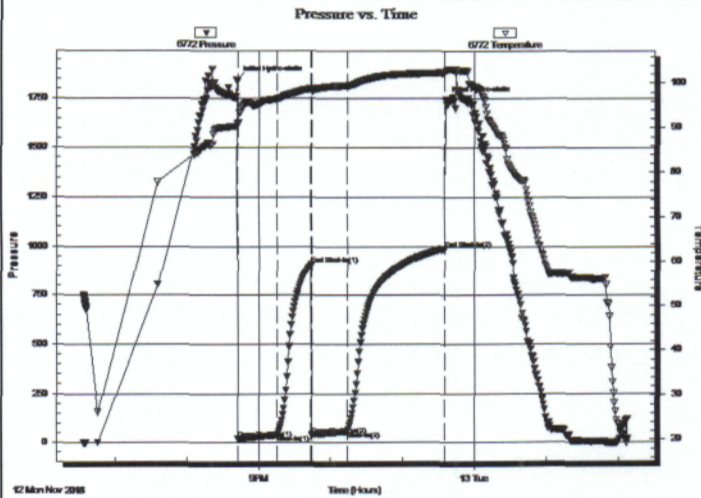
End Time:

02:07:10

Time On Btm: 2018.11.12 @ 20:41:40

Time Off Btm: 2018.11.12 @ 23:35:30

TEST COMMENT: I.F.-30-BOB 11 mins built to 32"
I.S.I.-30-No blow
F.F.-30-BOB 13 mins built to 31"
F.S.I.-45-No blow



PRESSURE SUMMARY

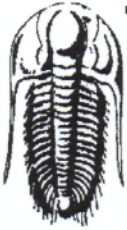
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1846.24	90.37	Initial Hydro-static
2	21.71	90.68	Open To Flow (1)
35	39.89	96.51	Shut-In(1)
63	907.54	98.73	End Shut-In(1)
63	42.17	98.39	Open To Flow (2)
93	59.22	99.43	Shut-In(2)
174	989.57	102.39	End Shut-In(2)
174	1744.09	102.66	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
124.00	GOCM 10%G 20%O 60%M	1.74
62.00	GHMCO 30%G 30%M 40%O	0.87
0.00	384' GIP	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations

18-21s-12w Stafford,KS

8411 Preston RD STE 800 Dallas TX 75225+5520

Chistiansen #2

Job Ticket: 53768

DST#: 4

ATTN: Jim Musgrove

Test Start: 2018.11.12 @ 18:34:00

Tool Information

Drill Pipe:	Length: 3604.00 ft	Diameter: 3.80 inches	Volume: 50.55 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 75000.00 lb
			<u>Total Volume: 50.55 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	33.00 ft			String Weight: Initial 45000.00 lb
Depth to Top Packer:	3591.00 ft			Final 46000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	14.00 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
Change Over Sub	1.00			3572.00	
Shut In Tool	5.00			3577.00	
Hydraulic tool	5.00			3582.00	
Packer	5.00			3587.00	20.00 Bottom Of Top Packer
Packer	4.00			3591.00	
Stubb	1.00			3592.00	
Perforations	2.00			3594.00	
Recorder	0.00	6772	Inside	3594.00	
Recorder	0.00	6769	Outside	3594.00	
Perforations	8.00			3602.00	
Bullnose	3.00			3605.00	14.00 Bottom Packers & Anchor

Total Tool Length: 34.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations

18-21s-12w Stafford,KS

8411 Preston RD STE 800 Dallas TX 75225+5520

Chistiansen #2

Job Ticket: 53768

DST#: 4

ATTN: Jim Musgrove

Test Start: 2018.11.12 @ 18:34:00

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 55.00 sec/qt
Water Loss: 11.97 in³
Resistivity: ohm.m
Salinity: 11000.00 ppm
Filter Cake: 1.00 inches

Cushion Type:
Cushion Length: ft
Cushion Volume: bbl
Gas Cushion Type:
Gas Cushion Pressure: psig

Oil API: deg API
Water Salinity: ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
124.00	GOCM 10%G 20%O 60%M	1.739
62.00	GHMCO 30%G 30%M 40%O	0.870
0.00	384' GIP	0.000

Total Length: 186.00 ft Total Volume: 2.609 bbl

Num Fluid Samples: 0

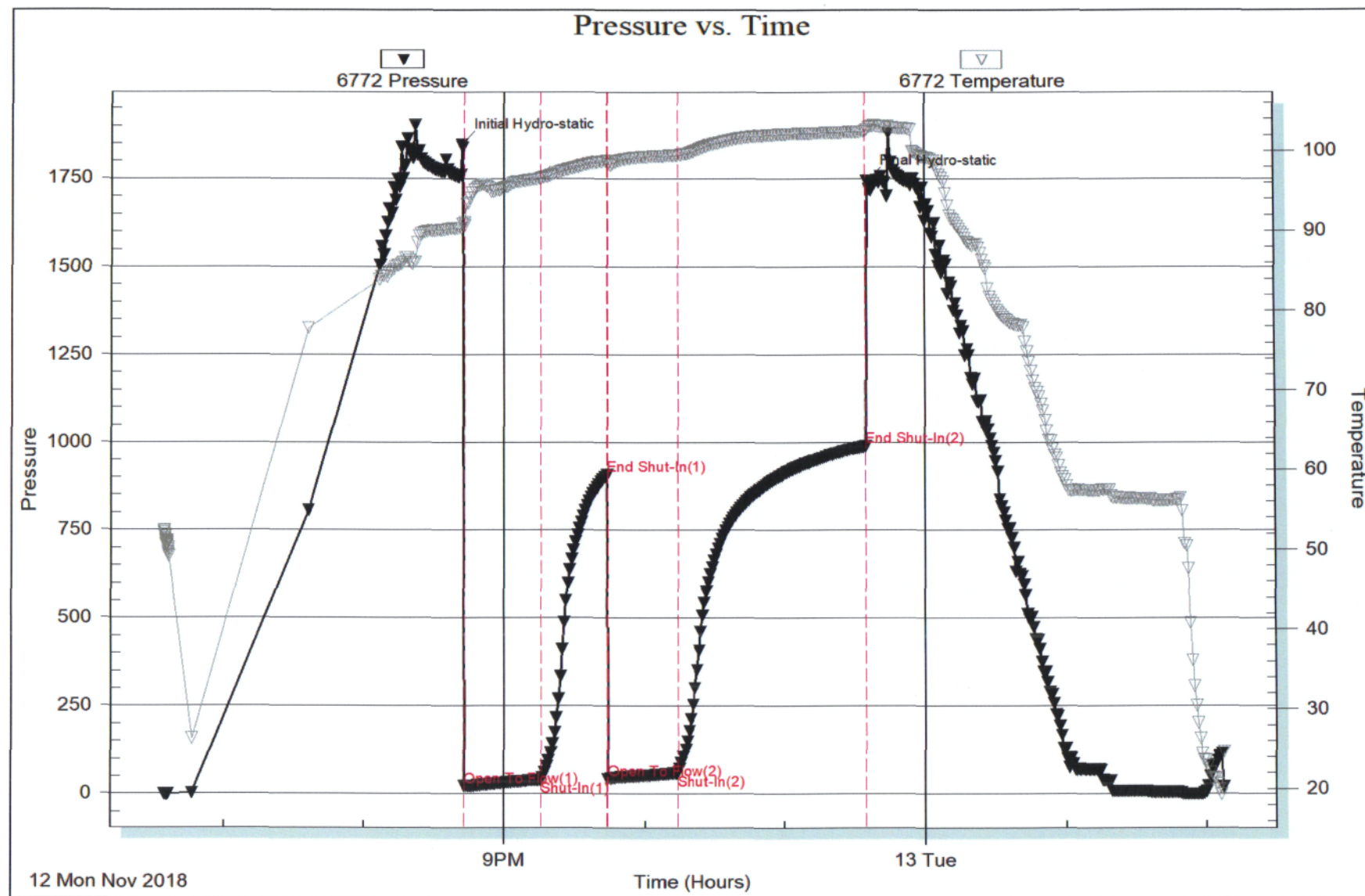
Num Gas Bombs: 0

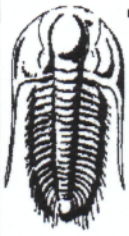
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mai Oil Operations

18-21s-12w Stafford,KS

8411 Preston RD STE 800 Dallas TX 75225+5520

Chistiansen #2

ATTN: Jim Musgrove

Job Ticket: 53769

DST#: 5

Test Start: 2018.11.13 @ 10:32:01

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:36:00

Time Test Ended: 16:58:20

Test Type: Conventional Bottom Hole (Initial)

Tester: Benny Mulligan

Unit No: 66

Interval: **3607.00 ft (KB) To 3627.00 ft (KB) (TVD)**

Reference Elevations: 1873.00 ft (KB)

Total Depth: 3627.00 ft (KB) (TVD)

1865.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6772

Inside

Press@RunDepth: 25.79 psig @ 3608.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.11.13

End Date:

2018.11.13

Last Calib.:

2018.11.13

Start Time: 10:32:01

End Time:

16:58:20

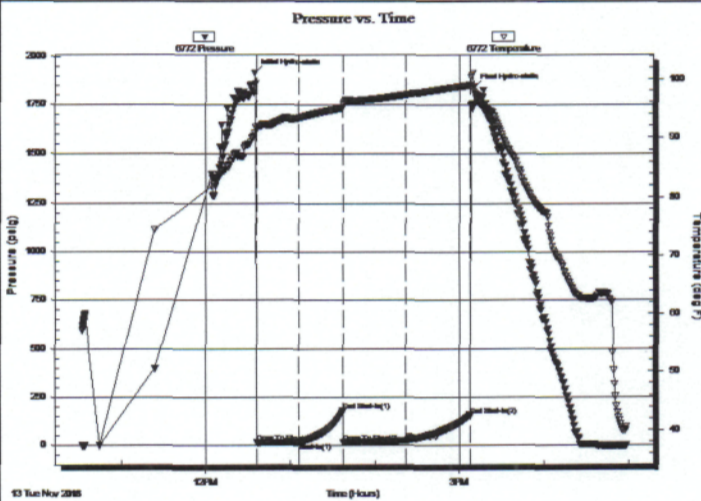
Time On Btm:

2018.11.13 @ 12:34:40

Time Off Btm:

2018.11.13 @ 15:10:09

TEST COMMENT: I.F-30- Blow built to 3"
I.S.I.-30- Weak blow back
F.F-45- Weak blow built to 4"
F.S.I.-45-Weak blow back



PRESSURE SUMMARY

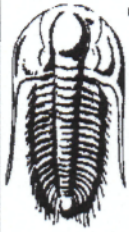
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1915.54	90.76	Initial Hydro-static
2	15.67	91.32	Open To Flow (1)
32	18.63	93.29	Shut-In(1)
63	181.06	94.97	End Shut-In(1)
63	16.57	95.63	Open To Flow (2)
107	25.79	97.20	Shut-In(2)
153	157.74	98.88	End Shut-In(2)
156	1838.74	97.89	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
35.00	G.O.M. 5%G 10%O 85%M	0.49
0.00	90' GIP	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mai Oil Operations

18-21s-12w Stafford,KS

8411 Preston RD STE 800 Dallas TX 75225+5520

Chistiansen #2

Job Ticket: 53769

DST#: 5

ATTN: Jim Musgrove

Test Start: 2018.11.13 @ 10:32:01

Tool Information

Drill Pipe:	Length: 3602.00 ft	Diameter: 3.80 inches	Volume: 50.53 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 70000.00 lb
			Total Volume: 50.53 bbl	Tool Chased 0.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 47000.00 lb
Depth to Top Packer:	3607.00 ft			Final 47000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	20.00 ft			
Tool Length:	40.00 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			3588.00	
Shut In Tool	5.00			3593.00	
Hydraulic tool	5.00			3598.00	
Packer	5.00			3603.00	20.00 Bottom Of Top Packer
Packer	4.00			3607.00	
Stubb	1.00			3608.00	
Recorder	0.00	6772	Inside	3608.00	
Recorder	0.00	6769	Outside	3608.00	
Perforations	16.00			3624.00	
Bullnose	3.00			3627.00	20.00 Bottom Packers & Anchor
Total Tool Length:	40.00				



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Mai Oil Operations **18-21s-12w Stafford,KS**
 8411 Preston RD STE 800 Dallas TX 75225+5520 **Chistiansen #2**
 Job Ticket: 53769 **DST#: 5**
 ATTN: Jim Musgrove Test Start: 2018.11.13 @ 10:32:01

Mud and Cushion Information

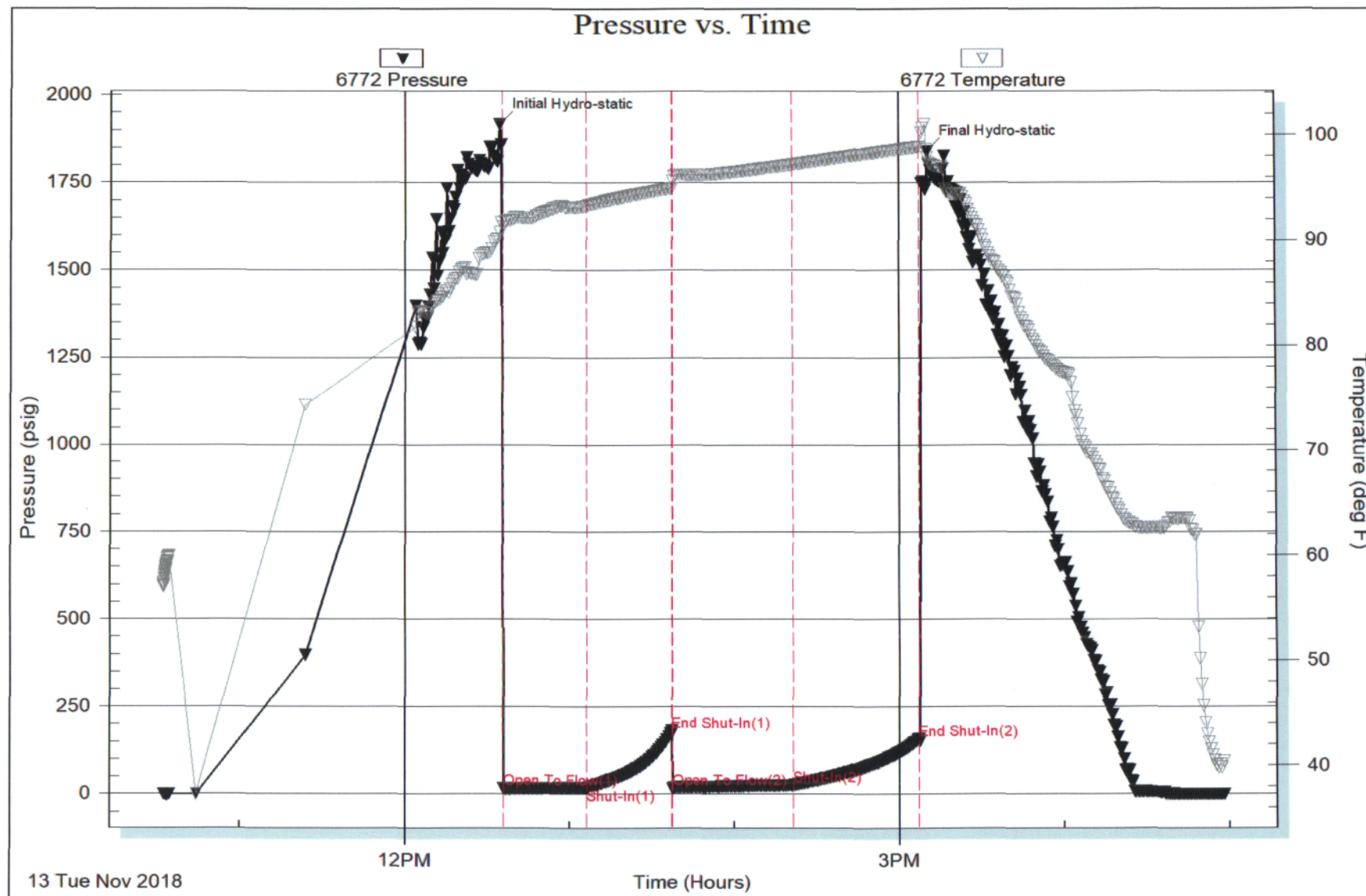
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 55.00 sec/qt	Cushion Volume: bbl		
Water Loss: 11.97 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 11000.00 ppm			
Filter Cake: 1.00 inches			

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
35.00	G.O.M. 5%G 10%O 85%M	0.491
0.00	90' GIP	0.000

Total Length: 35.00 ft Total Volume: 0.491 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:



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. 1144

Date	Sec.	Twp.	Range	County	State	On Location	Finish
11-7-18	18	21	12	Stafford	Ks		5:00 AM

Location *Great Bend - 95 to 190rd, 3E, 1/4S, E/S*

Lease	Well No.	Owner
<i>Christensen</i>	<i>2</i>	To Quality Oilwell Cementing, Inc.
Contractor		You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.
<i>Southern</i>	<i>#3</i>	
Type Job		Charge To
<i>Surface</i>		<i>Ma. oil operations</i>
Hole Size	T.D.	
<i>1 3/4"</i>	<i>700'</i>	
Csg.	Depth	
<i>8 5/8"</i>	<i>709'</i>	
Tbg. Size	Depth	Street
		City State
Tool	Depth	The above was done to satisfaction and supervision of owner agent or contractor.
Cement Left in Csg.	Shoe Joint	Cement Amount Ordered
<i>25'</i>	<i>25'</i>	<i>450 60/40 4% cc 2% Gel 1/2#</i>
Meas Line	Displace	
	<i>43 BLS</i>	<i>Flo-seal</i>

EQUIPMENT

Pumptrk	No.	Cementer	Common
<i>16</i>		<i>David</i>	
		Helper	Poz. Mix
Bulktrk	No.	Driver	Gel.
<i>19</i>		<i>Steen</i>	
		Driver	Calcium
Bulktrk	No.	Driver	
<i>P.H.</i>		<i>Rick</i>	

JOB SERVICES & REMARKS

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

FLOAT EQUIPMENT

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

Pumptrk Charge

Mileage

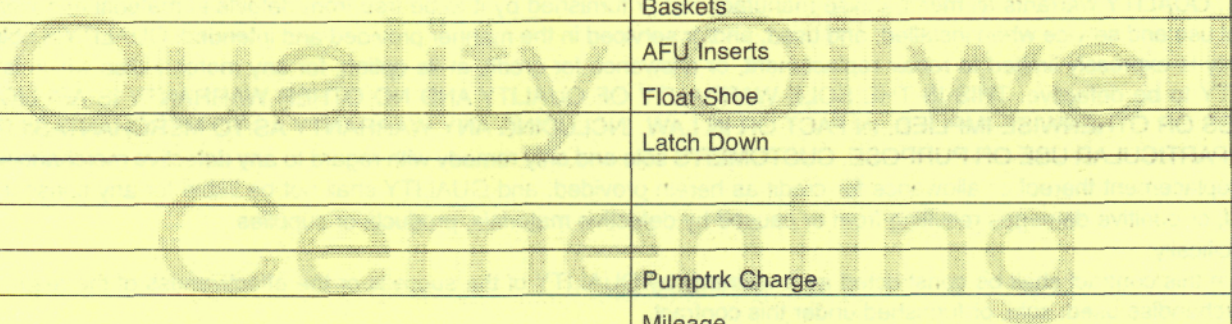
Tax

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. 1146

Date	11-14-18	Sec.	18	Twp.	21	Range	12	County	Stafford	State	Ks	On Location		Finish	4:30 PM
Lease								Location		Great Bend - @ 95 to 190th Rd, 3E, 1/4S					
Lease								Well No.		2					
Contractor								Well No.		3					
Type Job								Longstring							
Hole Size								T.D.		3700'					
Csg.								Depth		3700'					
Tbg. Size								Depth							
Tool								Depth							
Cement Left in Csg.								Shoe Joint		22.85' 22.85'					
Meas Line								Displace		89 3/4 BLS					
EQUIPMENT								Common							
Pumptrk								No.		16					
Bulktrk								No.		14					
Bulktrk								No.		pu					
JOB SERVICES & REMARKS								Hulls							
Remarks:								Salt							
Rat Hole								305V							
Mouse Hole								N/A							
Centralizers								1-3, 5-11							
Baskets								pipe on bottom break Circulation							
D/V or Port Collar								pump 1000 gal mud Clear 48							
plug								Bathub, back to 5 1/2" casing							
wash								pump lines, Displaced plug							
w/								89 3/4 BLS of floe Release + held							
FLOAT EQUIPMENT															
Lift pressure								#							
Land plug to								#							
Pumptrk Charge															
Mileage															
Signature								Tax							
								Discount							
								Total Charge							