

Form	ACO1 - Well Completion
Operator	Farmer, John O., Inc.
Well Name	MORGENSTERN C 1
Doc ID	1488357

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Surface	12.25	8.625	23	463	Common	225	3% C.C., 2% gel

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2386107

Phone 735-483-1071

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

No. 1715

Cell 735-324-1041

Date	7-23-19	Sec.	13	Twp.	16	Range	14	County	Barton	State	KS	On Location		Finish	8:00 PM
Lease								Morgenstern C				Well No. 1			
Contractor								Discovery #2				Owner			
Type Job								Surface				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.			
Hole Size								12 1/4"				Charge To John O Farmer			
Csg.								8 5/8"				Street			
Tbg. Size												City			
Tool												State			
Cement Left in Csg.								15'				The above was done to satisfaction and supervision of owner agent or contractor.			
Shoe Joint								15'				Cement Amount Ordered 225 Com 30% CC 20% Gel			
Meas Line								Displace 28 1/2 BLS							
EQUIPMENT															
Pumptrk 17 No. Cementer Tony P.								Common 225							
Bulktrk 15 No. Driver Lance								Poz. Mix							
Bulktrk p.u. No. Driver Rick								Gel. 4							
								Calcium 8							
JOB SERVICES & REMARKS															
Remarks: Cement did Circulate								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 237							
								Mileage							
FLOAT EQUIPMENT															
								Guide Shoe							
								Centralizer							
								Baskets							
								AFU Inserts							
								Float Shoe							
								Latch Down							
								Pumptrk Charge Surface							
								Mileage 18							
								Tax							
								Discount							
								Total Charge							

Thanks

X Signature [Signature]

Federal Tax I.D.# 20-2886107

No. 1589

Date	9-30-19	Sec.	13	Twp.	16	Range	14	County	Barton	State	Ks	On Location		Finish	9/30/19
Location								27 S 41 S 14 E 14 N E 14 W							
Lease	Morgenshen "C"				Well No.	#1				Owner	E 3/4 N E 14 W				
Contractor	Discovery #2				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.										
Type Job	PTA				Charge To John "C" Farmer										
Hole Size	7 1/8				T.D.										
Csg.	4 1/2 DP				Depth	3381'				Street					
Thg. Size					Depth					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	275 sk 6% Poz.				
Meas Line					Displace					47.9 gal 1/4 Flt					
EQUIPMENT										Common 165					
Pumptrk	#17 No. Cementer				Helper				Poz. Mix 110						
Bulktrk	#9 No. Driver				Driver				Gel. 10						
Bulktrk	#9 No. Driver				Driver				Calcium						
JOB SERVICES & REMARKS										Hulls					
Remarks:										Salt					
Rat Hole 2 USGD 275 sk 6 1/4 41.										Flowseal 75 #					
Mouse Hole 1 x 1/4 Flt										Kol-Seal					
Centralizers 1 x 8 1/8 wooden plug										Mud CLR 48					
Baskets										CFL-117 or CD110 CAF 38					
D/V or Port Collar										Sand					
P1 = 5 sk @ 3381' @ 50 sk 6 1/4 41.9 gal 1/4 Flt										Handling 285					
P2 = 5 sk @ 920' @ 50 sk 6 1/4 41.9 gal 1/4 Flt										Mileage					
P3 = 5 sk @ 520' @ 120 sk 6 1/4 41.9 gal 1/4 Flt										FLOAT EQUIPMENT					
P4 = 5 sk @ 40' @ 10 sk 6 1/4 41.9 gal 1/4 Flt										Guide Shoe 1 x 8 1/8 wooden plug					
1 x 8 1/8 wooden plug										Centralizer					
Cement to Surface										Baskets					
5 = 30 sk RAT										AFU Inserts					
6 = 18 sk Mouse										Float Shoe					
Signature										Latch Down					
										Pumptrk Charge					
										Mileage					
										Tax					
										Discount					
										Total Charge					



**Discovery
Drilling**

P.O. Box 763 • Hays, KS 67601 • OFFICE (785) 623-2920 • CELLULAR (785) 635-1511

DRILLER'S LOG

Operator: John O. Farmer, Inc. Lic# 5135 Contractor: Discovery Drilling Co., Inc. LIC#31548
370 West Wichita Avenue - P.O. Box 352 PO Box 763
Russell, KS 67665 + 0352 Hays, KS 67601

Lease: Morgenstern "C" # 1 Location: 975 FNL - 100 FWL
NW/SW/NW/NW
Section 13/ 16S/ 14W
Barton County, KS

Loggers Total Depth: 3450' API#15- 009-26,269-00-00
 Rotary Total Depth: 3450' Elevation: 1940 GL - 1948 KB
 Commenced: 9/23/2019 Completed: 9/30/2019
 Casing: 8 5/8" @ 463 W/225sks Status: D & A
 KCC Contact: Chris Neeley
 Plugging Info: (1st Plug @ 3381'W/50sks)(2nd Plug @ 920'W/100sks)
(3rd Plug @ 520'W/120sks)(4th Plug @ 40'W/10sks)
(30sks In Rat Hole)(15sks In Mouse Hole)(Total 275sks
60/40Poz 4%gel-1/4#FS/sk-By Quality Oilwell Cementing
(Completed @ 3:30AM 9/30/2019)

DEPTHS & FORMATIONS (All from KB)

Surface, Sand & Shale	<u>0'</u>	Shale	<u>931'</u>
Dakota Sand	<u>171'</u>	Shale & Lime	<u>1313'</u>
Shale	<u>228'</u>	Shale	<u>1794'</u>
Cedar Hill Sand	<u>412'</u>	Shale & Lime	<u>2209'</u>
Red Bed Shale	<u>542'</u>	Lime & Shale	<u>3094'</u>
Anhydrite	<u>903'</u>	RTD	<u>3450'</u>
Base Anhydrite	<u>931'</u>		

STATE OF KANSAS))
) ss
 COUNTY OF ELLIS)

Thomas H. Alm of Discovery Drilling states that to the best of his knowledge
 the above and foregoing is a true and correct log of the above captioned well.

Thomas H. Alm

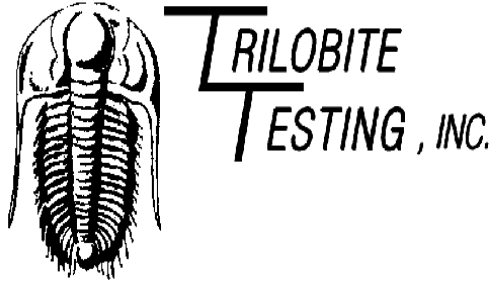
Subscribed and sworn to before me on 10-1-19

My Commission expires: 6-28-2022

(Place stamp or seal below)

Myrna S. Hoffman
 Notary Public





DRILL STEM TEST REPORT

Prepared For: **John O Farmer Inc.**

PO Box 352
Russell, KS 67665

ATTN: Austin Klaus

Morgenstern C #1

13-16S-14W Barton,KS

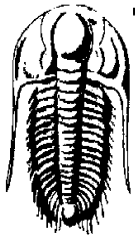
Start Date: 2019.09.27 @ 13:56:00

End Date: 2019.09.27 @ 20:34:02

Job Ticket #: 66295 DST #: 1

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

Printed: 2019.09.30 @ 12:07:15



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

John O Farmer Inc.

13-16S-14W Barton, KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66295

DST#: 1

ATTN: Austin Klaus

Test Start: 2019.09.27 @ 13:56:00

GENERAL INFORMATION:

Formation: **LKC A-D**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 15:49:17

Time Test Ended: 20:34:02

Test Type: Conventional Bottom Hole (Initial)

Tester: Ken Swinney

Unit No: 72

Interval: **3150.00 ft (KB) To 3208.00 ft (KB) (TVD)**

Reference Elevations: 1948.00 ft (KB)

Total Depth: 3208.00 ft (KB) (TVD)

1940.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: **8365** Inside

Press@RunDepth: 88.91 psig @ 3203.59 ft (KB)

Capacity: psig

Start Date: 2019.09.27

End Date:

2019.09.27

Last Calib.:

2019.09.27

Start Time: 13:56:01

End Time:

20:34:02

Time On Btm:

2019.09.27 @ 15:49:02

Time Off Btm:

2019.09.27 @ 18:51:02

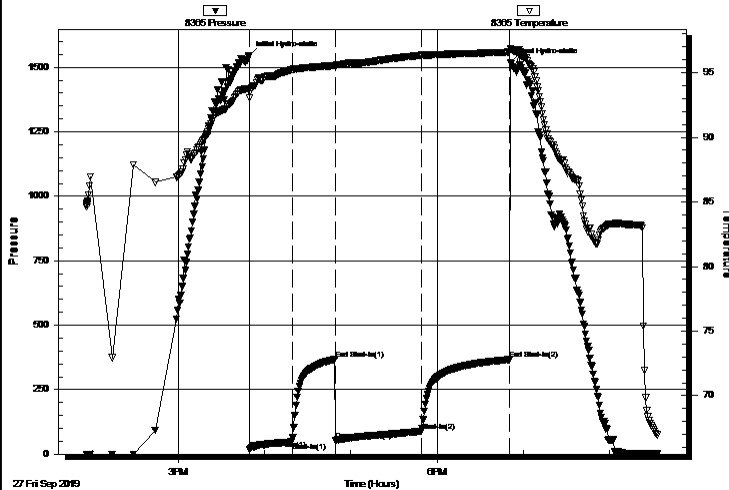
TEST COMMENT: IF 30 Minutes Blow built to 5 1/2"

ISI 30 Minutes No blow back

FF 60 Minutes Blow built to 5"

FSI 60 Minutes No blow back

Pressure vs. Time



PRESSURE SUMMARY

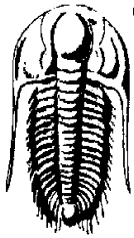
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1545.35	93.75	Initial Hydro-static
1	19.65	93.03	Open To Flow (1)
30	47.56	95.24	Shut-In(1)
60	367.68	95.53	End Shut-In(1)
61	54.76	95.43	Open To Flow (2)
121	88.91	96.35	Shut-In(2)
182	366.62	96.62	End Shut-In(2)
182	1518.44	96.88	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
170.00	MW M 30% W 70%	2.38

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

John O Farmer Inc.

13-16S-14W Barton, KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

ATTN: Austin Klaus

Job Ticket: 66295

DST#: 1

Test Start: 2019.09.27 @ 13:56:00

GENERAL INFORMATION:

Formation: **LKC A-D**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 15:49:17

Time Test Ended: 20:34:02

Test Type: Conventional Bottom Hole (Initial)

Tester: Ken Swinney

Unit No: 72

Interval: 3150.00 ft (KB) To 3208.00 ft (KB) (TVD)

Reference Elevations: 1948.00 ft (KB)

Total Depth: 3208.00 ft (KB) (TVD)

1940.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6752

Press@RunDepth: 365.84 psig @ ft (KB)

Capacity: psig

Start Date: 2019.09.27

End Date:

2019.09.27

Last Calib.:

2019.09.27

Start Time: 13:56:01

End Time:

20:35:02

Time On Btm:

2019.09.27 @ 15:49:02

Time Off Btm:

2019.09.27 @ 18:51:32

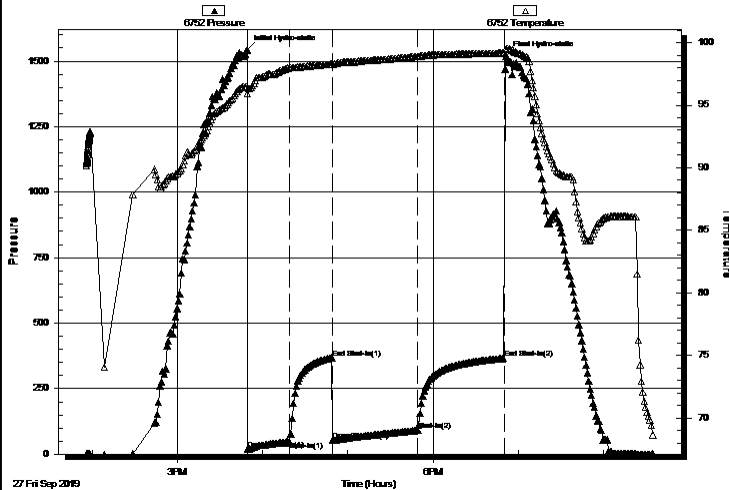
TEST COMMENT: IF 30 Minutes Blow built to 5 1/2"

ISI 30 Minutes No blow back

FF 60 Minutes Blow built to 5"

FSI 60 Minutes No blow back

Pressure vs. Time



PRESSURE SUMMARY

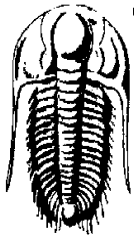
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1544.92	96.52	Initial Hydro-static
1	19.94	95.90	Open To Flow (1)
30	48.45	98.00	Shut-In (1)
60	367.95	98.27	End Shut-In (1)
61	52.65	98.27	Open To Flow (2)
121	90.91	98.90	Shut-In (2)
181	365.84	99.19	End Shut-In (2)
183	1519.74	99.53	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
170.00	MW M 30% W 70%	2.38

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

John O Farmer Inc.

13-16S-14W Barton,KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66295

DST#: 1

ATTN: Austin Klaus

Test Start: 2019.09.27 @ 13:56:00

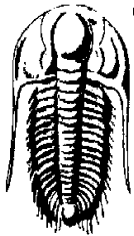
Tool Information

Drill Pipe:	Length:	3153.00 ft	Diameter:	3.80 inches	Volume:	44.23 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	20000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight to Pull Loose:	60000.00 lb
					Total Volume:	44.23 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		23.00 ft					String Weight: Initial	55000.00 lb
Depth to Top Packer:		3150.00 ft					Final	55000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		57.59 ft						
Tool Length:		77.59 ft						
Number of Packers:		2	Diameter:	6.75 inches				
Tool Comments:								

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut-In Tool	5.00			3135.00	
Hydraulic tool	5.00			3140.00	
Top Packer	5.00			3145.00	
Packer	5.00			3150.00	20.00 Bottom Of Top Packer
Anchor	19.00			3169.00	
Change Over Sub	1.00			3170.00	
Drill Pipe	31.59			3201.59	
Change Over Sub	1.00			3202.59	
Recorder	1.00	8365	Inside	3203.59	
Recorder	1.00	6755	Outside	3204.59	
Bullnose	3.00			3207.59	57.59 Anchor Tool

Total Tool Length: 77.59



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

John O Farmer Inc.

13-16S-14W Barton, KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66295

DST#: 1

ATTN: Austin Klaus

Test Start: 2019.09.27 @ 13:56:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 49.00 sec/qt

Water Loss: 9.58 in³

Resistivity: ohm.m

Salinity: 5800.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

Oil API:

deg API

Water Salinity: 29000 ppm

ft

bbl

psig

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
170.00	MW M 30% W 70%	2.385

Total Length: 170.00 ft Total Volume: 2.385 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Recovery Resistivity .227 ohms @ 71 deg.

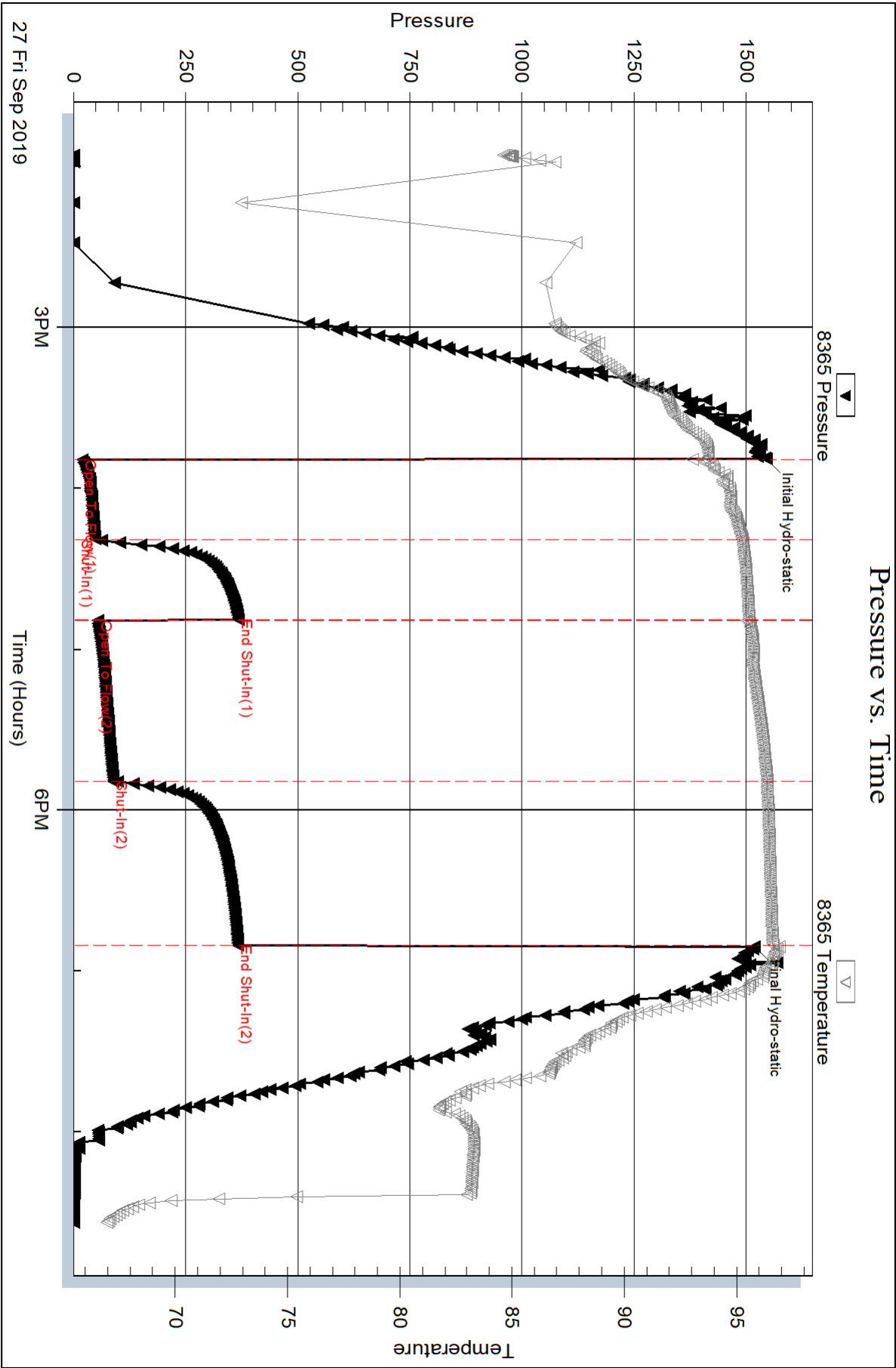
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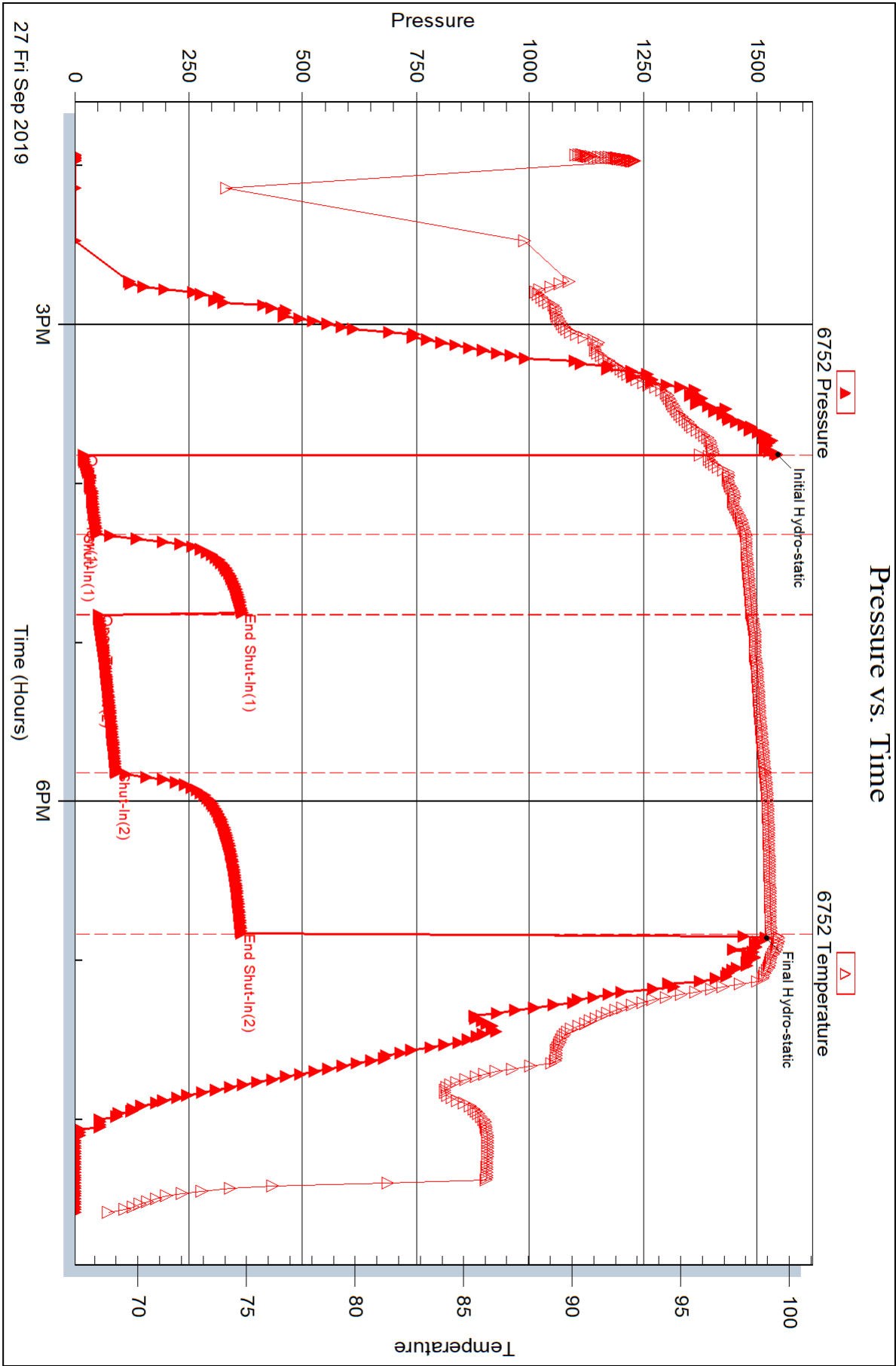
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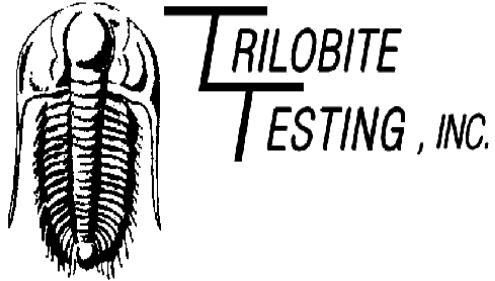
John O Farmer Inc.

Morgenstern C #1

DST Test Number: 1







DRILL STEM TEST REPORT

Prepared For: **John O Farmer Inc.**

PO Box 352
Russell, KS 67665

ATTN: Austin Klaus

Morgenstern C #1

13-16S-14W Barton,KS

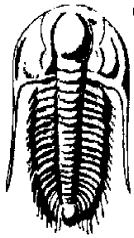
Start Date: 2019.09.28 @ 10:19:00

End Date: 2019.09.28 @ 15:33:02

Job Ticket #: 66296 DST #: 2

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

Printed: 2019.09.30 @ 12:06:48



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

John O Farmer Inc.

13-16S-14W Barton, KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66296

DST#: 2

ATTN: Austin Klaus

Test Start: 2019.09.28 @ 10:19:00

GENERAL INFORMATION:

Formation: **LKC H-J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:43:47

Time Test Ended: 15:33:02

Test Type: Conventional Bottom Hole (Initial)

Tester: Ken Swinney

Unit No: 72 Great Bend 52

Interval: 3286.00 ft (KB) To 3342.00 ft (KB) (TVD)

Reference Elevations: 1948.00 ft (KB)

Total Depth: 3342.00 ft (KB) (TVD)

1940.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8365 Inside

Press@RunDepth: 27.66 psig @ 3287.00 ft (KB)

Capacity: psig

Start Date: 2019.09.28

End Date:

2019.09.28

Last Calib.: 2019.09.28

Start Time: 10:19:01

End Time:

15:33:02

Time On Btm: 2019.09.28 @ 11:43:32

Time Off Btm: 2019.09.28 @ 13:47:32

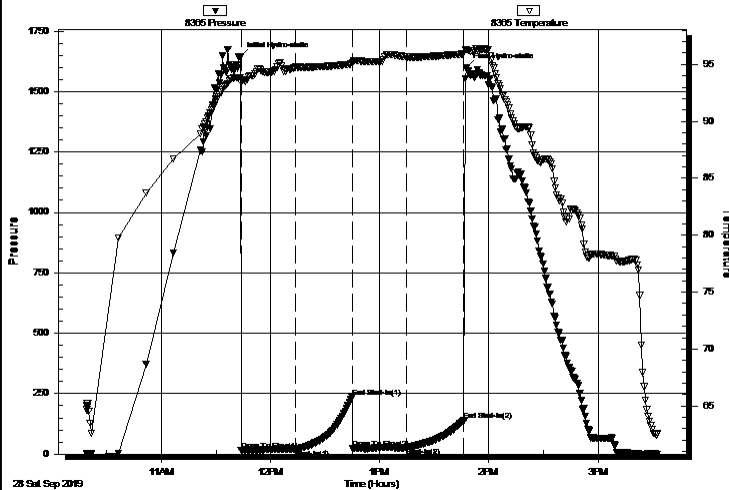
TEST COMMENT: IF 30 Minutes Blow built to 1 3/4"

ISI 30 Minutes No blow back

FF 30 Minutes Blow built to 1/2"

FSI 30 Minutes No blow back

Pressure vs. Time



PRESSURE SUMMARY

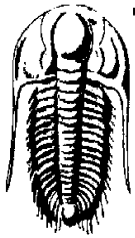
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1643.02	93.87	Initial Hydro-static
1	15.72	93.38	Open To Flow (1)
31	21.56	94.77	Shut-In(1)
62	234.60	95.05	End Shut-In(1)
62	24.47	95.17	Open To Flow (2)
92	27.66	95.66	Shut-In(2)
123	140.76	95.95	End Shut-In(2)
124	1598.52	96.30	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
15.00	OSM / O 1% M99%	0.21

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

John O Farmer Inc.

13-16S-14W Barton, KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

ATTN: Austin Klaus

Job Ticket: 66296

DST#: 2

Test Start: 2019.09.28 @ 10:19:00

GENERAL INFORMATION:

Formation: **LKC H-J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:43:47

Time Test Ended: 15:33:02

Test Type: Conventional Bottom Hole (Initial)

Tester: Ken Swinney

Unit No: 72 Great Bend 52

Interval: 3286.00 ft (KB) To 3342.00 ft (KB) (TVD)

Reference Elevations: 1948.00 ft (KB)

Total Depth: 3342.00 ft (KB) (TVD)

1940.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6752 Outside

Press@RunDepth: 141.62 psig @ 3288.00 ft (KB)

Capacity: psig

Start Date: 2019.09.28

End Date:

2019.09.28

Last Calib.:

2019.09.28

Start Time: 10:19:01

End Time:

15:32:02

Time On Btm:

2019.09.28 @ 11:43:32

Time Off Btm:

2019.09.28 @ 13:47:47

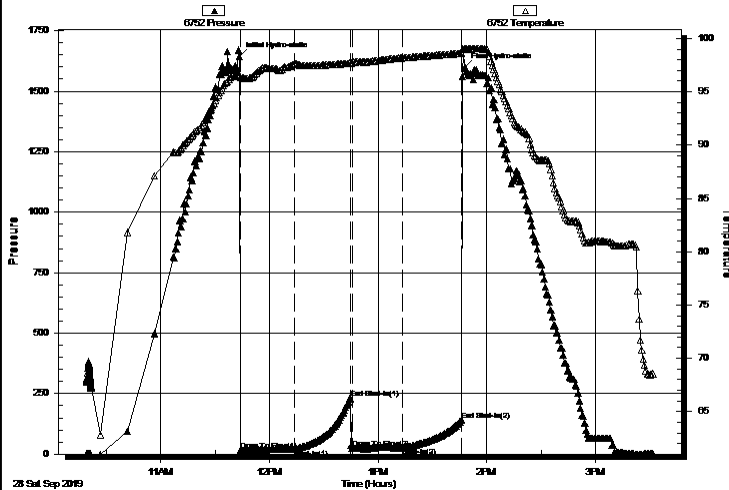
TEST COMMENT: IF 30 Minutes Blow built to 1 3/4"

ISI 30 Minutes No blow back

FF 30 Minutes Blow built to 1/2"

FSI 30 Minutes No blow back

Pressure vs. Time



PRESSURE SUMMARY

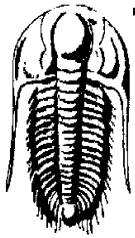
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1642.26	96.54	Initial Hydro-static
1	15.07	96.38	Open To Flow (1)
31	21.73	97.61	Shut-In(1)
61	232.18	97.69	End Shut-In(1)
62	23.58	97.73	Open To Flow (2)
90	26.72	98.18	Shut-In(2)
123	141.62	98.64	End Shut-In(2)
125	1595.29	99.00	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
15.00	OSM / O 1% M99%	0.21

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

John O Farmer Inc.

13-16S-14W Barton,KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66296

DST#: 2

ATTN: Austin Klaus

Test Start: 2019.09.28 @ 10:19:00

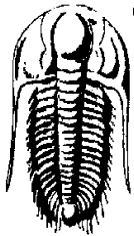
Tool Information

Drill Pipe:	Length:	3279.00 ft	Diameter:	3.80 inches	Volume:	46.00 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	20000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight to Pull Loose:	58000.00 lb
					Total Volume:	46.00 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:	13.00 ft						String Weight: Initial	56000.00 lb
Depth to Top Packer:	3286.00 ft						Final	56000.00 lb
Depth to Bottom Packer:	ft							
Interval between Packers:	55.52 ft							
Tool Length:	75.52 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			3271.00	
Hydraulic tool	5.00			3276.00	
Top Packer	5.00			3281.00	
Packer	5.00			3286.00	20.00 Bottom Of Top Packer
Recorder	1.00	8365	Inside	3287.00	
Recorder	1.00	6752	Outside	3288.00	
Anchor	17.00			3305.00	
Change Over Sub	1.00			3306.00	
Drill Pipe	31.52			3337.52	
Change Over Sub	1.00			3338.52	
Bullnose	3.00			3341.52	55.52 Anchor Tool

Total Tool Length: 75.52



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

John O Farmer Inc.

13-16S-14W Barton,KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66296

DST#: 2

ATTN: Austin Klaus

Test Start: 2019.09.28 @ 10:19:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 49.00 sec/qt

Water Loss: 9.58 in³

Resistivity: ohm.m

Salinity: 7100.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

Oil API:

Water Salinity:

deg API

ppm

ft

bbl

psig

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	OSM / O 1% M99%	0.210

Total Length: 15.00 ft

Total Volume: 0.210 bbl

Num Fluid Samples: 0

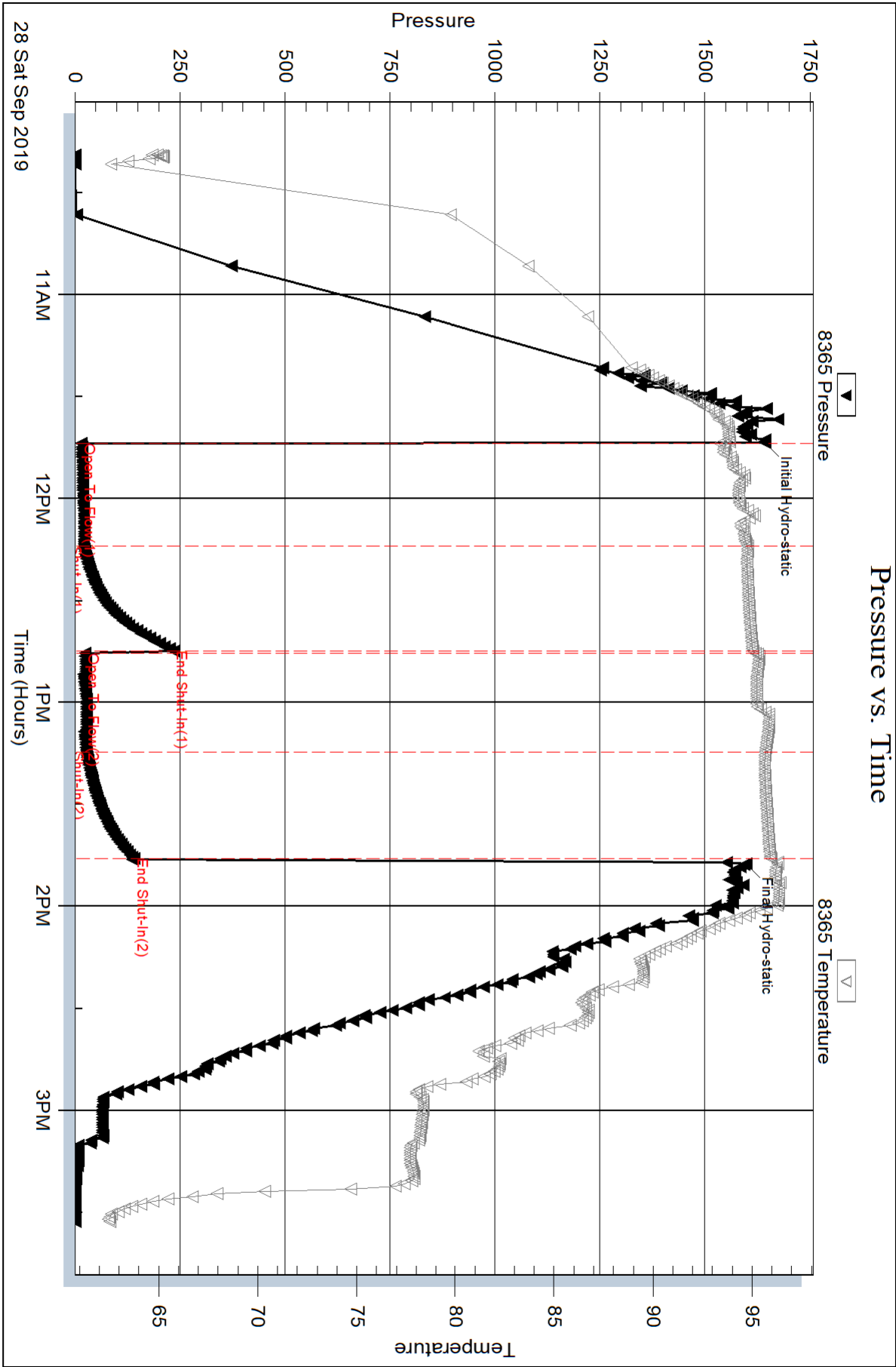
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

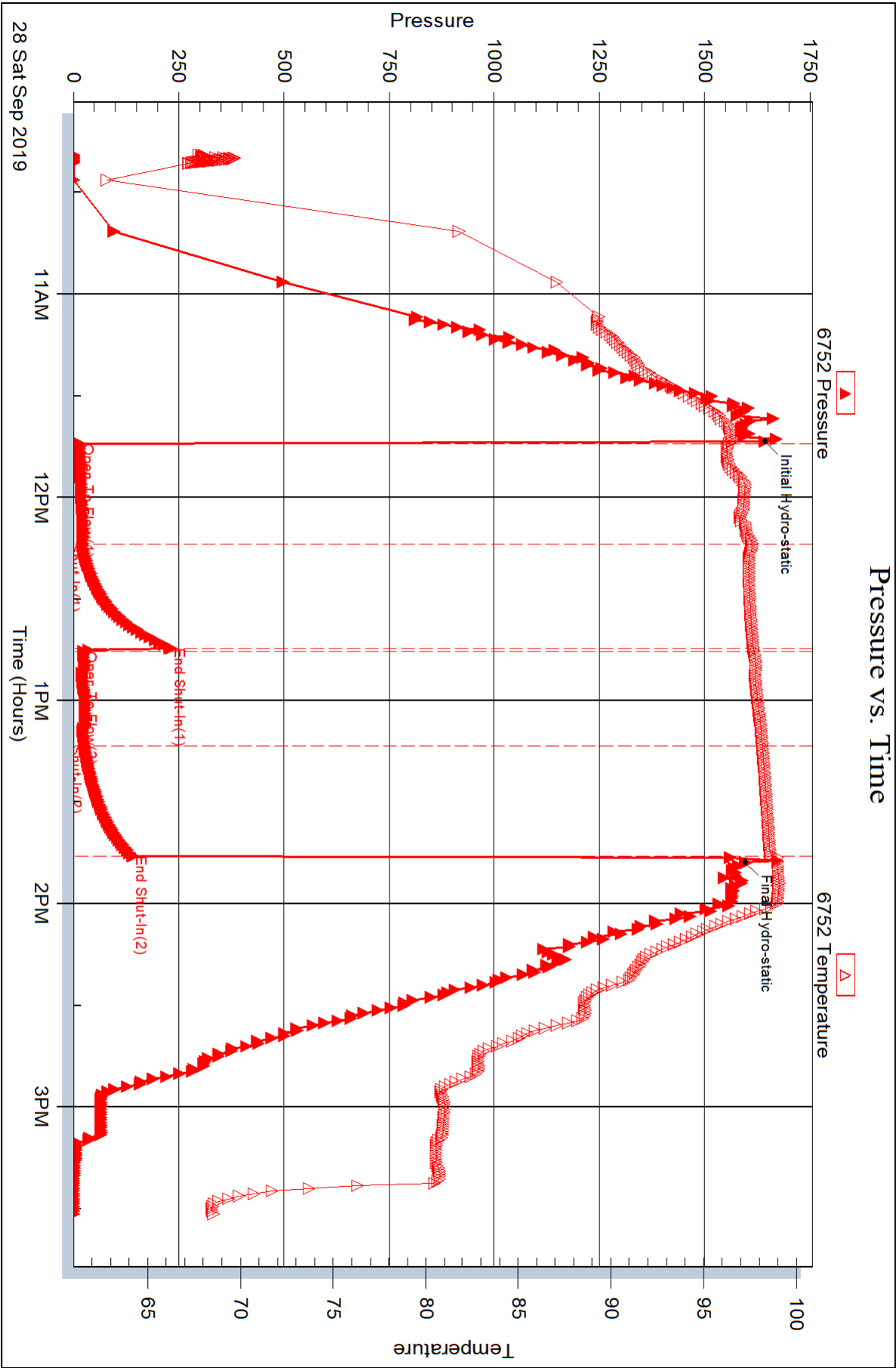


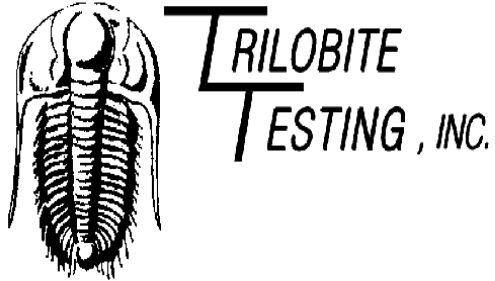
Serial #: 6752

Outside John O Farmer Inc.

Morgenstern C #1

DST Test Number: 2





DRILL STEM TEST REPORT

Prepared For: **John O Farmer Inc.**

PO Box 352
Russell, KS 67665

ATTN: Austin Klaus

Morgenstern C #1

13-16S-14W Barton,KS

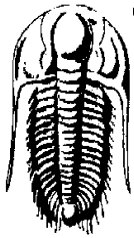
Start Date: 2019.09.29 @ 08:25:00

End Date: 2019.09.29 @ 13:31:02

Job Ticket #: 66297 DST #: 3

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

Printed: 2019.09.30 @ 12:06:19



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

John O Farmer Inc.

13-16S-14W Barton, KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66297

DST#: 3

ATTN: Austin Klaus

Test Start: 2019.09.29 @ 08:25:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:48:32

Time Test Ended: 13:31:02

Test Type: Conventional Straddle (Initial)

Tester: Ken Swinney

Unit No: 72

Interval: **3345.00 ft (KB) To 3400.00 ft (KB) (TVD)**

Reference Elevations: 1948.00 ft (KB)

Total Depth: 3450.00 ft (KB) (TVD)

1940.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8365 Inside

Press@RunDepth: 37.48 psig @ 3351.15 ft (KB)

Capacity: psig

Start Date: 2019.09.29

End Date:

2019.09.29

Last Calib.:

2019.09.29

Start Time: 08:25:01

End Time:

13:31:02

Time On Btm:

2019.09.29 @ 09:47:02

Time Off Btm:

2019.09.29 @ 11:50:02

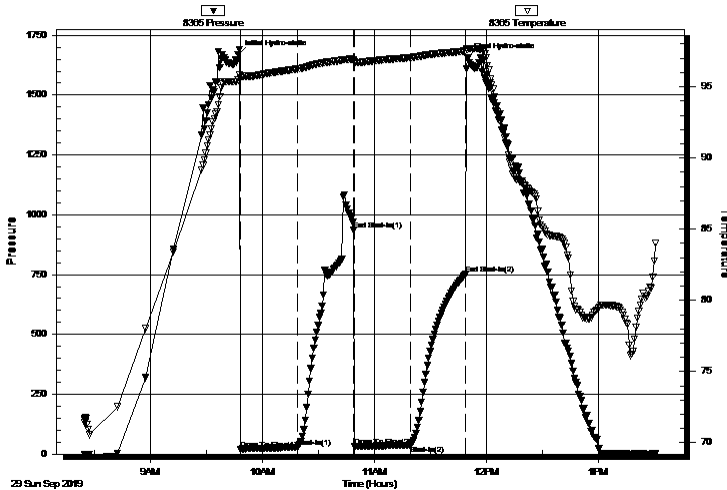
TEST COMMENT: IF 30 Minutes/ Blow built to 1 3/4"

ISI 30 Minutes/ No blow back

FF 30 Minutes/ Blow built to 1"

FSI 30 Minutes/ No blow back

Pressure vs. Time



PRESSURE SUMMARY

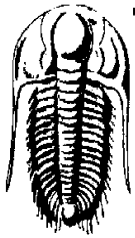
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1668.26	95.45	Initial Hydro-static
2	21.13	95.63	Open To Flow (1)
32	28.82	96.25	Shut-In (1)
62	934.76	96.88	End Shut-In (1)
63	32.14	96.73	Open To Flow (2)
93	37.48	97.04	Shut-In (2)
122	750.91	97.52	End Shut-In (2)
123	1654.35	97.62	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
45.00	OSW O 1% M99%	0.63

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

John O Farmer Inc.

13-16S-14W Barton, KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66297

DST#: 3

ATTN: Austin Klaus

Test Start: 2019.09.29 @ 08:25:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:48:32

Time Test Ended: 13:31:02

Test Type: Conventional Straddle (Initial)

Tester: Ken Swinney

Unit No: 72

Interval: 3345.00 ft (KB) To 3400.00 ft (KB) (TVD)

Reference Elevations: 1948.00 ft (KB)

Total Depth: 3450.00 ft (KB) (TVD)

1940.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6755 Outside

Press@RunDepth: 748.64 psig @ 3351.15 ft (KB)

Capacity: psig

Start Date: 2019.09.29

End Date:

2019.09.29

Last Calib.:

2019.09.29

Start Time: 08:25:01

End Time:

13:31:02

Time On Btm:

2019.09.29 @ 09:47:02

Time Off Btm:

2019.09.29 @ 11:49:47

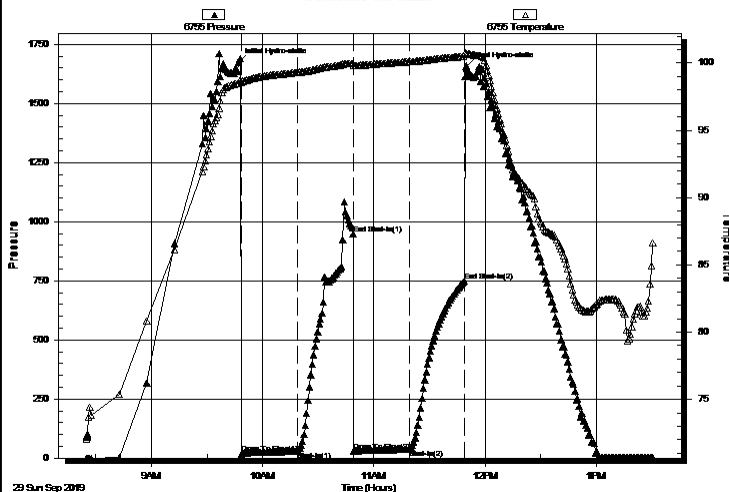
TEST COMMENT: IF 30 Minutes/ Blow built to 1 3/4"

ISI 30 Minutes/ No blow back

FF 30 Minutes/ Blow built to 1"

FSI 30 Minutes/ No blow back

Pressure vs. Time



PRESSURE SUMMARY

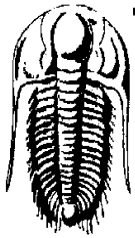
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1674.04	98.49	Initial Hydro-static
2	19.01	98.56	Open To Flow (1)
32	28.33	99.31	Shut-In (1)
62	948.63	99.94	End Shut-In (1)
63	30.87	99.83	Open To Flow (2)
93	37.38	100.10	Shut-In (2)
122	748.64	100.52	End Shut-In (2)
123	1658.07	100.67	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
45.00	OSW O 1% M99%	0.63

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

John O Farmer Inc.

13-16S-14W Barton,KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66297

DST#: 3

ATTN: Austin Klaus

Test Start: 2019.09.29 @ 08:25:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:48:32

Time Test Ended: 13:31:02

Test Type: Conventional Straddle (Initial)

Tester: Ken Swinney

Unit No: 72

Interval: 3345.00 ft (KB) To 3400.00 ft (KB) (TVD)

Reference Elevations: 1948.00 ft (KB)

Total Depth: 3450.00 ft (KB) (TVD)

1940.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6752 Below (Straddle)

Press@RunDepth: 1131.54 psig @ 3401.19 ft (KB)

Capacity: psig

Start Date: 2019.09.29

End Date:

2019.09.29

Last Calib.:

2019.09.29

Start Time: 08:25:01

End Time:

13:30:02

Time On Btm:

2019.09.29 @ 09:48:02

Time Off Btm:

2019.09.29 @ 11:50:17

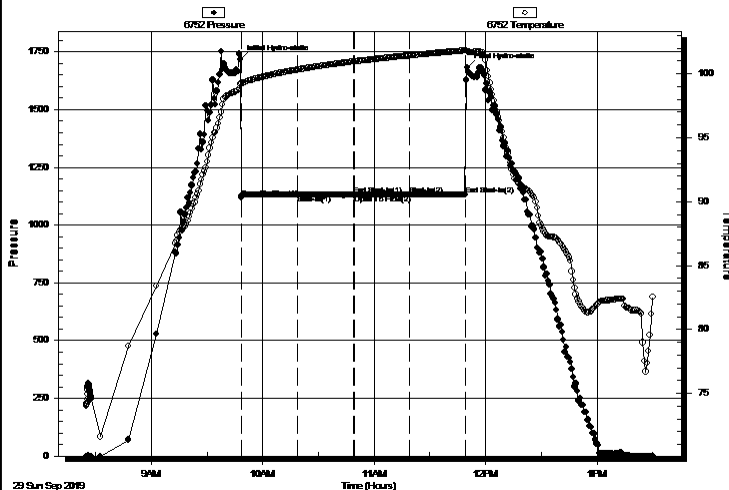
TEST COMMENT: IF 30 Minutes/ Blow built to 1 3/4"

ISI 30 Minutes/ No blow back

FF 30 Minutes/ Blow built to 1"

FSI 30 Minutes/ No blow back

Pressure vs. Time



PRESSURE SUMMARY

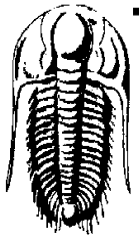
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1718.07	99.20	Initial Hydro-static
1	1118.94	99.22	Open To Flow (1)
31	1131.28	100.30	Shut-In(1)
61	1130.41	100.94	End Shut-In(1)
62	1129.41	100.94	Open To Flow (2)
91	1131.08	101.40	Shut-In(2)
121	1131.54	101.80	End Shut-In(2)
123	1683.49	101.72	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
45.00	OSW O 1% M99%	0.63

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

John O Farmer Inc.

13-16S-14W Barton,KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66297

DST#: 3

ATTN: Austin Klaus

Test Start: 2019.09.29 @ 08:25:00

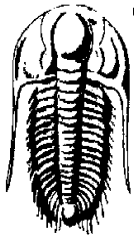
Tool Information

Drill Pipe:	Length:	3346.00 ft	Diameter:	3.80 inches	Volume:	46.94 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	20000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight to Pull Loose:	60000.00 lb
					Total Volume:	46.94 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:	17.80 ft							
Depth to Top Packer:	3345.00 ft							
Depth to Bottom Packer:	3437.28 ft							
Interval between Packers:	92.28 ft							
Tool Length:	109.08 ft							
Number of Packers:	3	Diameter:	6.75 inches					
Tool Comments:								

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut-In Tool	5.00			3333.20	
Hydraulic tool	5.00			3338.20	
Top Packer	5.00			3343.20	
Packer	1.80			3345.00	16.80 Bottom Of Top Packer
Anchor	5.00			3350.00	
Change Over Sub	1.15			3351.15	
Recorder	0.00	8365	Inside	3351.15	
Recorder	0.00	6755	Outside	3351.15	
Drill Pipe	31.61			3382.76	
Change Over Sub	1.03			3383.79	
Blank Off Sub	1.00			3384.79	
Packer (Interval Side)	2.80			3387.59	
Packer (Tail Side)	1.75			3389.34	
Perforations	11.00			3400.34	
Change Over Sub	0.85			3401.19	
Recorder	0.00	6752	Below	3401.19	
Drill Pipe	31.99			3433.18	
Change Over Sub	1.10			3434.28	
Bullnose	3.00			3437.28	92.28 Anchor Tool

Total Tool Length: 109.08



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

John O Farmer Inc.

13-16S-14W Barton,KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66297

DST#: 3

ATTN: Austin Klaus

Test Start: 2019.09.29 @ 08:25:00

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: 56.00 sec/qt

Cushion Volume:

bbl

Water Loss: 8.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 8000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
45.00	OSM O 1% M99%	0.631

Total Length: 45.00 ft

Total Volume: 0.631 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

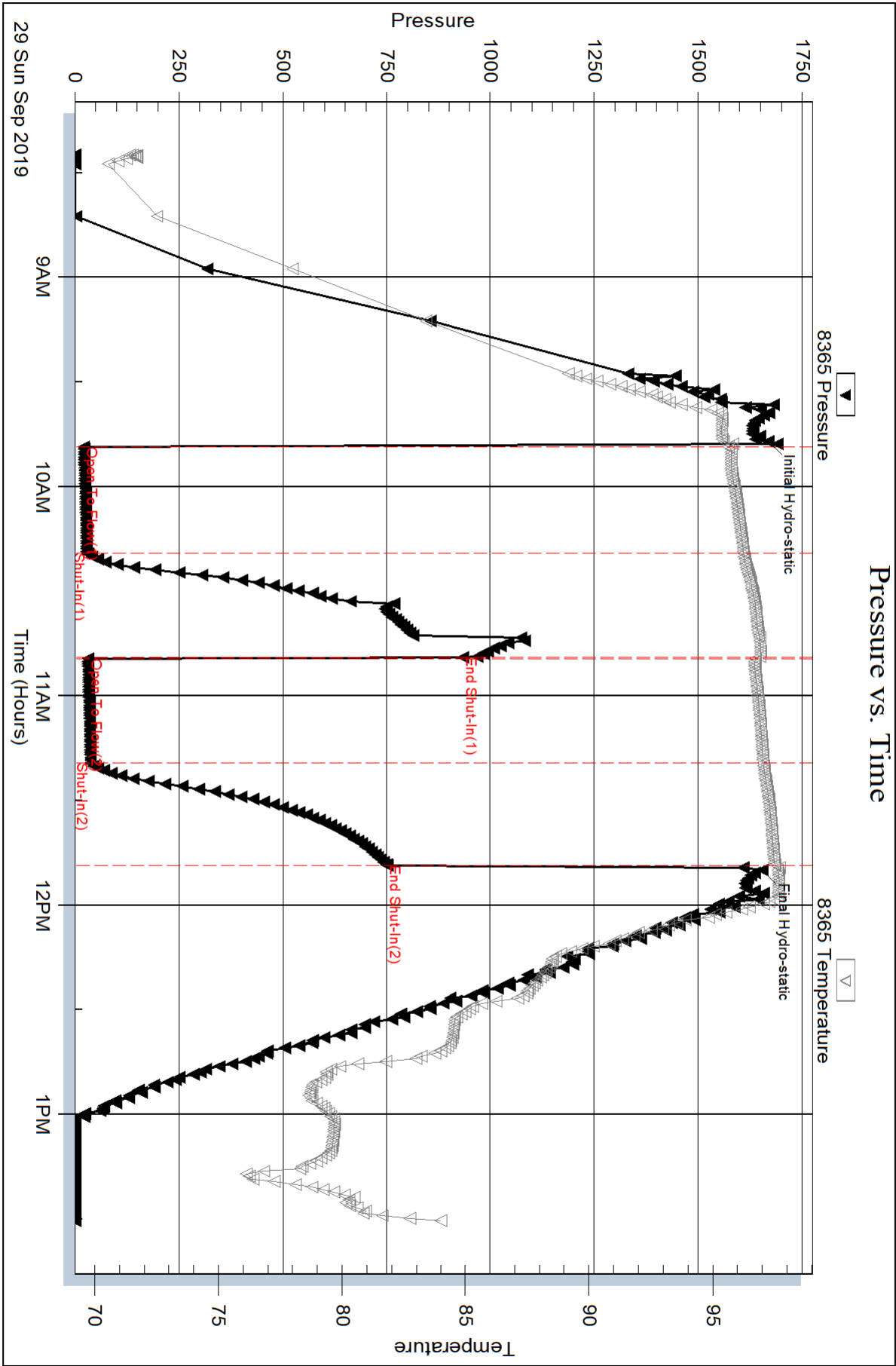
Serial #: 8365

Inside

John O Farmer Inc.

Morgenstern C#1

DST Test Number: 3

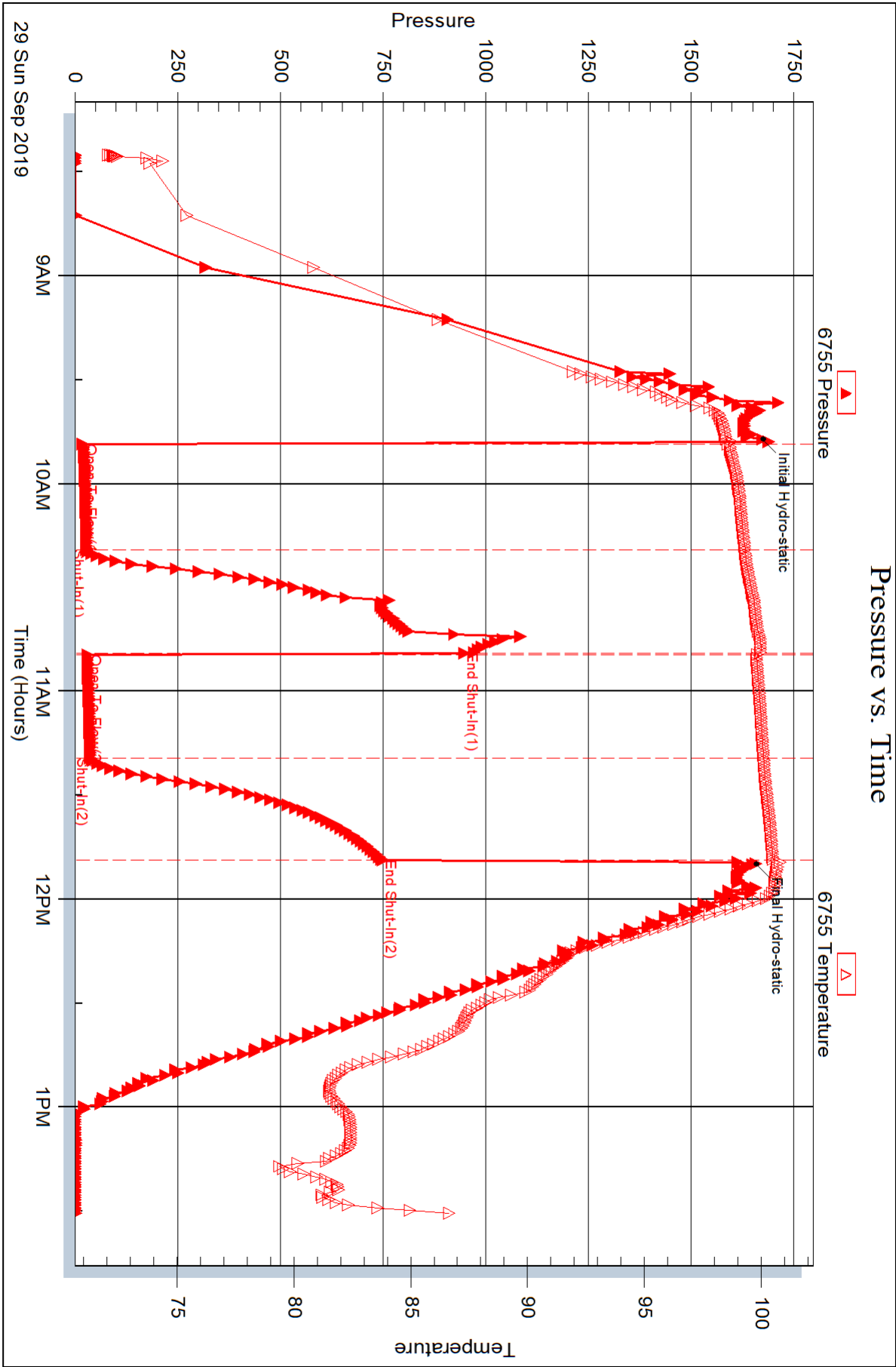


Serial #: 6755

Outside John O Farmer Inc.

Morgenstern C#1

DST Test Number: 3

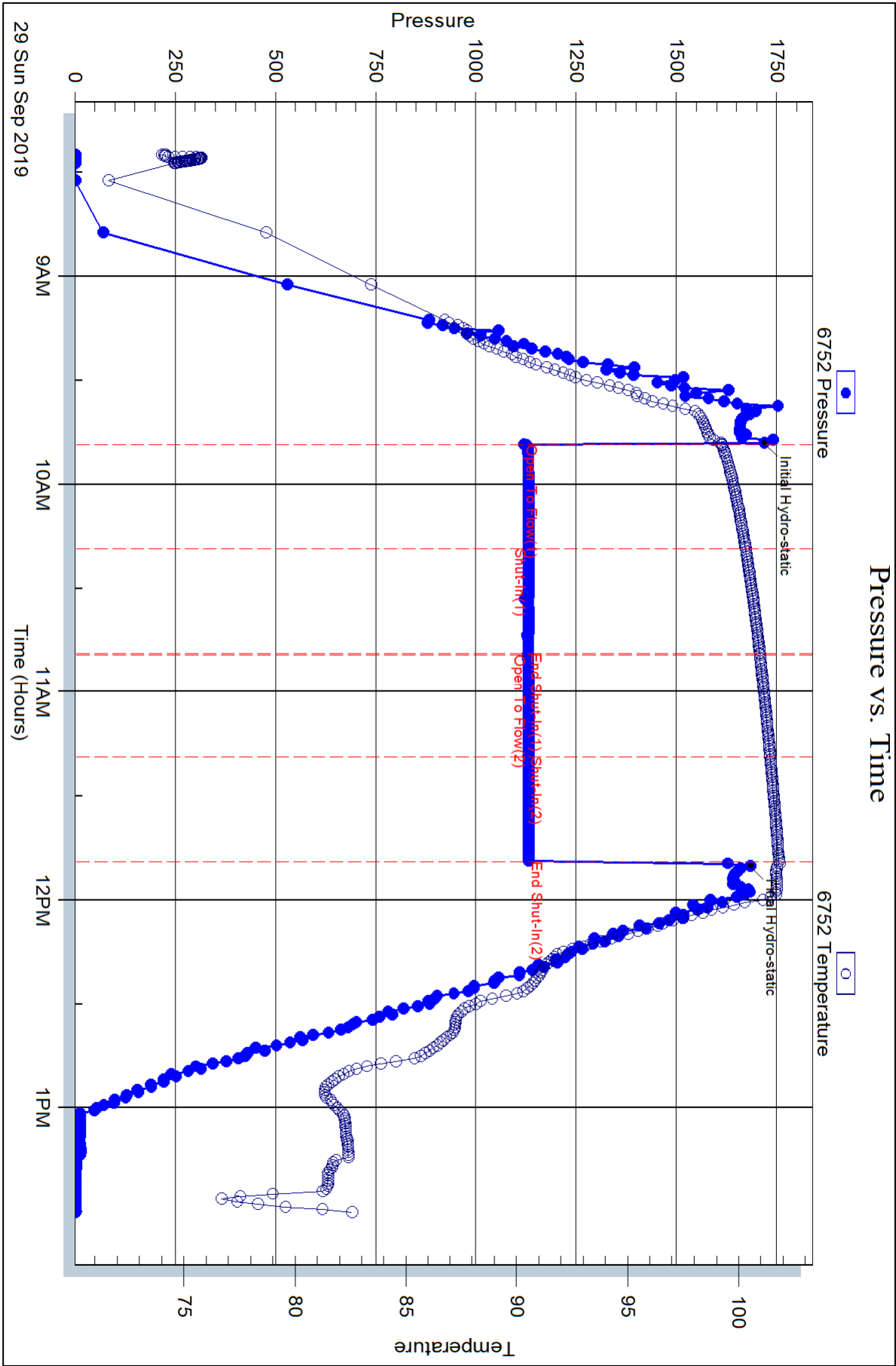


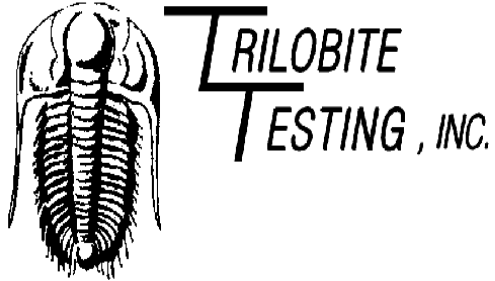
Serial #: 6752

Below (Straddled) Farmer Inc.

Morgenstern C #1

DST Test Number: 3





DRILL STEM TEST REPORT

Prepared For: **John O Farmer Inc.**

PO Box 352
Russell, KS 67665

ATTN: Austin Klaus

Morgenstern C #1

13-16S-14W Barton,KS

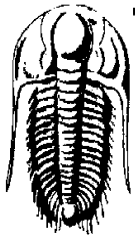
Start Date: 2019.09.29 @ 14:13:00

End Date: 2019.09.29 @ 20:11:02

Job Ticket #: 66298 DST #: 4

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

Printed: 2019.09.30 @ 12:04:59



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

John O Farmer Inc.

13-16S-14W Barton, KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66298

DST#: 4

ATTN: Austin Klaus

Test Start: 2019.09.29 @ 14:13:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:08:32

Time Test Ended: 20:11:02

Test Type: Conventional Straddle (Initial)

Tester: Ken Swinney

Unit No: 72

Interval: 3345.00 ft (KB) To 3412.00 ft (KB) (TVD)

Reference Elevations: 1948.00 ft (KB)

Total Depth: 3450.00 ft (KB) (TVD)

1940.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6752 Outside

Press@RunDepth: 191.93 psig @ 3350.00 ft (KB)

Capacity: psig

Start Date: 2019.09.29

End Date:

2019.09.29

Last Calib.:

2019.09.29

Start Time: 14:13:01

End Time:

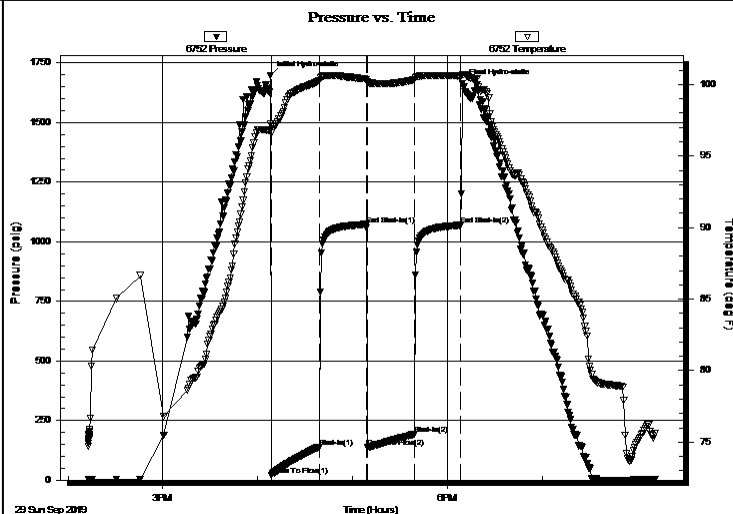
20:11:02

Time On Btm: 2019.09.29 @ 16:08:02

Time Off Btm: 2019.09.29 @ 18:09:32

TEST COMMENT: IF 30 Mintues Blow to BOB in 19 minutes total build 18"
ISI 30 Mintues No blow back
FF 30 Minutes Blow to BOB in 24 minutes total build 16"
FSI 30 Minutes Light surface blow back

PRESSURE SUMMARY



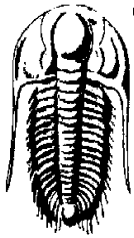
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1698.20	97.24	Initial Hydro-static
1	21.32	96.59	Open To Flow (1)
31	136.73	100.26	Shut-In(1)
61	1072.71	100.35	End Shut-In(1)
62	137.70	100.16	Open To Flow (2)
91	191.93	100.33	Shut-In(2)
121	1069.55	100.62	End Shut-In(2)
122	1664.66	100.69	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
387.00	OSMW / O 1% M40% W 59%	5.43

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

John O Farmer Inc.

13-16S-14W Barton, KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66298

DST#: 4

ATTN: Austin Klaus

Test Start: 2019.09.29 @ 14:13:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:08:32

Time Test Ended: 20:11:02

Test Type: Conventional Straddle (Initial)

Tester: Ken Swinney

Unit No: 72

Interval: **3345.00 ft (KB) To 3412.00 ft (KB) (TVD)**

Reference Elevations: 1948.00 ft (KB)

Total Depth: 3450.00 ft (KB) (TVD)

1940.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: **8365** Inside

Press@RunDepth: 1068.74 psig @ 3350.00 ft (KB)

Capacity: psig

Start Date: 2019.09.29

End Date:

2019.09.29

Last Calib.:

2019.09.29

Start Time: 14:13:01

End Time:

20:12:02

Time On Btm: 2019.09.29 @ 16:08:02

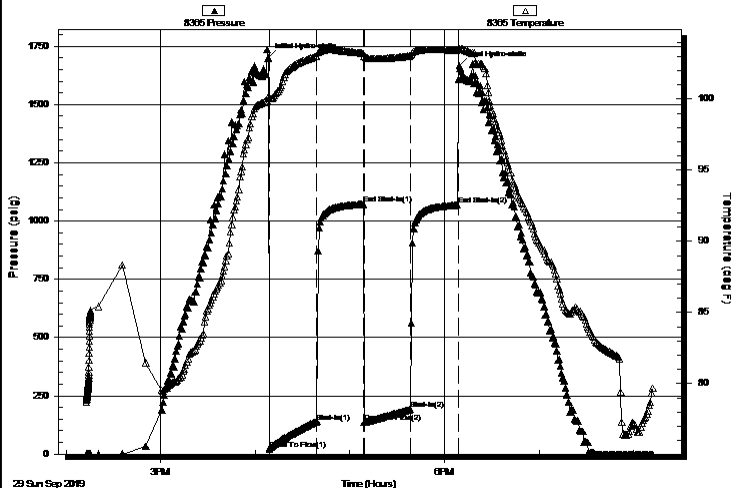
Time Off Btm: 2019.09.29 @ 18:09:32

TEST COMMENT: IF 30 Mintues Blow to BOB in 19 minutes total build 18"
ISI 30 Mintues No blow back
FF 30 Minutes Blow to BOB in 24 minutes total build 16"
FSI 30 Minutes Light surface blow back

PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1699.28	100.15	Initial Hydro-static
1	22.64	100.00	Open To Flow (1)
31	136.97	103.03	Shut-In(1)
61	1071.75	103.19	End Shut-In(1)
61	137.43	103.01	Open To Flow (2)
91	191.49	103.07	Shut-In(2)
121	1068.74	103.47	End Shut-In(2)
122	1667.38	103.55	Final Hydro-static

Pressure vs. Time

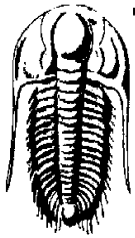


Recovery

Length (ft)	Description	Volume (bbl)
387.00	OSMW / O 1% M40% W 59%	5.43

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

John O Farmer Inc.

13-16S-14W Barton,KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66298

DST#: 4

ATTN: Austin Klaus

Test Start: 2019.09.29 @ 14:13:00

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:08:32

Time Test Ended: 20:11:02

Test Type: Conventional Straddle (Initial)

Tester: Ken Swinney

Unit No: 72

Interval: 3345.00 ft (KB) To 3412.00 ft (KB) (TVD)

Reference Elevations: 1948.00 ft (KB)

Total Depth: 3450.00 ft (KB) (TVD)

1940.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6755 Below (Straddle)

Press@RunDepth: psig @ 3414.34 ft (KB)

Capacity: psig

Start Date: 2019.09.29

End Date:

2019.09.29

Last Calib.:

2019.09.29

Start Time: 14:13:01

End Time:

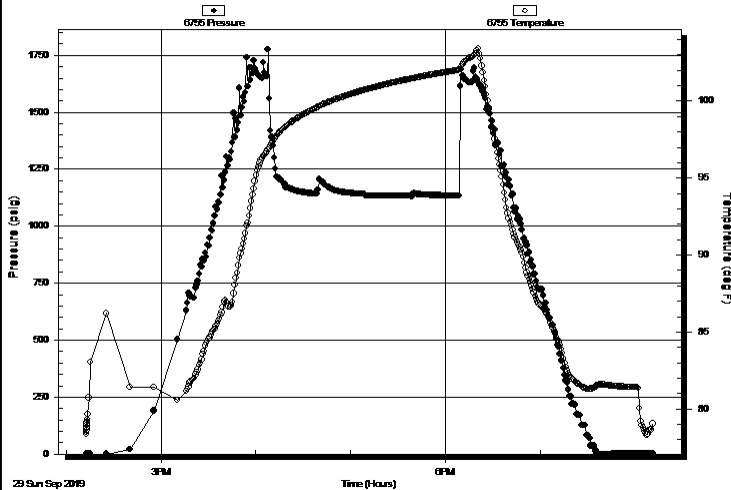
20:11:02

Time On Btm:

Time Off Btm:

TEST COMMENT: IF 30 Mintues Blow to BOB in 19 minutes total build 18"
ISI 30 Mintues No blow back
FF 30 Minutes Blow to BOB in 24 minutes total build 16"
FSI 30 Minutes Light surface blow back

Pressure vs. Time



PRESSURE SUMMARY

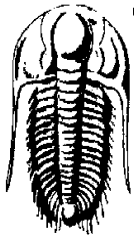
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
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Recovery

Length (ft)	Description	Volume (bbl)
387.00	OSMW / O 1% M 40% W 59%	5.43

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

John O Farmer Inc.

13-16S-14W Barton,KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66298

DST#: 4

ATTN: Austin Klaus

Test Start: 2019.09.29 @ 14:13:00

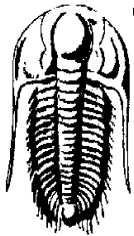
Tool Information

Drill Pipe:	Length:	3346.00 ft	Diameter:	3.80 inches	Volume:	46.94 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	20000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight to Pull Loose:	60000.00 lb
					Total Volume:	46.94 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:	17.80 ft							
Depth to Top Packer:	3345.00 ft							
Depth to Bottom Packer:	3450.18 ft							
Interval between Packers:	105.18 ft							
Tool Length:	121.98 ft							
Number of Packers:	3	Diameter:	6.75 inches					
Tool Comments:								

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Shut-In Tool	5.00			3333.20	
Hydraulic tool	5.00			3338.20	
Top Packer	5.00			3343.20	
Packer	1.80			3345.00	16.80 Bottom Of Top Packer
Anchor	5.00			3350.00	
Recorder	0.00	8365	Inside	3350.00	
Recorder	0.00	6752	Outside	3350.00	
Change Over Sub	1.15			3351.15	
Drill Pipe	31.61			3382.76	
Change Over Sub	1.03			3383.79	
Perforations	22.00			3405.79	
Blank Off Sub	1.00			3406.79	
Packer (Interval Side)	2.80			3409.59	
Packer (Tail Side)	1.75			3411.34	
Perforations	3.00			3414.34	
Recorder	0.00	6755	Below	3414.34	
Change Over Sub	0.85			3415.19	
Drill Pipe	31.99			3447.18	
Bullnose	3.00			3450.18	105.18 Anchor Tool

Total Tool Length: 121.98



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

John O Farmer Inc.

13-16S-14W Barton,KS

PO Box 352
Russell, KS 67665

Morgenstern C #1

Job Ticket: 66298

DST#: 4

ATTN: Austin Klaus

Test Start: 2019.09.29 @ 14:13:00

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:

22000 ppm

Viscosity: 56.00 sec/qt

Cushion Volume:

bbl

Water Loss: 8.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 8000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
387.00	OSMW / O 1% M 40% W 59%	5.429

Total Length: 387.00 ft Total Volume: 5.429 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

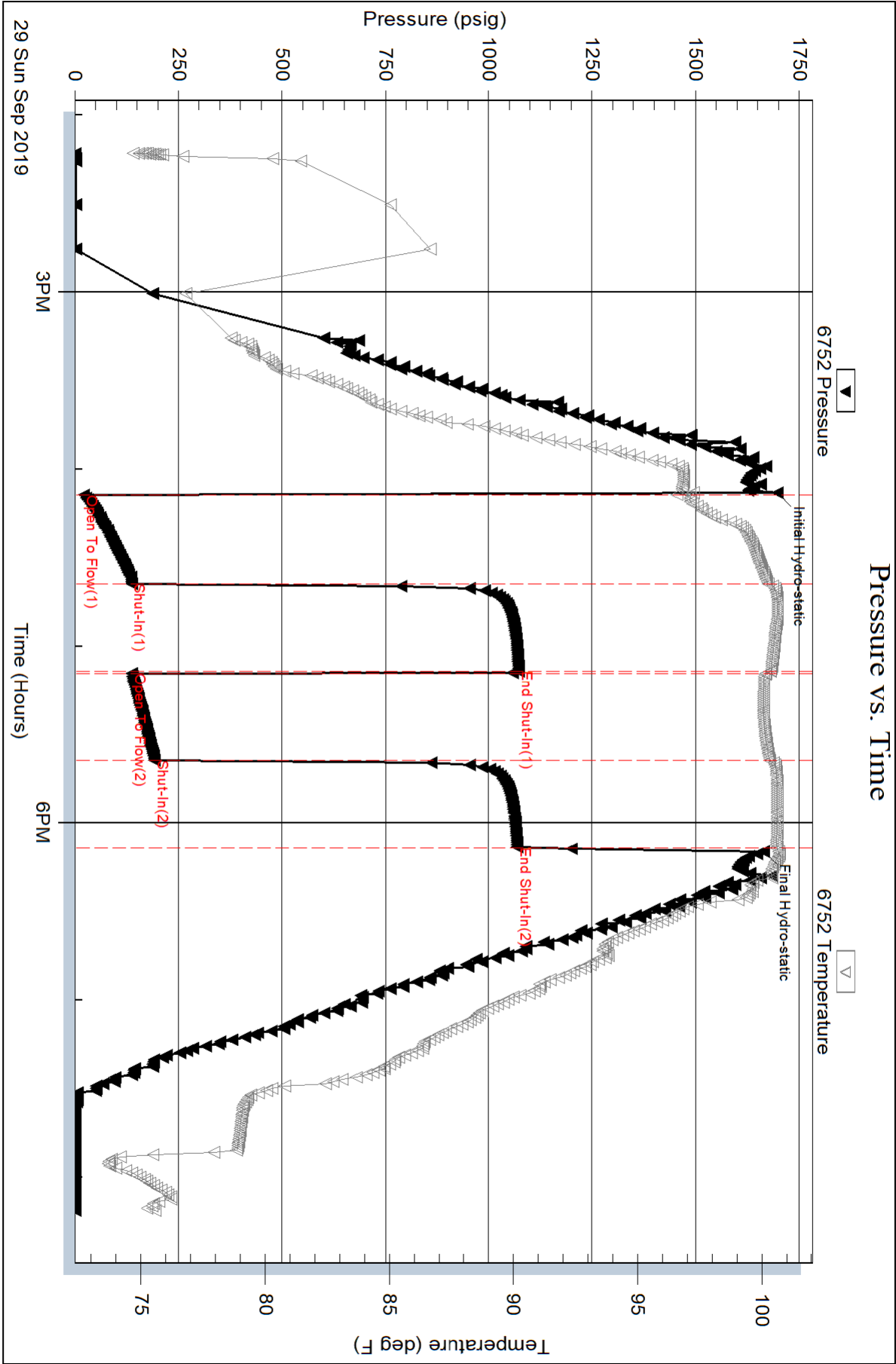
Recovery Comments: Recovery Resistivity .265 ohms @ 77 deg.

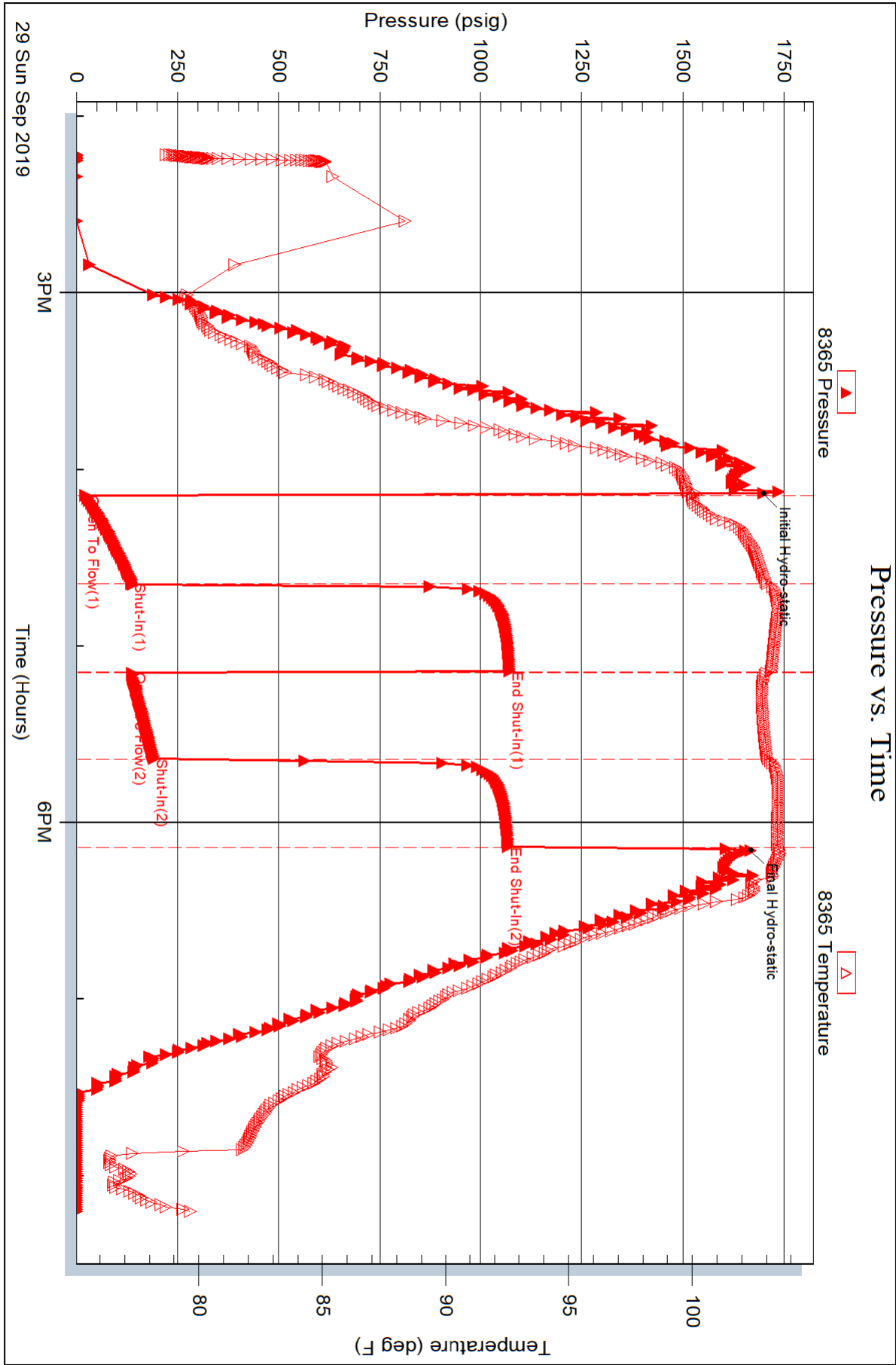
Serial #: 6752

Outside John O Farmer Inc.

Morgenstern C #1

DST Test Number: 4



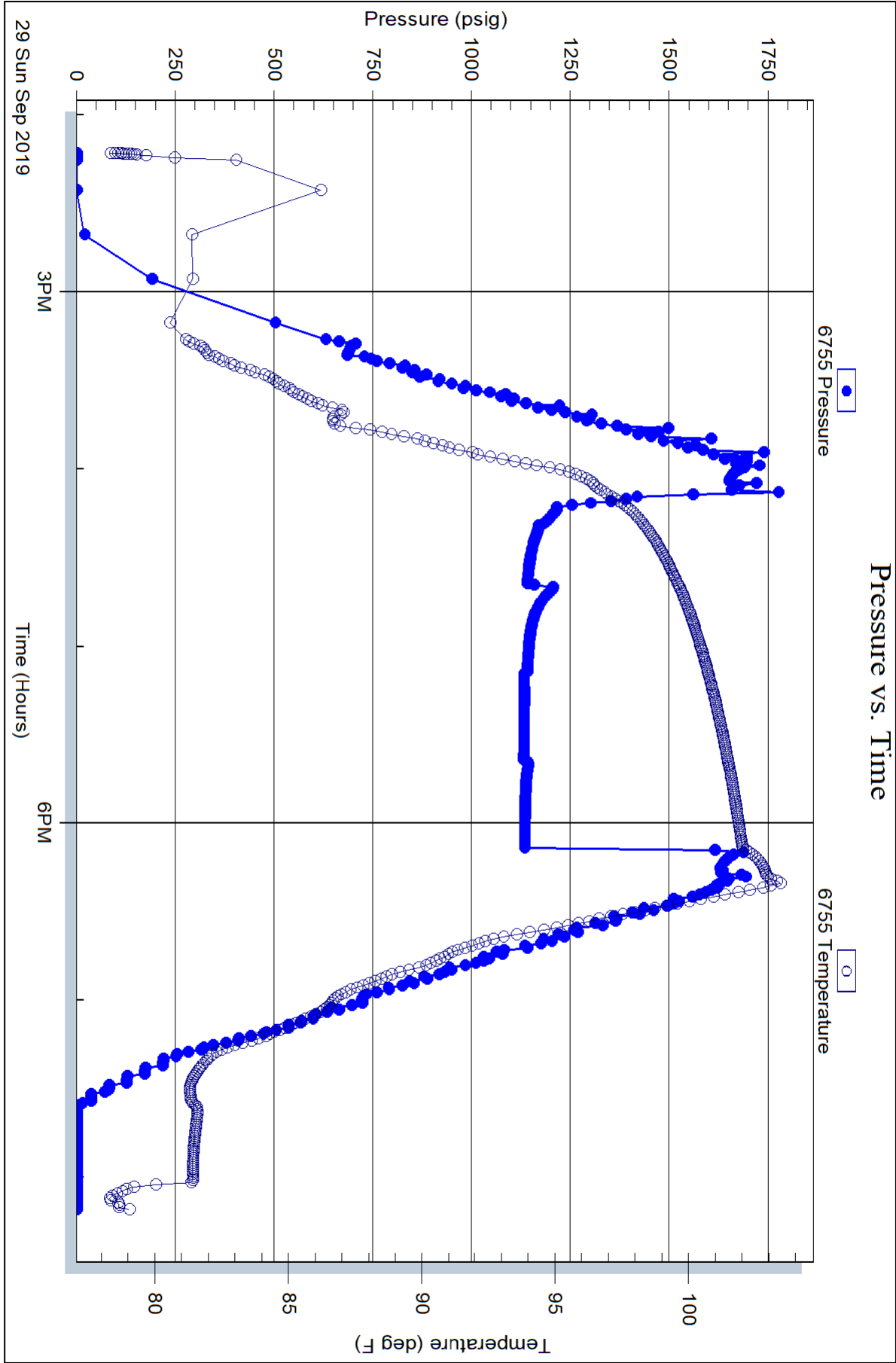


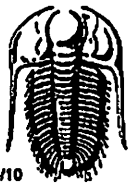
Serial #: 6755

Below (Straddled) Farmer Inc.

Morgenstern C#1

DST Test Number: 4





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 66295

NO.

Well Name & No. Morgenstern C#1 Test No. 1 Date 27 Sep 19
 Company John O Farmer Inc Elevation 1948 KB 1940 GL
 Address PO Box 352 Russell Kansas 67665
 Co. Rep / Geo. Austin Klaus Rig Discovery Rig 2
 Location: Sec. 13 Twp 16S Rge. 14W Co. Barton State KS

Interval Tested 3150-3208 Zone Tested Lausling/Kansas City A-D
 Anchor Length 58 Drill Pipe Run 3153 Mud Wt. 9.1
 Top Packer Depth 3145 Drill Collars Run — Vls 49
 Bottom Packer Depth 3150 Wt. Pipe Run — WL 9.6
 Total Depth 3208 Chlorides 5800 ppm System LCM 1#

Blow Description IF Blow built to 5 1/2 inches

ISF No blow back

FF Blow built to 5 inches

FSI No blow back

Rec <u>170</u>	Feet of <u>Muddy Water</u>	%gas	%oil	<u>70</u> %water	<u>30</u> %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 170 BHT 96 Gravity 1200 API RW 227 @ 71 °F Chlorides 29000 ppm

(A) Initial Hydrostatic 1545
 (B) First Initial Flow 19
 (C) First Final Flow 47
 (D) Initial Shut-In 367
 (E) Second Initial Flow 54
 (F) Second Final Flow 88
 (G) Final Shut-In 366
 (H) Final Hydrostatic 1518

☒ Test 1200
☐ Jars
☐ Safety Joint
☐ Circ Sub
☐ Hourly Standby
☒ Mileage 52 52
☐ Sampler
☐ Straddle
☐ Shale Packer
☐ Extra Packer
☐ Extra Recorder
☐ Day Standby
☐ Accessibility
 Sub Total 1252

T-On Location 12:54pm
 T-Started 1:56pm
 T-Open 3:49pm
 T-Pulled 6:49pm
 T-Out 8:35pm
 Comments
☐ EM Tool
☐ Ruined Shale Packer
☐ Ruined Packer
☐ Extra Copies
 Sub Total 0
 Total 1252
 MP/DST Disc't

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

Approved By _____

Our Representative Russell

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.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 66296

NO.

Well Name & No. Morgenstern C#1 Test No. 2 Date 28 Sept 19
 Company John O Farmer Inc. Elevation 1948 KB 1940 GL
 Address PO Box 352 Russell Kansas 67665
 Co. Rep / Geo. Austin Klaus Rig Discovery Rig 2
 Location: Sec. 13 Twp 16S Rge. 14W Co. Barton State KS

Interval Tested 3286-3342 Zone Tested Lansing/Kansas City H-J
 Anchor Length 56 Drill Pipe Run 3279 Mud Wt. 9.3
 Top Packer Depth 3281 Drill Collars Run — Vls 49
 Bottom Packer Depth 3286 Wt. Pipe Run — WL 9.6
 Total Depth 3342 Chlorides 7100 ppm System LCM 1#

Blow Description Blow Blow built to 1 3/4 inch
FSI No blowback
FF Blow built to 1/2 inch
FSI No blowback

Rec	Feet of	%gas	%oil	%water	%mud
15	05M				29

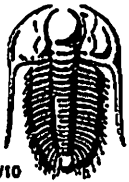
Rec Total 15 BHT 96 Gravity — API RW — @ — °F Chlorides — ppm
 (A) Initial Hydrostatic 1643 ☒ Test 1200 T-On Location 10:15 am
 (B) First Initial Flow 15 ☐ Jars — T-Started 10:19 am
 (C) First Final Flow 21 ☐ Safety Joint — T-Open 11:43 am
 (D) Initial Shut-In 234 ☐ Circ Sub — T-Pulled 1:43 pm
 (E) Second Initial Flow 24 ☐ Hourly Standby — T-Out 3:33 pm
 (F) Second Final Flow 27 ☒ Mileage 52 Comments —
 (G) Final Shut-In 140 ☐ Sampler —
 (H) Final Hydrostatic 1598 ☐ Straddle —

Initial Open 30 ☐ Shale Packer — ☐ EM Tool —
 Initial Shut-In 30 ☐ Extra Packer — ☐ Ruined Shale Packer —
 Final Flow 30 ☐ Extra Recorder — ☐ Ruined Packer —
 Final Shut-In 30 ☐ Day Standby — ☐ Extra Copies —
 Sub Total 1252 ☐ Accessibility — Sub Total 1252 MP/DST Dis't —

Approved By —

Our Representative —

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 66297

NO.

Well Name & No. Morgenstern C#1 Test No. 3 Date 29 Sep 15
 Company John O Farmer Inc Elevation 1948 KB 1940 GL
 Address PO Box 352 Russell Kansas 67665
 Co. Rep / Geo. Austin Klaus Rig Discovery Rig 2
 Location: Sec. 13 Twp 16S Rge. 14W Co. Barton State KS

Interval Tested 3345 - 3400 Zone Tested Arbuckle
 Anchor Length 55 Drill Pipe Run 3346 Mud Wt. 9.35
 Top Packer Depth 3340 Drill Collars Run - Vis 56
 Bottom Packer Depth 3345 Wt. Pipe Run - WL 8.8
 Total Depth 3450 Chlorides 8000 ppm System LCM 37

Blow Description IF Blow built to 1 3/4 inch
FSI No slow back
FF Blow to 1 inch
FSI No blow back

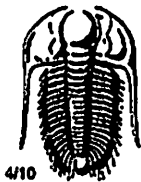
Rec	Feet of	%gas	%oil	%water	%mud
<u>45</u>	<u>05M</u>				<u>99</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 45 BHT 97 Gravity _____ API RW _____ @ _____ ° F Chlorides _____ ppm
 (A) Initial Hydrostatic 1668 ☒ Test 1200 T-On Location 7:52 am
 (B) First Initial Flow 21 ☐ Jars _____ T-Started 8:25 am
 (C) First Final Flow 28 ☐ Safety Joint _____ T-Open 9:49 am
 (D) Initial Shut-In 934 ☐ Circ Sub _____ T-Pulled 11:49 am
 (E) Second Initial Flow 32 ☐ Hourly Standby _____ T-Out 1:31 pm
 (F) Second Final Flow 37 ☒ Mileage 52 Comments _____
 (G) Final Shut-In 750 ☐ Sampler _____
 (H) Final Hydrostatic 1654 ☒ Straddle 600

Initial Open <u>30</u>	☐ Shale Packer _____	☐ EM Tool _____
Initial Shut-In <u>30</u>	☐ Extra Packer _____	☐ Ruined Shale Packer _____
Final Flow <u>30</u>	☐ Extra Recorder _____	☐ Ruined Packer _____
Final Shut-In <u>30</u>	☐ Day Standby _____	☐ Extra Copies _____
	☐ Accessibility _____	Sub Total <u>0</u>
	Sub Total <u>1852</u>	Total <u>1852</u>
		MP/DST Disc't _____

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 66298

NO.

Well Name & No. Morgenstern C#1 Test No. 4 Date 27 Sep 19
 Company John O Farmer Inc Elevation 1948 KB 1940 GL
 Address PO Box 352 Russell Kansas 67665
 Co. Rep / Geo. Austin Klaus Rig D. Recovery Rig 2
 Location: Sec. 13 Twp 16S Rge. 14W Co. Barton State KS

Interval Tested 3345-3412 Zone Tested Arbuckle
 Anchor Length 67 Drill Pipe Run 3346 Mud Wt. 9.35
 Top Packer Depth 3340 Drill Collars Run — Vis 56
 Bottom Packer Depth 3345 Wt. Pipe Run — WL 8.8
 Total Depth 3450 Chlorides 8000 ppm System LCM 3#

Blow Description IF Blow to BOB 19 minutes total build 18 inches

ISI No blow back

FF Blow to BOB 24 minutes total build 16 inches

FSI Light surface blow back

Rec <u>387</u>	Feet of <u>OSMW</u>	%gas <u>1</u>	%oil <u>59</u>	%water <u>40</u>	%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 387 BHT 103 Gravity 1200 API RW 265 @ 77°F Chlorides 22000 ppm

- (A) Initial Hydrostatic 1698
- (B) First Initial Flow 21
- (C) First Final Flow 136
- (D) Initial Shut-In 1072
- (E) Second Initial Flow 137
- (F) Second Final Flow 191
- (G) Final Shut-In 1069
- (H) Final Hydrostatic 1664

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

- ☒ Test 1200
- ☐ Jars
- ☐ Safety Joint
- ☐ Circ Sub
- ☐ Hourly Standby
- ☒ Mileage 52
- ☐ Sampler
- ☒ Straddle 600
- ☐ Shale Packer
- ☐ Extra Packer
- ☐ Extra Recorder
- ☐ Day Standby
- ☐ Accessibility
- Sub Total 1800

T-On Location
 T-Started 2:13 pm
 T-Open 4:08 pm
 T-Pulled 6:08 pm
 T-Out 8:11 pm
 Comments

☐ EM Tool
☐ Ruined Shale Packer
☐ Ruined Packer
☐ Extra Copies
 Sub Total 0
 Total 1800

MP/DST Disc't

Approved By

Our Representative Phil Jones

TriLOBITE Testing Inc. shall not be liable for damaged or 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.



AUSTIN B. KLAUS



Cell 785.650.3629
Work 785.483.3145
Ext 225

PO BOX 352
Russell, KS 67665
austin.klaus@johnofarmer.com

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

Well Name:	Morgenstern C #1		
API:	15-009-26,269-0000		
Location:	Barton County		
License Number:		Region:	Kansas
Spud Date:	9/23/2019	Drilling Completed:	9/28/2019
Surface Coordinates:	975' FNL & 100' FWL		
	Section 13, Township 16 South, Range 14 West		
Bottom Hole	Vertical well w/ minimal deviation, same as above		
Coordinates:			
Ground Elevation (ft):	1,940	K.B. Elevation (ft):	1,948
Logged Interval (ft):	2,800	To:	RTD
		Total Depth (ft):	3,450
Formation:	LKC-Arbuckle		
Type of Drilling Fluid:	Chemical (Mud Co.)		

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

OPERATOR

Company: John O. Farmer, Inc.
Address: 370 W. Wichita Ave.
Russell, KS 67665

Comments

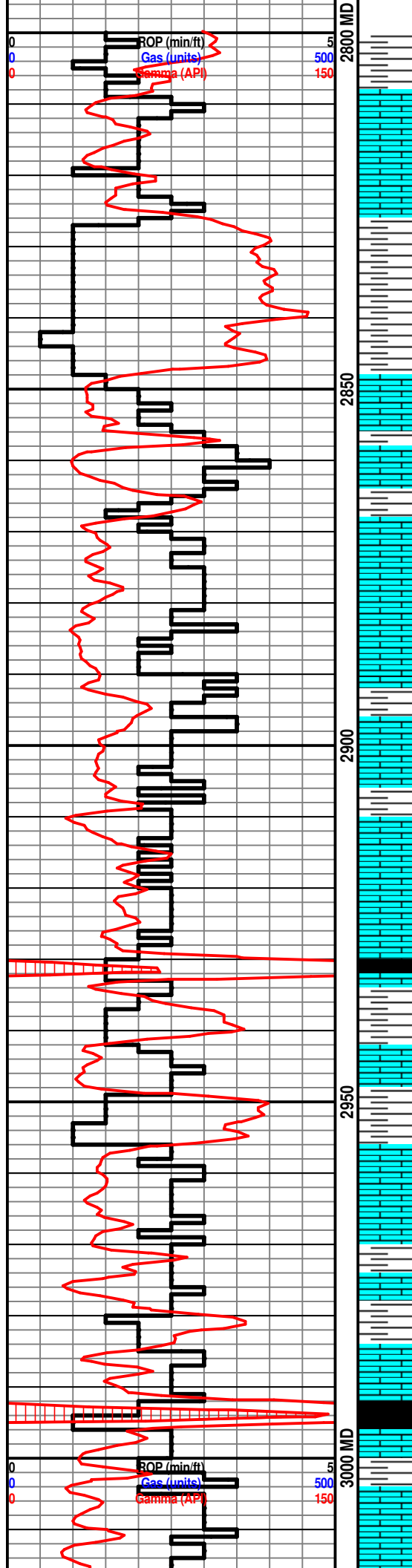
The Morgenstern C #1 well was drilled by Discovery Drilling Rig #2 (Tool Pusher: Terry Wickham).

The location for the Morgenstern C #1 was discovered via 3D seismic survey. Rock samples were gathered and evaluated from 2,800' - 3,450'. Oil shows were encountered in the LKC B, C, J, & Arbuckle. Structurally, the Lansing top was picked flat to the comparison well, Morgenstern A #1 (John O. Farmer, Inc.). Structural thickening occurred below the B/KC, which resulted in an Arbuckle top that was 12' low to the comparison well. Two bottom-hole tests were conducted over the Lansing A-D & Lansing H-K, both yielding negative results. Two straddle tests were conducted over the Arbuckle, which were also negative. After evaluation of all oil shows, drill stem test results, & electric logs, the decision was made to plug and abandon the Morgenstern C #1 well on 9/29/2019.

 Anhy
 Bent
 Brec
 Cht
 Clyst
 Coal
 Congl
 Dol
 Gyp
 Igne
 Lmst
 Meta
 Mrlst
 Salt
 Shale
 Shcol
 Shgy
 Sltst
 Ss
 Till

POROSITY	Vuggy	ROUNDING	Spotted	EVENT
Earthy		Rounded	Ques	Rft
Fenest	SORTING	Subrnd	Dead	Sidewall
Fracture	Well	Subang		
Inter	Moderate	Angular	INTERVAL	
Moldic	Poor		Core	
Organic		OIL SHOW	Dst	
Pinpoint		Even		

[illegible]



Sh: lt-drk gry

Ls: tan-gry, fn-sub xln, mostly DNS

Sh: lt-drk gry

Topeka 2851' (-903)

Ls: off wh-tan, fn-sub xln, mostly DNS

Sh: lt-drk gry

Ls: off wh-tan, fn xln, scat foss, scat vuggy porosity, sl edge stn, NSFO

Ls: tan-lt gry, fn-sub xln, mostly DNS

Ls: ala

Sh: drk gry-blk

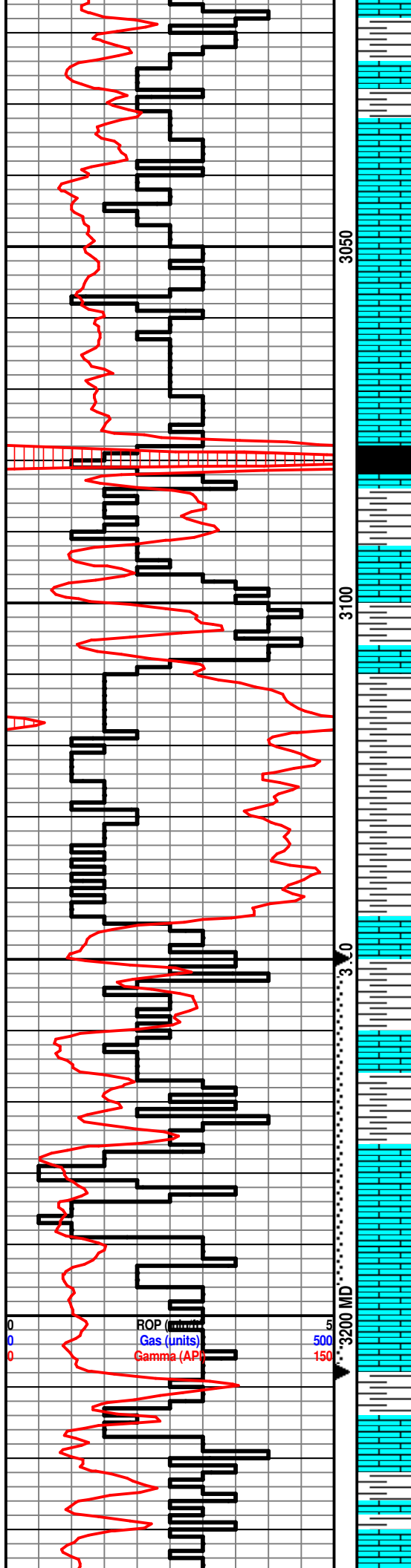
Sh: lt gry

Ls: tan-lt gry, fn-sub xln, mostly DNS, scat foss

Ls: ala

Sh: drk gry-blk

Ls: lt gry-tan, fn xln, scat foss, poor int xln porosity



Ls: ala

Ls: tan-lt gry, fn xln, poor int xln & scat vuggy porosity, NSFO

Ls: tan-lt gry, fn-sub xln, mostly DNS, NSFO

Heebner 3078' (-1130)

Sh: blk, carb, fissile

Sh: lt-drk gry, scat brn

Ls: off wh-tan, fn xln, poor int xln porosity, barren

Sh: vry lt gry, soft

Sh: ala

Sh: lt gry-brn, vry soft

Ls: off wh-tan, fn xln, poor vuggy porosity, barren

Lansing 3160' (-1212)

Ls: off wh-tan, fn xln, scat int xln & pp vuggy porosity, scat edge stn, NSFO

Sh: lt-drk gry

Ls: off wh-tan, fn xln, ool, fair-good oom porosity, fair-good oil stn, VSSFO, sl-fair odor

Ls: off wh-tan, fn xln, ool, fair-good oom porosity, scat-fair oil stn, SSFO, fair odor

Ls: off wh-tan, fn xln, scat int xln & scat vuggy porosity, barren

Sh: lt-drk gry

Ls: off wh-tan, fn xln, scat int xln & vuggy porosity, scat edge stn, NSFO, scat chalk

Sh: lt-drk gry-brn

Ls: off wh-tan, fn xln, poor int xln porosity, barren

DST #1 3,150-3,208' (LKC A-D)

30"-30"-30"-30"

IF: weak blow built to 5.5"

FF: weak blow built to 5"

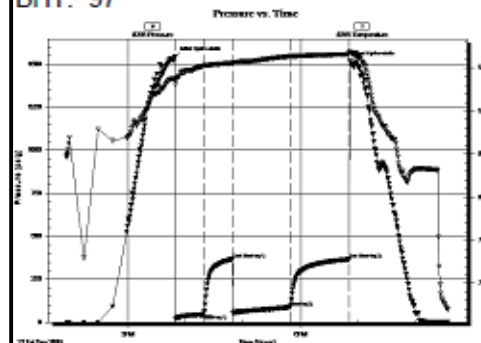
Rec: 170' Muddy Water (30% M, 70% W)

FP: 20-48, 55-89#

SIP: 368-367#

HP: 1,545- 1,518#

BHT: 97°



Wt: 9.1

Vis: 49

DST #2 3,286-3,342' (LKC H-J)

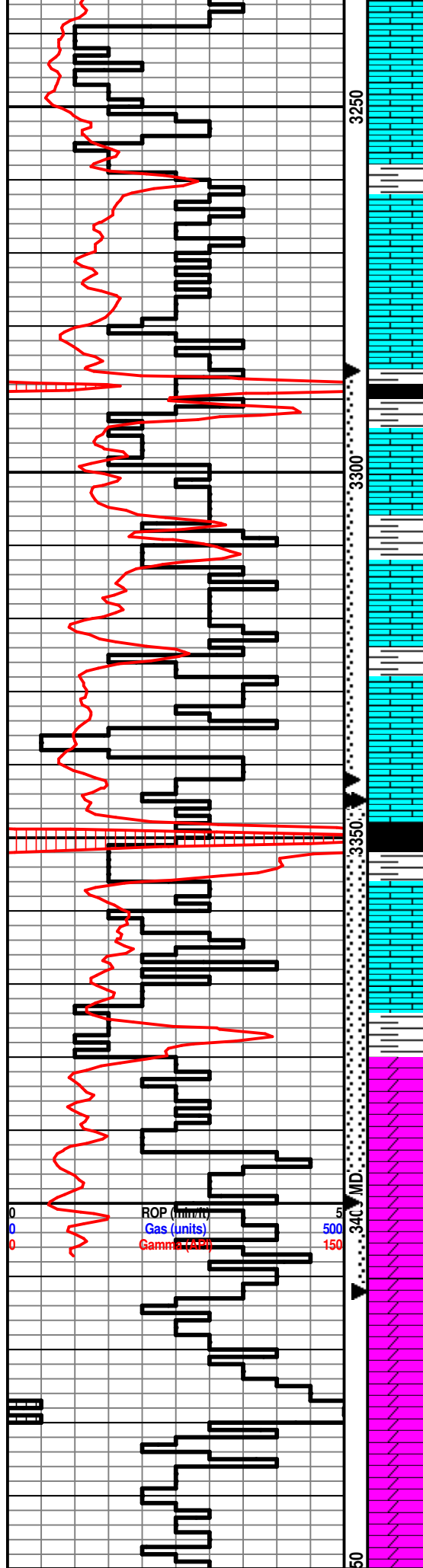
30"-30"-30"-30"

IF: weak blow built to 1.75"

FF: weak blow built to .5"

Rec: 15' Very Slight Oil Cut Mud (1% O, 99% M)

FP: 16-22, 25-28#



Ls: off wh-tan-crm, fn xln, ool, fair oom porosity, fair oil stn, VSSFO in few rxns, fair odor

Ls: off wh-tan-gry, fn xln, scat int xln porosity, barren

Ls: ala

Ls: off wh-tan-gry, fn xln, scat-poor int xln porosity, barren

Sh: drk gry-blk, carb

Ls: tan-lt gry, fn xln, poor int xln porosity, NSFO

Sh: lt-drk gry

Ls: off wh-tan-lt gry, fn xln, poor int xln porosity, scat vuggy porosity, mostly barren

Sh: lt-drk gry

Ls: off wh-tan, fn xln, ool, fair oom porosity, fair-good oil stn, SSFO, fair-good odor

B/KC 3350' (-1402)

Sh: lt-drk gry

Ls: off wh-tan-lt gry, fn xln, poor int xln porosity, NSFO

Ls: off wh-tan, fn xln, fair int xln & scat vuggy porosity, fair-good oil stn, SSFO, sl odor

Arbuckle 3380' (-1432)

Dolo: off wh-tan-brn, fn xln, poor-fair int xln porosity, fair oil sat, SSFO, fair-good odor

Dolo: off wh-tan-brn, fn-md xln, fair-good int xln porosity, fair-good oil sat, SSFO, good odor

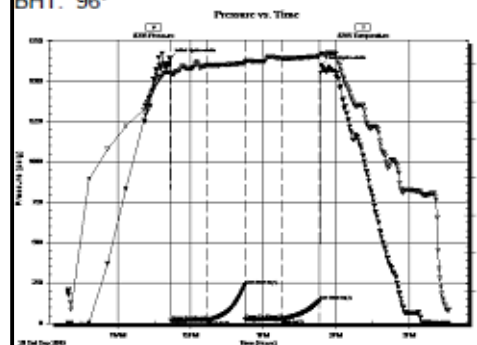
Dolo: off wh-tan-brn, fn-md xln, scat fair int xln porosity, fair-good oil sat, SSFO, fair-good odor

Dolo: off wh-tan-brn, fn-md xln, poor-fair int xln porosity, scat fair oil stn, VSSFO, sl-fair odor

Dolo: off wh-tan, fn-md xln, poor int xln porosity, NSFO

Dolo: off wh-tan, fn xln, poor int xln porosity, NSFO, hvy chert: wh, shrp

SIP: 235-141#
HP: 1,643-1,599#
BHT: 96°



Wt: 9.3
Vis: 49

DST #3 3,345-3,400' (Top 19' of Arbuckle)

30"-30"-30"-30"

IF: weak surface blow built to 1.75"

FF: weak blow built to 1"

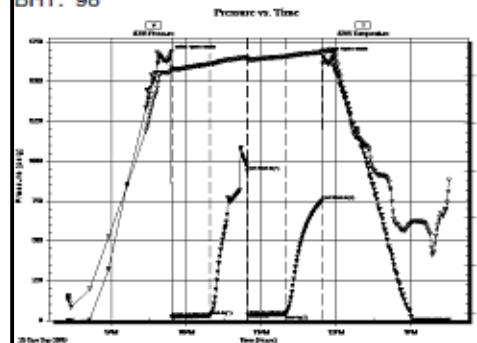
Rec: 45' Very Slight Oil Cut Mud (1% O, 99% M)

FP: 21-29, 32-38#

SIP: 935-751#

HP: 1,668-1,654#

BHT: 98°



DST #4 3,345-3,412' (Top 31' of Arbuckle)

30"-30"-30"-30"

IF: BOB in 19 minutes, no blow on shut in

FF: BOB in 24 minutes, no blow back on shut in

Rec: 387' Slight Oil Cut Muddy Water (1% O, 40% M, 59% W)

FP: 21-137, 138-192#

SIP: 1,073-1,070#

HP: 1,698-1,665#

BHT: 101°

