Confidentiality Requested:
☑ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

1211632

Form ACO-1
August 2013
Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 3842
Name: Larson Engineering, Inc. dba Larson Operating Company
Address 1: 562 W STATE RD 4
Address 2:
City: OLMITZ State: KS Zip: 67564 + 8561
Contact Person: Thomas Larson
Phone: (620) 653-7368
CONTRACTOR: License # 33935
Name: H. D. Drilling, LLC
Wellsite Geologist: Vernon Schrag
Purchaser:

Designate Type of Completion:

☑ New Well ☐ Re-Entry ☐ Workover

☐ Oil ☐ WSW ☐ SWD ☐ SIOW
☐ Gas ☑ D&A ☐ ENHR ☐ SIGW
☐ OG ☐ GSW ☐ Temp. Abd.
☐ 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 ENHR ☐ Conv. to SWD
☐ Plug Back ☐ Conv. to GSW ☐ Conv. to Producer

☐ Commingled Permit #:
☐ Dual Completion Permit #:
☐ SWD Permit #:
☐ ENHR Permit #:
☐ GSW Permit #:

3/7/2014	3/18/2014	3/18/2014
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No. 15 - 15-101-22499-00-00
Spot Description:
SE - NE - NE - SE Sec. 9 Twp. 18 S. R. 29 ☐ East ☑ West
2290 Feet from ☐ North / ☑ South Line of Section
155 Feet from ☑ East / ☐ West Line of Section

Footages Calculated from Nearest Outside Section Corner:
☐ NE ☐ NW ☑ SE ☐ SW

GPS Location: Lat: *(e.g. xx.xxxxx)* , Long: *(e.g. -xxx.xxxxx)*
Datum: ☐ NAD27 ☐ NAD83 ☐ WGS84
County: Lane
Lease Name: McKenna Unit Well #: 1-9
Field Name:
Producing Formation: N/A
Elevation: Ground: 2797 Kelly Bushing: 2804
Total Vertical Depth: 4625 Plug Back Total Depth:
Amount of Surface Pipe Set and Cemented at: 264 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: 12000 ppm Fluid volume: 1400 bbls
Dewatering method used: Evaporated

Location of fluid disposal if hauled offsite:

Operator Name:
Lease Name: License #:
Quarter Sec. Twp. S. R. ☐ East ☐ West
County: Permit #:

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

☑ **Confidentiality Requested**
Date: 07/03/2014
☑ **Confidential Release Date:** 07/02/2016
☑ **Wireline Log Received**
☑ **Geologist Report Received**
☐ **UIC Distribution**
ALT ☐ I ☑ II ☐ III **Approved by:** NAOMI JAMES **Date:** 07/07/2014

[redacted] 1211632

Operator Name: Larson Engineering, Inc. dba Larson Operating Company Lease Name: McKenna Unit Well #: 1-9

Sec. 9 Twp. 18 S. R. 29 ☐ East ☑ West County: Lane

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken ☑ Yes ☐ No
(Attach Additional Sheets)

Samples Sent to Geological Survey ☐ Yes ☑ No

Cores Taken ☐ Yes ☑ No

Electric Log Run ☑ Yes ☐ No

List All E. Logs Run:

Dual Induction
Dual Comp Porosity
Microresistivity

☑ Log Formation (Top), Depth and Datum ☐ Sample

Name: Attached Top: Attached Datum: Attached

CASING RECORD ☑ New ☐ Used
Report all strings set-conductor, surface, intermediate, production, etc.

Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives
Surface	12.25	8.625	20	264	Class A	175	2% gel, 3% CC

ADDITIONAL CEMENTING / SQUEEZE RECORD

Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
___ Perforate ___ Protect Casing ___ Plug Back TD ___ Plug Off Zone	-			
	-			

Did you perform a hydraulic fracturing treatment on this well? ☐ Yes ☑ No *(If No, skip questions 2 and 3)*

Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? ☐ Yes ☐ No *(If No, skip question 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)*

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record *(Amount and Kind of Material Used)*	Depth

TUBING RECORD: Size: Set At: Packer At: Liner Run: ☐ Yes ☐ No

Date of First, Resumed Production, SWD or ENHR. Producing Method: ☐ Flowing ☐ Pumping ☐ Gas Lift ☐ Other *(Explain)*

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

DISPOSITION OF GAS:
☐ Vented ☐ Sold ☐ Used on Lease
(If vented, Submit ACO-18.)

METHOD OF COMPLETION:
☐ Open Hole ☐ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)*
☑ Other *(Specify)* D & A

PRODUCTION INTERVAL:

Form	ACO1 - Well Completion
Operator	Larson Engineering, Inc. dba Larson Operating Company
Well Name	McKenna Unit 1-9
Doc ID	1211632

Tops

Name	Top	Datum
Anhydrite	2160	+644
B/ Anhydrite	2193	+611
Heebner	3908	-1104
Lansing	3951	-1147
Stark Sh	4218	-1414
Marmaton	4354	-1550
Pawnee	4412	-1608
Ft. Scott	4466	-1662
Cherokee Sh	4491	-1687
Mississippi	4587	-1783

Form	ACO1 - Well Completion
Operator	Larson Engineering, Inc. dba Larson Operating Company
Well Name	McKenna Unit 1-9
Doc ID	1211632

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	20	264	Class A	175	2% gel, 3% CC

TICKET NUMBER 43090
LOCATION Oaklex KS
FOREMAN Miles Shaw

2066387

CONSOLIDATED Oil Well Services, LLC

PO Box 884, Chanute, KS 66720
620-431-9210 or 800-467-8676

FIELD TICKET & TREATMENT REPORT
CEMENT

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
3-7-14	4802	McKeans Unit #1-9	9	18S	09W	Labette

CUSTOMER: Larson Engineering
MAILING ADDRESS:
CITY: STATE: ZIP CODE:

Diighton Unit Wells Unit Wells

TRUCK #	DRIVER	TRUCK #	DRIVER
405	Jordan / Cody R		
506	Jeremy R		

JOB TYPE Surface HOLE SIZE 12¼" HOLE DEPTH 266' CASING SIZE & WEIGHT 8⅝ 20#
CASING DEPTH 266 DRILL PIPE TUBING OTHER
SLURRY WEIGHT 14.8# SLURRY VOL 1.36 WATER gal/sk CEMENT LEFT In CASING 20'
DISPLACEMENT 15½ bbls DISPLACEMENT PSI MIX PSI RATE

REMARKS: Safety Meeting and rig up on HD drilling Rig #3 Circulate Casing Mix 175sks Class A cement with 3% calcium 2% gel displace 15½ bbls Water Shut in Cement did Circulate 5 bbls to pit

Thanks Miles & Crew

ACCOUNT CODE	QUANITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
54015	1	PUMP CHARGE	1150.00	1150.00
5406	35	MILEAGE	5.25	183.75
5407	8.23 tons	Ton Mileage delivery	1.75	504.35
1102	493 #	Calcium Chloride	.94	463.42
11045	175 sks	Class A Cement	18.55	3246.25
11188	329 #	Bentonite gel	.27	88.83
			Subtotal	5636.60
		completed less 10% discount		563.66
			Subtotal	5072.94
		7.15	SALES TAX	244.43
			ESTIMATED TOTAL	5317.37

Ravin 3737

AUTHORIZTION [signature] TITLE Pusher DATE 3-7-14

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.

CONSOLIDATED
Oil Well Services, LLC
PO Box 884, Chanute, KS 66720
620-431-9210 or 800-467-8676

266620

TICKET NUMBER 30162
LOCATION Oakley, KS
FOREMAN Kevin Yats

FIELD TICKET & TREATMENT REPORT
CEMENT

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
3-18-14	4802	McKenna Unit 1-16	9	18S	29W	Gove

CUSTOMER: Larson Eng.
MAILING ADDRESS:
CITY: STATE: ZIP CODE:

Dighton W to Ike N to Rig W side

TRUCK #	DRIVER	TRUCK #	DRIVER
399	Travis W		
566	Jeremy R		
955 ext	Dale R		

JOB TYPE Plug HOLE SIZE 7 7/8 HOLE DEPTH 4625 CASING SIZE & WEIGHT
CASING DEPTH 0 DRILL PIPE 4 1/2 TUBING OTHER
SLURRY WEIGHT 13.8 SLURRY VOL WATER gal/sk CEMENT LEFT in CASING
DISPLACEMENT DISPLACEMENT PSI MIX PSI RATE

REMARKS: Safty meeting - rig upon HD rig 3 plugs as ordered with 280 sks 60/40 poz 4% bentonite gel and 1/4# flosseal per sk
50 sks @ 2190'
80 sks @ 1400'
50 sks @ 690'
50 sks @ 300'
20 sks @ 60'
30 sks RH

Thank You
Jerry & Crew

ACCOUNT CODE	QUANITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
5405N	1	PUMP CHARGE	1395.00	1395.00
5406	35	MILEAGE	5.25	183.75
5407	12	ton mileage delivery	1.25	735.00
1131	280 sks	60/40 poz mix	15.86	4440.80
1118B	980 #	bentonite gel	.27	264.60
1107	70 #	flosseal	2.97	207.90
			Subtotal	7227.05
			less 10% disc.	722.71
			Subtotal	6504.34
		completed		
		7.15	SALES TAX	316.17
			ESTIMATED TOTAL	6820.51

Ravin 3737

AUTHORIZTION Christine Larson TITLE Owner DATE 3-15-14

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this for

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Larson Engineering, Inc.**

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

McKenna Unit #1-9

9-18s-29w Lane,KS

Start Date: 2014.03.13 @ 14:33:00

End Date: 2014.03.13 @ 18:47:45

Job Ticket #: 56362 DST #: 1

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.03.20 @ 17:40:38

DRILL STEM TEST REPORT

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56362 **DST#: 1**

Test Start: 2014.03.13 @ 14:33:00

GENERAL INFORMATION:

Formation: **" I "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 16:16:30
Time Test Ended: 18:47:45

Test Type: Conventional Bottom Hole (Initial)
Tester: Samuel Esparza
Unit No: 71

Interval: 4159.00 ft (KB) To 4185.00 ft (KB) (TVD)
Total Depth: 4185.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

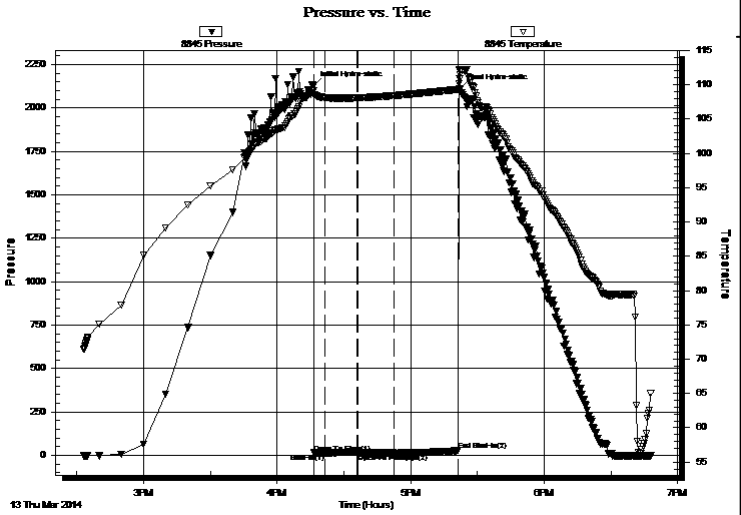
Reference Elevations: 2804.00 ft (KB)
2797.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8845 **Outside**

Press@RunDepth: 12.99 psig @ 4160.00 ft (KB)
Start Date: 2014.03.13 End Date: 2014.03.13
Start Time: 14:33:05 End Time: 18:47:45

Capacity: 8000.00 psig
Last Calib.: 2014.03.13
Time On Btm: 2014.03.13 @ 16:16:15
Time Off Btm: 2014.03.13 @ 17:22:00

TEST COMMENT: IF: Weak Surface Blow .
ISI: No Return.
FF: Weak Surface Blow Died @ 11min.
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2129.63	109.19	Initial Hydro-static
1	14.14	108.47	Open To Flow (1)
5	14.50	108.11	Shut-In(1)
20	19.96	108.08	End Shut-In(1)
20	13.20	108.09	Open To Flow (2)
36	12.99	108.41	Shut-In(2)
65	27.92	109.32	End Shut-In(2)
66	2112.44	110.92	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100m (Oil Spots)	0.02

Gas Rates

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

DRILL STEM TEST REPORT

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56362 **DST#: 1**

Test Start: 2014.03.13 @ 14:33:00

GENERAL INFORMATION:

Formation: **" I "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 16:16:30
Time Test Ended: 18:47:45

Test Type: Conventional Bottom Hole (Initial)
Tester: Samuel Esparza
Unit No: 71

Interval: 4159.00 ft (KB) To 4185.00 ft (KB) (TVD)
Total Depth: 4185.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

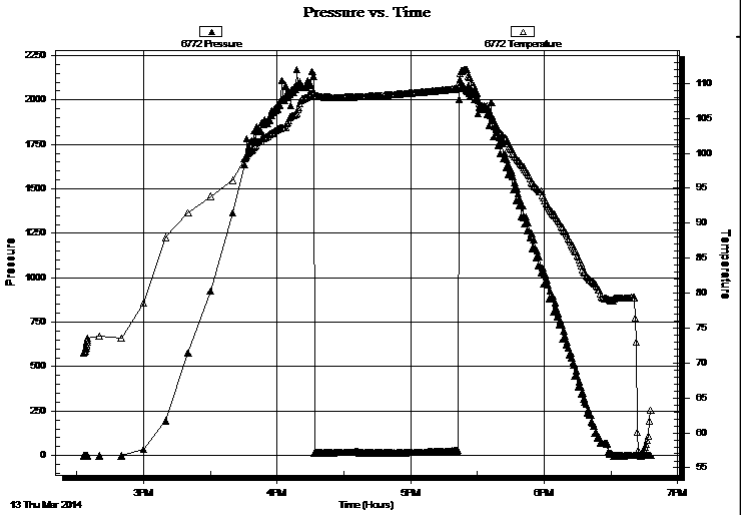
Reference Elevations: 2804.00 ft (KB)
2797.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 6772 **Outside**

Press@RunDepth: psig @ 4160.00 ft (KB)
Start Date: 2014.03.13 End Date: 2014.03.13
Start Time: 14:33:05 End Time: 18:48:00

Capacity: 8000.00 psig
Last Calib.: 2014.03.13
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: Weak Surface Blow .
ISI: No Return.
FF: Weak Surface Blow Died @ 11min.
FSI: No Return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100m (Oil Spots)	0.02

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56362 **DST#: 1**

Test Start: 2014.03.13 @ 14:33:00

Tool Information

Drill Pipe:	Length:	4044.00 ft	Diameter:	3.80 inches	Volume:	56.73 bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	
Drill Collar:	Length:	116.00 ft	Diameter:	2.25 inches	Volume:	0.57 bbl	
					Total Volume:	57.30 bbl	

Drill Pipe Above KB:	29.00 ft
Depth to Top Packer:	4159.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	26.00 ft
Tool Length:	54.00 ft
Number of Packers:	2 Diameter: 6.75 inches

Tool Weight:		2000.00 lb
Weight set on Packer:		30000.00 lb
Weight to Pull Loose:		70000.00 lb
Tool Chased		0.00 ft
String Weight:	Initial	54000.00 lb
	Final	54000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Change Over Sub	1.00			4132.00		
Shut In Tool	5.00			4137.00		
Hydraulic tool	5.00			4142.00		
Jars	5.00			4147.00		
Safety Joint	3.00			4150.00		
Packer	5.00			4155.00	28.00	Bottom Of Top Packer
Packer	4.00			4159.00		
Stubb	1.00			4160.00		
Recorder	0.00	6772	Outside	4160.00		
Recorder	0.00	8845	Outside	4160.00		
Perforations	20.00			4180.00		
Bullnose	5.00			4185.00	26.00	Bottom Packers & Anchor
Total Tool Length:	**54.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56362 **DST#: 1**

Test Start: 2014.03.13 @ 14:33:00

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:	52.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	8.38 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2100.00 ppm				
Filter Cake:	2.00 inches				

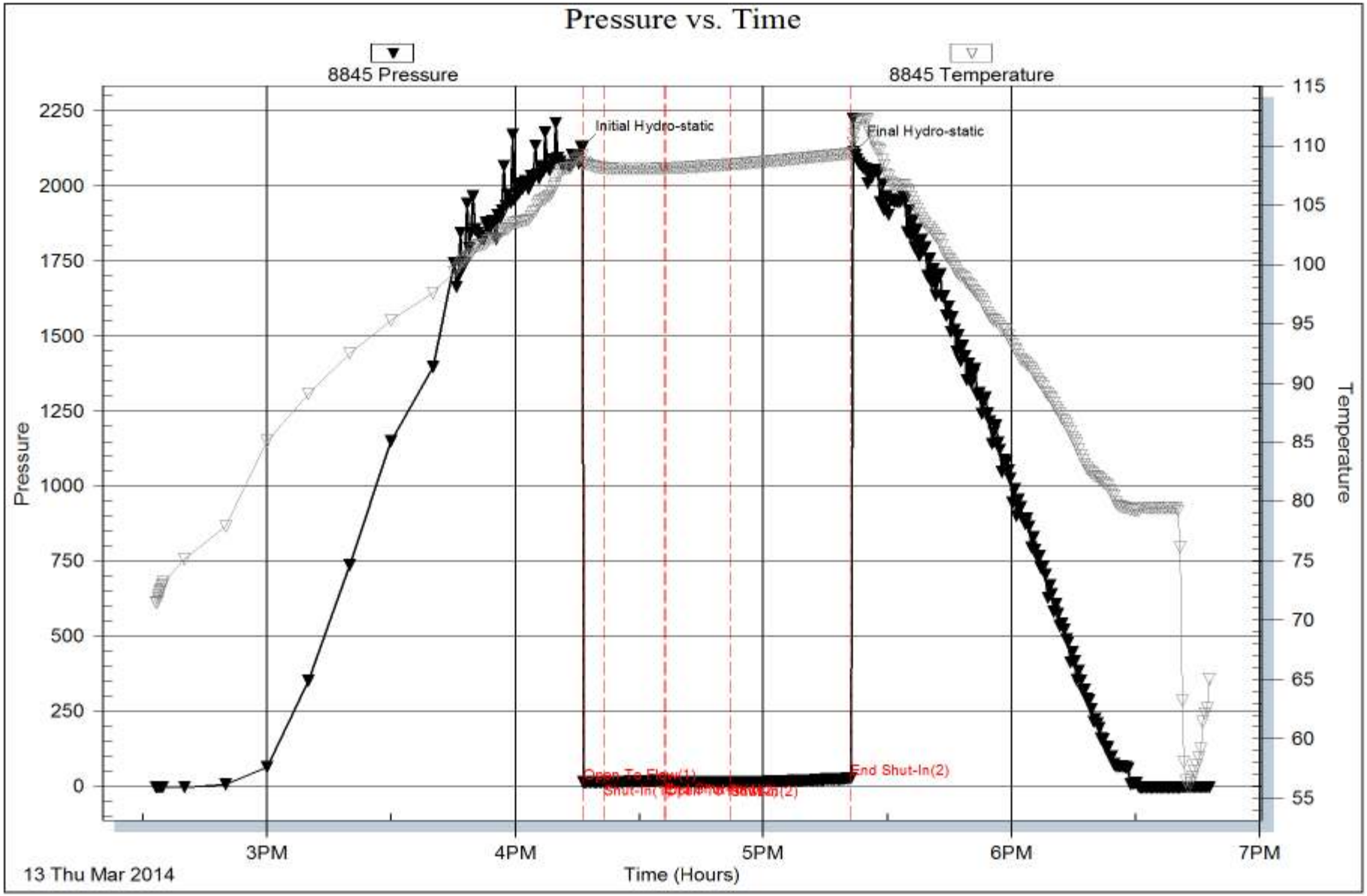
Recovery Information

Recovery Table

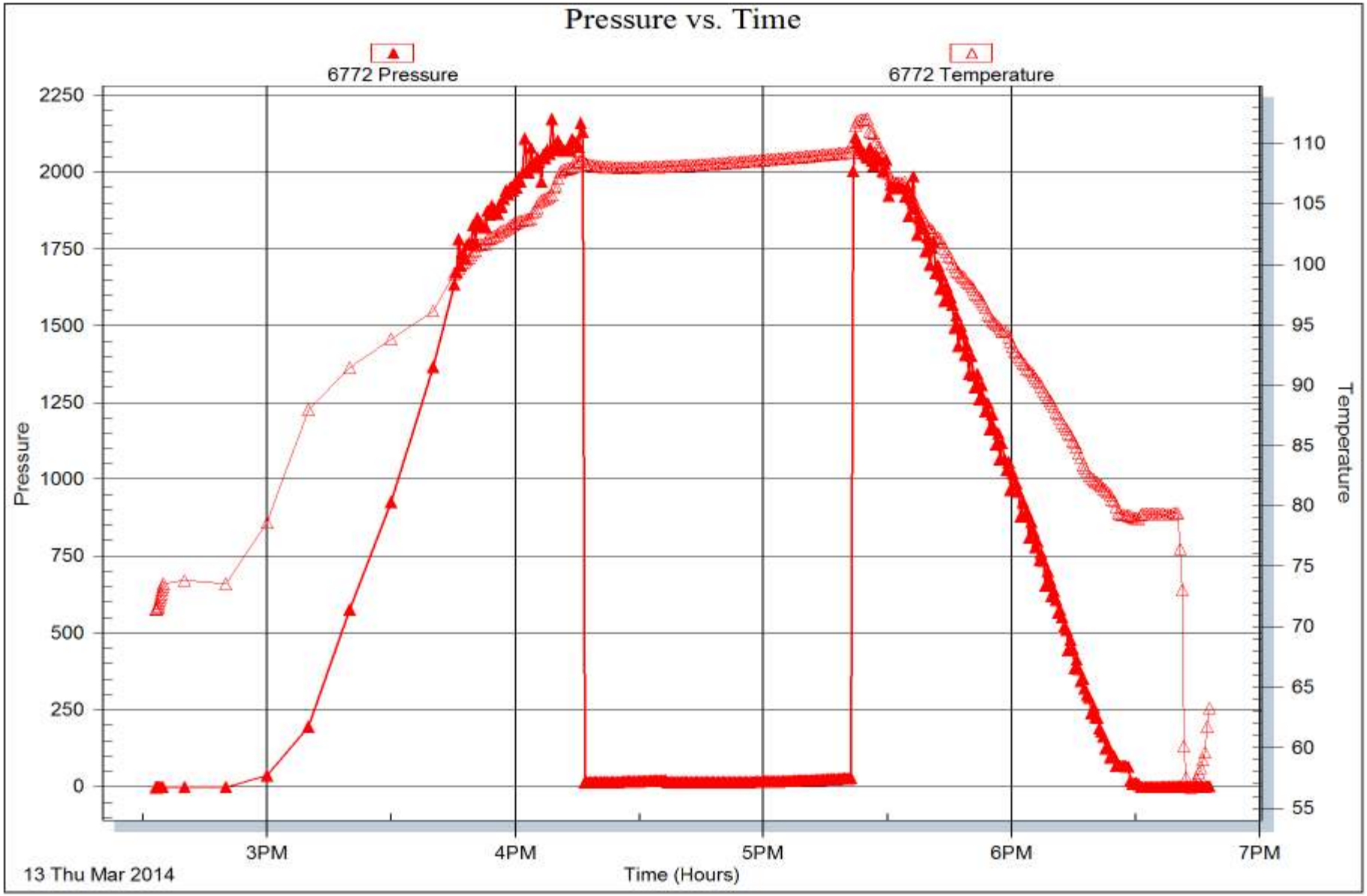
Length ft	Description	Volume bbl
5.00	Mud 100m (Oil Spots)	0.025

Total Length: 5.00 ft Total Volume: 0.025 bbl

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


Pressure vs. Time
8845 Pressure
8845 Temperature
Initial Hydro-static
Final Hydro-static
Open To Flow(1)
End Shut-In(2)
Pressure
Temperature
2250
2000
1750
1500
1250
1000
750
500
250
0
115
110
105
100
95
90
85
80
75
70
65
60
55
3PM
4PM
5PM
6PM
7PM
13 Thu Mar 2014
Time (Hours)

Serial #: 6772 **Outside** Larson Engineering, Inc. McKenna Unit #1-9 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 56362 Printed: 2014.03.20 @ 17:40:40

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Larson Engineering, Inc.**

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

McKenna Unit #1-9

9-18s-29w Lane,KS

Start Date: 2014.03.14 @ 15:07:00
End Date: 2014.03.14 @ 19:20:30
Job Ticket #: 56363 DST #: 2

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.03.20 @ 17:40:17

DRILL STEM TEST REPORT

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56363 **DST#: 2**

Test Start: 2014.03.14 @ 15:07:00

GENERAL INFORMATION:

Formation: **" L "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 16:41:30
Time Test Ended: 19:20:30

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4250.00 ft (KB) To 4268.00 ft (KB) (TVD)
Total Depth: 4268.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

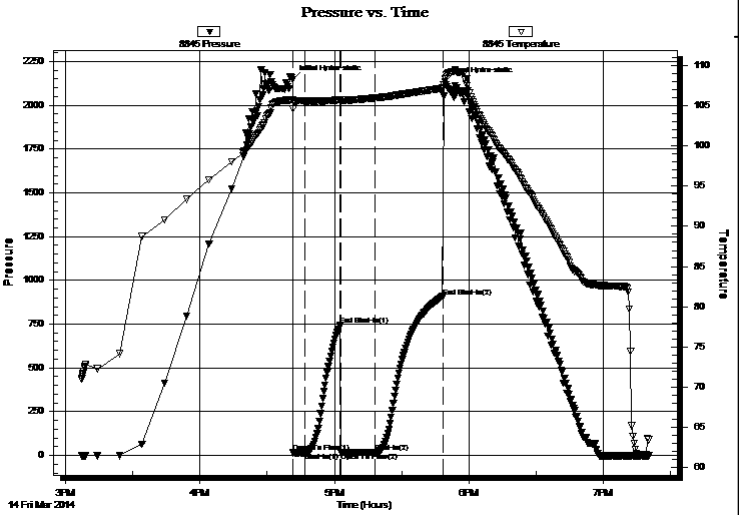
Reference Elevations: 2804.00 ft (KB)
2797.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8845 **Outside**

Press@RunDepth: 17.39 psig @ 4251.00 ft (KB)
Start Date: 2014.03.14 End Date: 2014.03.14
Start Time: 15:07:05 End Time: 19:20:30

Capacity: 8000.00 psig
Last Calib.: 2014.03.14
Time On Btm: 2014.03.14 @ 16:41:15
Time Off Btm: 2014.03.14 @ 17:49:15

TEST COMMENT: IF: Weak Surface Blow .
ISI: No Return.
FF: No Blow .
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2148.84	105.72	Initial Hydro-static
1	15.28	104.62	Open To Flow (1)
6	15.78	105.56	Shut-In(1)
22	746.61	105.72	End Shut-In(1)
22	16.04	105.51	Open To Flow (2)
37	17.39	105.94	Shut-In(2)
67	907.53	107.16	End Shut-In(2)
68	2134.41	108.38	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100m	0.02

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56363 **DST#: 2**

Test Start: 2014.03.14 @ 15:07:00

GENERAL INFORMATION:

Formation: **" L "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 16:41:30
Time Test Ended: 19:20:30

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4250.00 ft (KB) To 4268.00 ft (KB) (TVD)
Total Depth: 4268.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

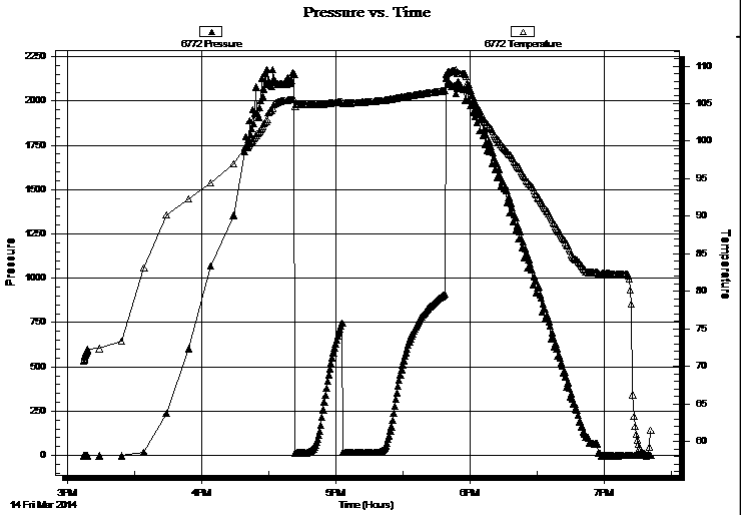
Reference Elevations: 2804.00 ft (KB)
2797.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 6772 **Outside**

Press@RunDepth: psig @ 4251.00 ft (KB)
Start Date: 2014.03.14 End Date: 2014.03.14
Start Time: 15:07:05 End Time: 19:20:45

Capacity: 8000.00 psig
Last Calib.: 2014.03.14
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: Weak Surface Blow .
ISI: No Return.
FF: No Blow .
FSI: No Return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100m	0.02

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56363 **DST#: 2**

Test Start: 2014.03.14 @ 15:07:00

Tool Information

Drill Pipe:	Length:	4137.00 ft	Diameter:	3.80 inches	Volume:	58.03 bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	
Drill Collar:	Length:	116.00 ft	Diameter:	2.25 inches	Volume:	0.57 bbl	
					Total Volume:	58.60 bbl	

Drill Pipe Above KB:	31.00 ft
Depth to Top Packer:	4250.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	18.00 ft
Tool Length:	46.00 ft
Number of Packers:	2 Diameter: 6.75 inches

Tool Weight:		2000.00 lb
Weight set on Packer:		30000.00 lb
Weight to Pull Loose:		70000.00 lb
Tool Chased		0.00 ft
String Weight:	Initial	58000.00 lb
	Final	58000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Change Over Sub	1.00			4223.00		
Shut In Tool	5.00			4228.00		
Hydraulic tool	5.00			4233.00		
Jars	5.00			4238.00		
Safety Joint	3.00			4241.00		
Packer	5.00			4246.00	28.00	Bottom Of Top Packer
Packer	4.00			4250.00		
Stubb	1.00			4251.00		
Recorder	0.00	6772	Outside	4251.00		
Recorder	0.00	8845	Outside	4251.00		
Perforations	12.00			4263.00		
Bullnose	5.00			4268.00	18.00	Bottom Packers & Anchor
Total Tool Length:	**46.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56363 **DST#: 2**

Test Start: 2014.03.14 @ 15:07:00

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:	52.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	8.38 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	3600.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

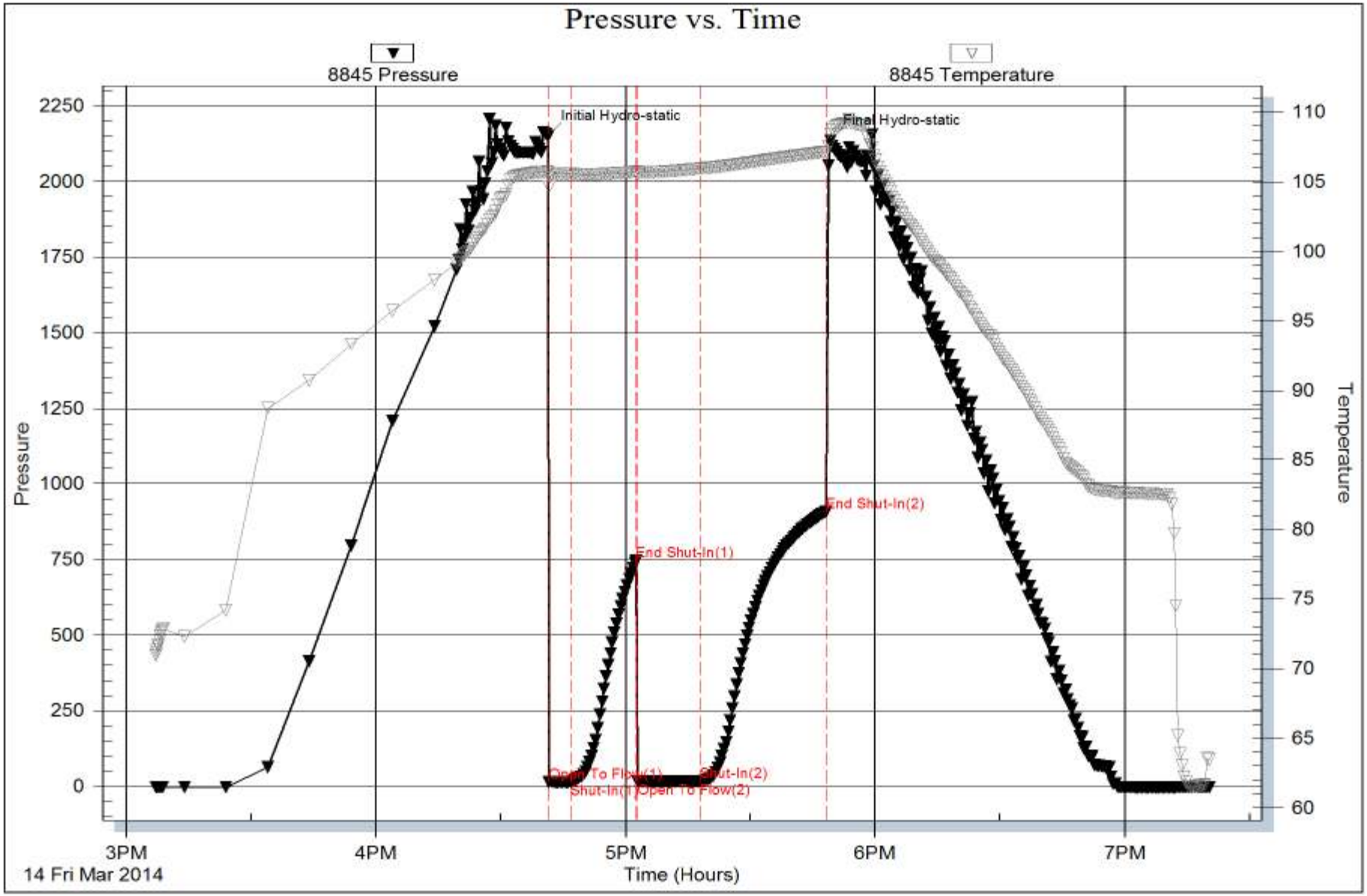
Recovery Table

Length ft	Description	Volume bbl
5.00	Mud 100m	0.025

Total Length: 5.00 ft Total Volume: 0.025 bbl

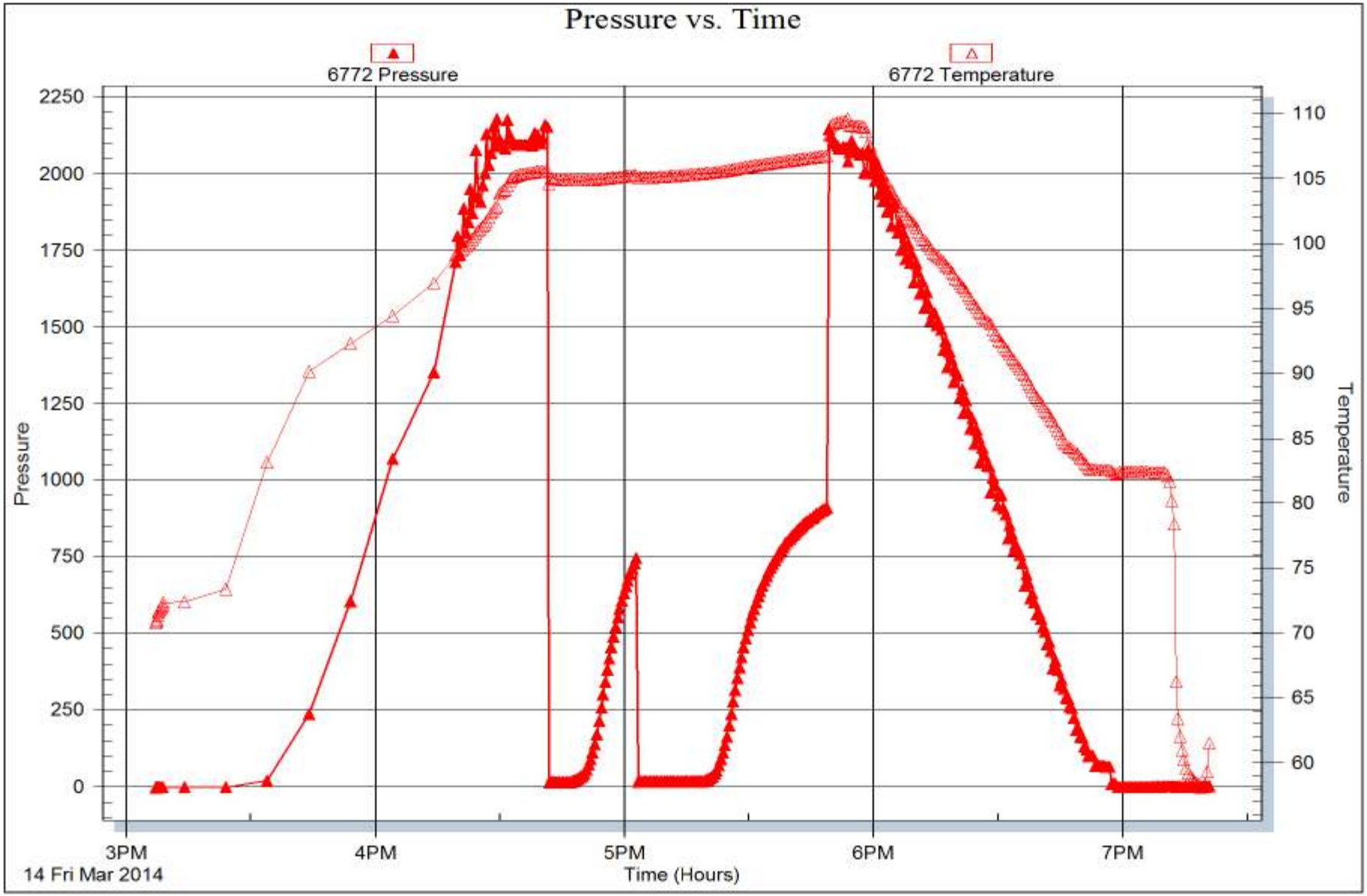
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8845 **Outside** Larson Engineering, Inc. McKenna Unit #1-9 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 56363 Printed: 2014.03.20 @ 17:40:19

Serial #: 6772 **Outside** Larson Engineering, Inc. McKenna Unit #1-9 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 56363 Printed: 2014.03.20 @ 17:40:19

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Larson Engineering, Inc.**

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

McKenna Unit #1-9

9-18s-29w Lane,KS

Start Date: 2014.03.15 @ 16:48:00

End Date: 2014.03.15 @ 22:40:15

Job Ticket #: 56364 DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2014.03.20 @ 17:39:34

DRILL STEM TEST REPORT

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56364 **DST#: 3**

Test Start: 2014.03.15 @ 16:48:00

GENERAL INFORMATION:

Formation: **Marmaton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 19:01:15
Time Test Ended: 22:40:15

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

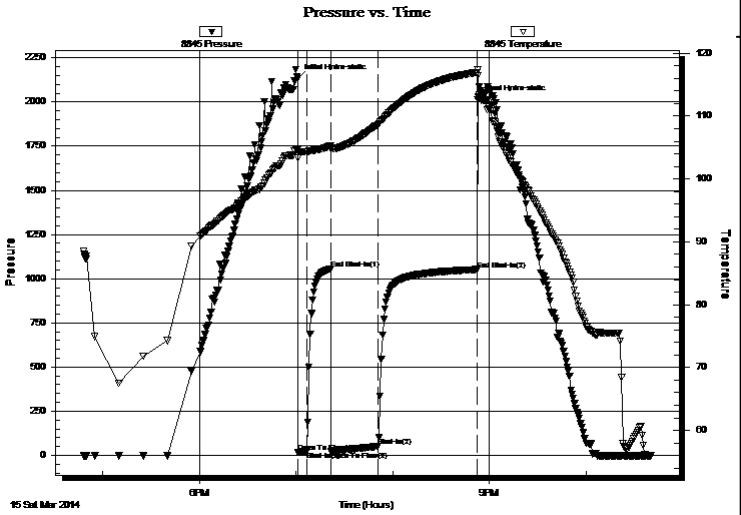
Interval: 4297.00 ft (KB) To 4395.00 ft (KB) (TVD)
Total Depth: 4395.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2804.00 ft (KB)
2797.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8845 **Inside**
Press@RunDepth: 51.25 psig @ 4298.00 ft (KB)
Start Date: 2014.03.15 End Date: 2014.03.15
Start Time: 16:48:05 End Time: 22:40:14

Capacity: 8000.00 psig
Last Calib.: 2014.03.15
Time On Btm: 2014.03.15 @ 19:01:00
Time Off Btm: 2014.03.15 @ 20:52:45

TEST COMMENT: IF: 3/4" Blow .
ISI: No Return.
FF: 1 3/4" Blow .
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2133.83	104.64	Initial Hydro-static
1	16.71	103.33	Open To Flow (1)
6	21.11	104.34	Shut-In(1)
21	1054.76	105.28	End Shut-In(1)
21	24.38	104.73	Open To Flow (2)
50	51.25	108.74	Shut-In(2)
112	1051.58	116.98	End Shut-In(2)
112	2013.03	117.44	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
90.00	WCM 10w 90m	0.44

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56364 **DST#: 3**

Test Start: 2014.03.15 @ 16:48:00

GENERAL INFORMATION:

Formation: **Marmaton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 19:01:15
Time Test Ended: 22:40:15

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4297.00 ft (KB) To 4395.00 ft (KB) (TVD)
Total Depth: 4395.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

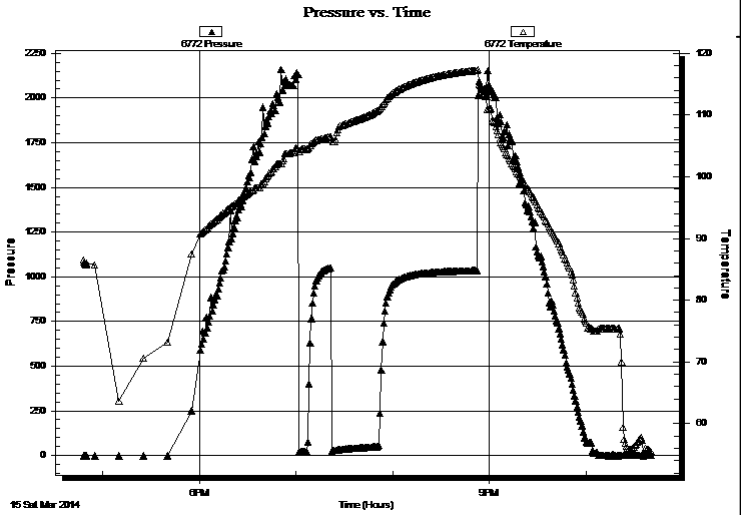
Reference Elevations: 2804.00 ft (KB)
2797.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 6772 **Outside**

Press@RunDepth: psig @ 4298.00 ft (KB)
Start Date: 2014.03.15 End Date: 2014.03.15
Start Time: 16:48:05 End Time: 22:40:29

Capacity: 8000.00 psig
Last Calib.: 2014.03.15
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: 3/4" Blow .
ISI: No Return.
FF: 1 3/4" Blow .
FSI: No Return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
90.00	WCM 10w 90m	0.44

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56364 **DST#: 3**

Test Start: 2014.03.15 @ 16:48:00

Tool Information

Drill Pipe:	Length:	4168.00 ft	Diameter:	3.80	inches	Volume:	58.47	bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00	inches	Volume:	0.00	bbl	
Drill Collar:	Length:	116.00 ft	Diameter:	2.25	inches	Volume:	0.57	bbl	
						Total Volume:	59.04	bbl	

Drill Pipe Above KB:	15.00 ft
Depth to Top Packer:	4297.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	98.00 ft
Tool Length:	126.00 ft
Number of Packers:	2 Diameter: 6.75 inches

Tool Weight:		2000.00 lb
Weight set on Packer:		30000.00 lb
Weight to Pull Loose:		75000.00 lb
Tool Chased		0.00 ft
String Weight:	Initial	58000.00 lb
	Final	58000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Change Over Sub	1.00			4270.00		
Shut In Tool	5.00			4275.00		
Hydraulic tool	5.00			4280.00		
Jars	5.00			4285.00		
Safety Joint	3.00			4288.00		
Packer	5.00			4293.00	28.00	Bottom Of Top Packer
Packer	4.00			4297.00		
Stubb	1.00			4298.00		
Recorder	0.00	6772	Outside	4298.00		
Recorder	0.00	8845	Inside	4298.00		
Perforations	27.00			4325.00		
Change Over Sub	1.00			4326.00		
Drill Pipe	63.00			4389.00		
Change Over Sub	1.00			4390.00		
Bullnose	5.00			4395.00	98.00	Bottom Packers & Anchor
Total Tool Length:	**126.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56364 **DST#: 3**

Test Start: 2014.03.15 @ 16:48:00

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:	52.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	8.38 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2100.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

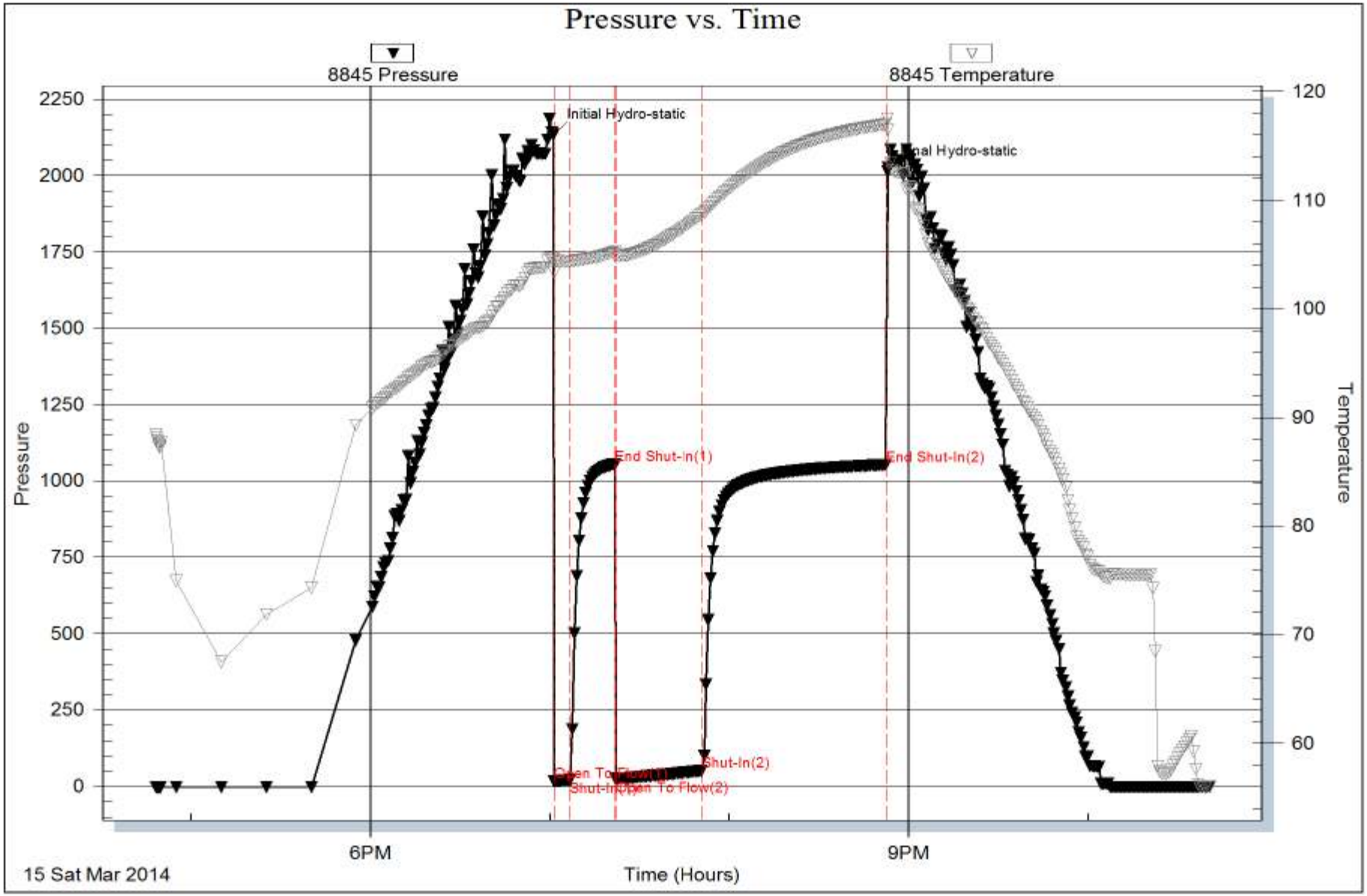
Recovery Table

Length ft	Description	Volume bbl
90.00	WCM 10w 90m	0.443

Total Length: 90.00 ft Total Volume: 0.443 bbl

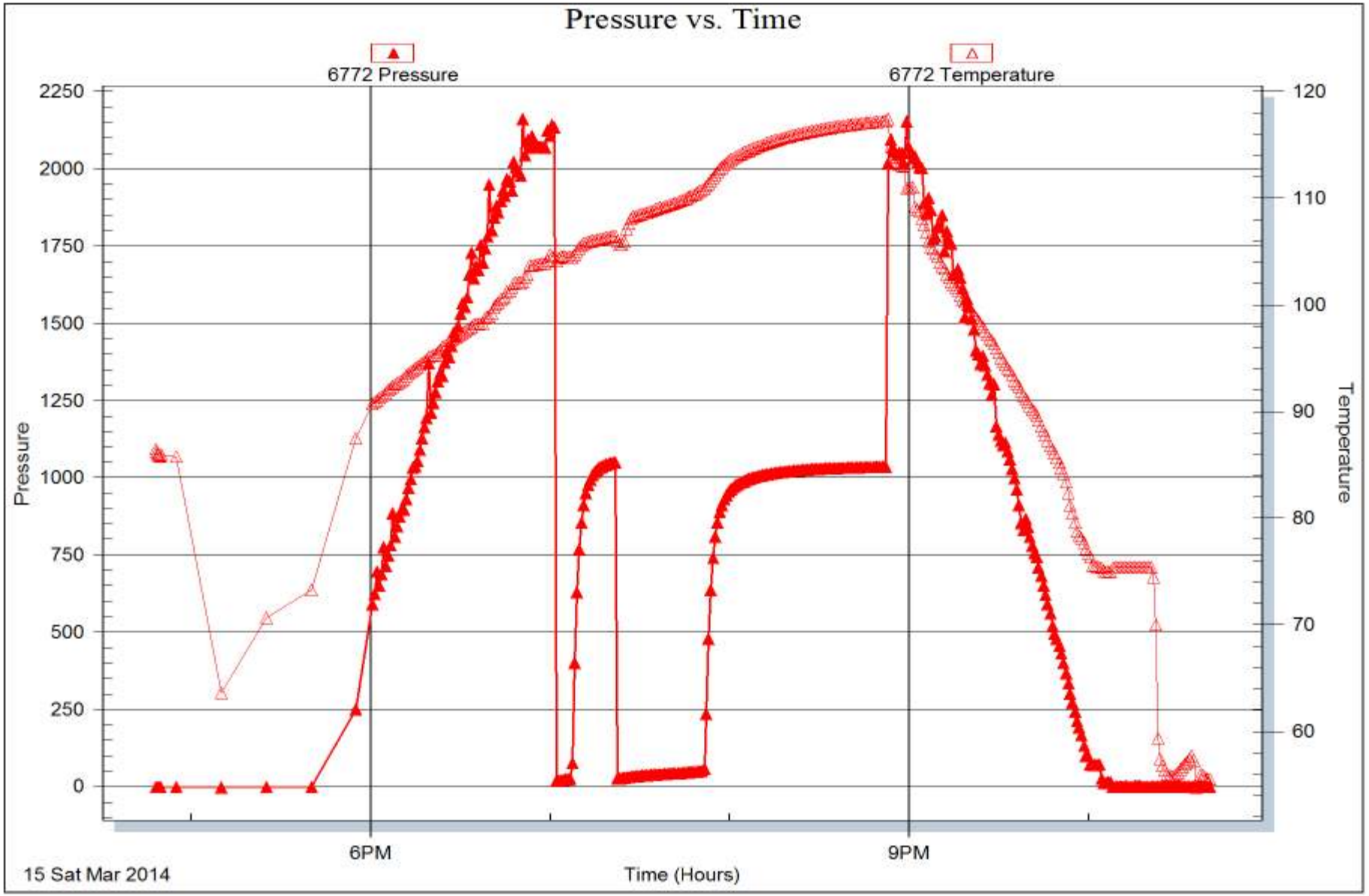
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8845 **Inside** Larson Engineering, Inc. McKenna Unit #1-9 DST Test Number: 3



Trilobite Testing, Inc Ref. No: 56364 Printed: 2014.03.20 @ 17:39:36

Serial #: 6772 **Outside** Larson Engineering, Inc. McKenna Unit #1-9 DST Test Number: 3



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Larson Engineering, Inc.**

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

McKenna Unit #1-9

9-18s-29w Lane,KS

Start Date: 2014.03.16 @ 18:21:00

End Date: 2014.03.16 @ 23:38:30

Job Ticket #: 56365 DST #: 4

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2014.03.20 @ 17:39:01

DRILL STEM TEST REPORT

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56365 **DST#: 4**

Test Start: 2014.03.16 @ 18:21:00

GENERAL INFORMATION:

Formation: **Cherokee**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:31:00
Time Test Ended: 23:38:30

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4439.00 ft (KB) To 4553.00 ft (KB) (TVD)
Total Depth: 4553.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

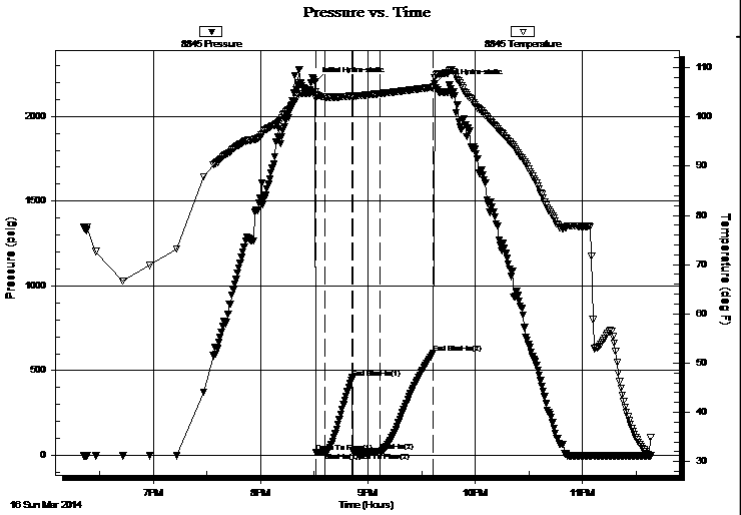
Reference Elevations: 2804.00 ft (KB)
2797.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8845 **Inside**

Press@RunDepth: 21.92 psig @ 4440.00 ft (KB)
Start Date: 2014.03.16 End Date: 2014.03.16
Start Time: 18:21:05 End Time: 23:38:29

Capacity: 8000.00 psig
Last Calib.: 2014.03.16
Time On Btm: 2014.03.16 @ 20:30:45
Time Off Btm: 2014.03.16 @ 21:37:15

TEST COMMENT: IF: Weak Surface Blow .
ISI: No Return.
FF: Weak Surface Blow .
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2204.75	105.09	Initial Hydro-static
1	17.23	103.73	Open To Flow (1)
5	19.69	104.03	Shut-In(1)
21	458.39	104.26	End Shut-In(1)
21	20.47	104.14	Open To Flow (2)
36	21.92	104.72	Shut-In(2)
66	603.78	106.01	End Shut-In(2)
67	2195.43	107.96	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100m	0.02

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56365 **DST#: 4**

Test Start: 2014.03.16 @ 18:21:00

GENERAL INFORMATION:

Formation: **Cherokee**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:31:00
Time Test Ended: 23:38:30

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4439.00 ft (KB) To 4553.00 ft (KB) (TVD)
Total Depth: 4553.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

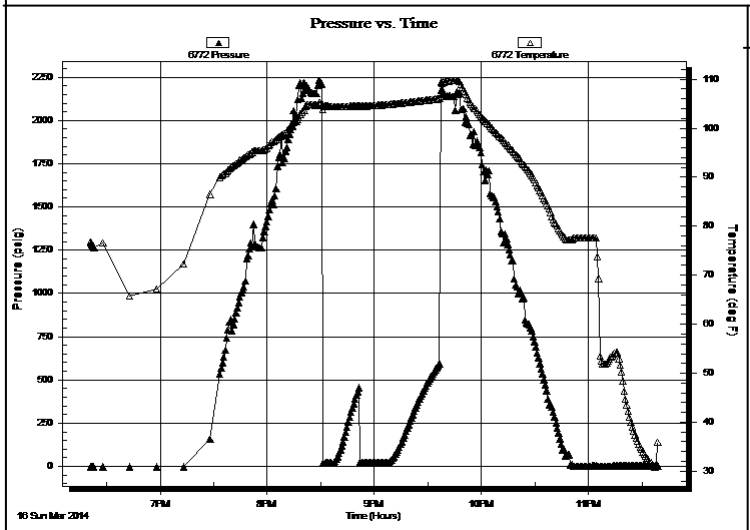
Reference Elevations: 2804.00 ft (KB)
2797.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 6772 **Outside**

Press@RunDepth: psig @ 4440.00 ft (KB)
Start Date: 2014.03.16 End Date: 2014.03.16
Start Time: 18:21:05 End Time: 23:38:44

Capacity: 8000.00 psig
Last Calib.: 2014.03.16
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: Weak Surface Blow .
ISI: No Return.
FF: Weak Surface Blow .
FSI: No Return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100m	0.02

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56365 **DST#: 4**

Test Start: 2014.03.16 @ 18:21:00

Tool Information

Drill Pipe:	Length:	4325.00 ft	Diameter:	3.80	inches	Volume:	60.67	bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00	inches	Volume:	0.00	bbl	
Drill Collar:	Length:	116.00 ft	Diameter:	2.25	inches	Volume:	0.57	bbl	
						Total Volume:	61.24	bbl	

Drill Pipe Above KB:	30.00 ft
Depth to Top Packer:	4439.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	114.00 ft
Tool Length:	142.00 ft
Number of Packers:	2 Diameter: 6.75 inches

Tool Weight:		2000.00 lb
Weight set on Packer:		30000.00 lb
Weight to Pull Loose:		75000.00 lb
Tool Chased		0.00 ft
String Weight:	Initial	60000.00 lb
	Final	60000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Change Over Sub	1.00			4412.00		
Shut In Tool	5.00			4417.00		
Hydraulic tool	5.00			4422.00		
Jars	5.00			4427.00		
Safety Joint	3.00			4430.00		
Packer	5.00			4435.00	28.00	Bottom Of Top Packer
Packer	4.00			4439.00		
Stubb	1.00			4440.00		
Recorder	0.00	6772	Outside	4440.00		
Recorder	0.00	8845	Inside	4440.00		
Perforations	12.00			4452.00		
Change Over Sub	1.00			4453.00		
Drill Pipe	94.00			4547.00		
Change Over Sub	1.00			4548.00		
Bullnose	5.00			4553.00	114.00	Bottom Packers & Anchor
Total Tool Length:	**142.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering, Inc.

202 West State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

9-18s-29w Lane,KS

McKenna Unit #1-9

Job Ticket: 56365 **DST#: 4**

Test Start: 2014.03.16 @ 18:21:00

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:	62.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	8.39 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	1600.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

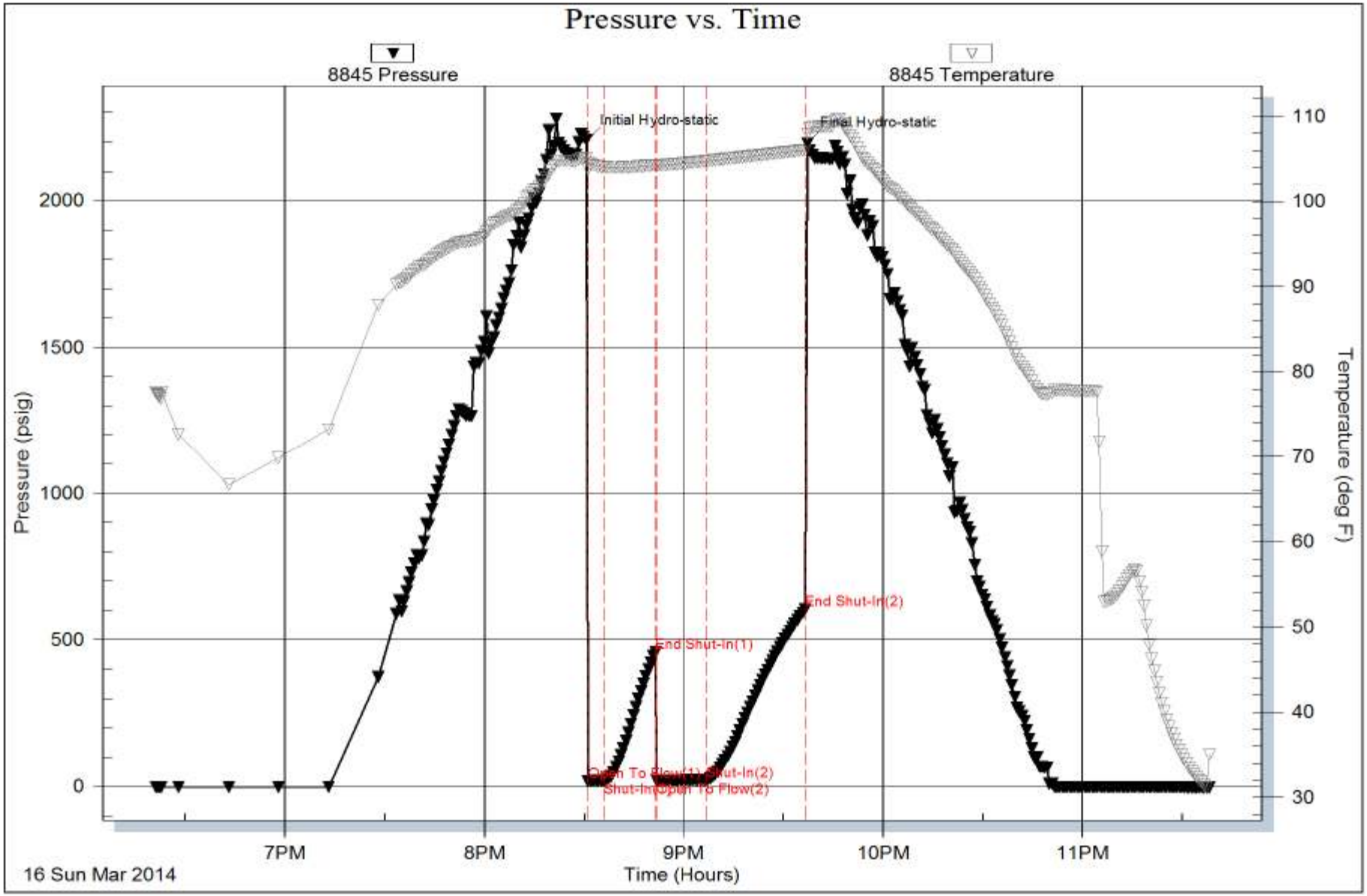
Recovery Table

Length ft	Description	Volume bbl
5.00	Mud 100m	0.025

Total Length: 5.00 ft Total Volume: 0.025 bbl

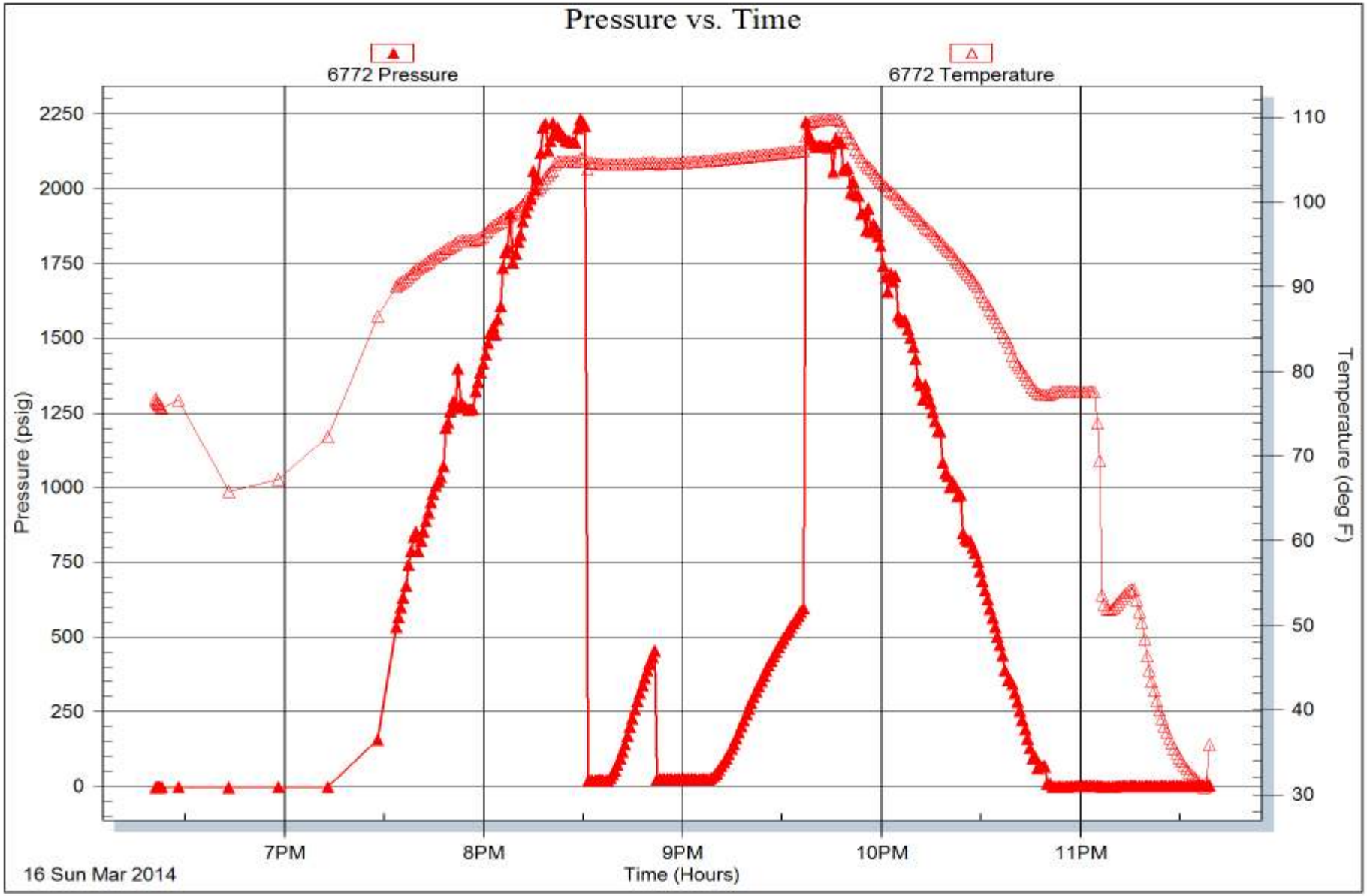
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8845 **Inside** Larson Engineering, Inc. McKenna Unit #1-9 DST Test Number: 4



Trilobite Testing, Inc Ref. No: 56365 Printed: 2014.03.20 @ 17:39:03

Serial #: 6772 **Outside** Larson Engineering, Inc. McKenna Unit #1-9 DST Test Number: 4



Trilobite Testing, Inc Ref. No: 56365 Printed: 2014.03.20 @ 17:39:03

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 56362

Well Name & No. McKenna Unit #1-9 Test No. 1 Date 5/13/14

Company Larson Engineering, Inc Elevation 2804 KB 2797 GL

Address 562 West State Rd 4 Olmitz, KS 67564

Co. Rep / Geo. Vern Schrag Rig HD #3

Location: Sec. 9 Twp. 18S Rge. 29W Co. Lane State KS

Interval Tested 4159-4185 Zone Tested "I"

Anchor Length 26 Drill Pipe Run 4044 Mud Wt. 9.2

Top Packer Depth 4155 Drill Collars Run 116 Vis 52

Bottom Packer Depth 4159 Wt. Pipe Run 0 WL 8.4

Total Depth 4185 Chlorides 2100 ppm System LCM 1

Blow Description IF: Weak surface Blow.

ISI: No Return.

FF: Weak surface Blow died @ 11 min.

FSI: No Return.

Rec 5	Feet of Mud (oil spots)	%gas	%oil	%water 100	%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 5 BHT ____ Gravity ____ API RW ____ @ ____ °F Chlorides ____ ppm

(A) Initial Hydrostatic	2130	☒ Test	1250	T-On Location	1400
(B) First Initial Flow	14	☒ Jars	250	T-Started	14:33
(C) First Final Flow	15	☒ Safety Joint	75	T-Open	16:16
(D) Initial Shut-In	20	☒ Circ Sub	N/C	T-Pulled	17:22
(E) Second Initial Flow	13	☐ Hourly Standby		T-Out	18:48
(F) Second Final Flow	13	☒ Mileage	44 R/T 68.20	Comments	
(G) Final Shut-In	30	☐ Sampler			
(H) Final Hydrostatic	2112	☐ Straddle		☐ Ruined Shale Packer	
		☐ Shale Packer		☐ Ruined Packer	
Initial Open	5	☐ Extra Packer		☐ Extra Copies	
Initial Shut-In	15	☐ Extra Recorder		Sub Total	0
Final Flow	15	☐ Day Standby		Total	1643.20
Final Shut-In	30	☐ Accessibility		MP/DST Disc't	
		Sub Total	1643.20		

Approved By ____ Our Representative ____

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 56363

Well Name & No. McKenna Unit #1-9 Test No. 2 Date 3/14/14

Company Larson Engineering, Inc Elevation 2804 KB 2797 GL

Address 562 West State Road 4 Olmitz, KS 67564

Co. Rep / Geo. Vern Schrag Rig HD #3

Location: Sec. 9 Twp. 18S Rge. 29W Co. Lane State KS

Interval Tested 4250-4268 Zone Tested "L"

Anchor Length 18 Drill Pipe Run 4137 Mud Wt. 9.2

Top Packer Depth 4246 Drill Collars Run 116 Vis 52

Bottom Packer Depth 4250 Wt. Pipe Run 0 WL 8.4

Total Depth 4268 Chlorides 3600 ppm System LCM 1

Blow Description IF: Weak surface Blow.

ISI: No Return.

FF: No Blow.

ESI: No Return.

Rec 5	Feet of Mud	%gas	%oil	%water	100	%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 5 BHT 107 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic	2149	☒ Test	1250	T-On Location	15:00
(B) First Initial Flow	15	☒ Jars	250	T-Started	15:07
(C) First Final Flow	16	☒ Safety Joint	75	T-Open	16:42
(D) Initial Shut-In	747	☒ Circ Sub	NC	T-Pulled	17:49
(E) Second Initial Flow	16	☐ Hourly Standby		T-Out	19:21
(F) Second Final Flow	17	☒ Mileage	44 R/T 68.20	Comments	
(G) Final Shut-In	908	☐ Sampler			
(H) Final Hydrostatic	2134	☐ Straddle		☐ Ruined Shale Packer	
		☐ Shale Packer		☐ Ruined Packer	
Initial Open	5	☐ Extra Packer		☐ Extra Copies	
Initial Shut-In	15	☐ Extra Recorder		Sub Total	0
Final Flow	15	☐ Day Standby		Total	1643.20
Final Shut-In	30	☐ Accessibility		MP/DST Disc't	
		Sub Total	1643.20		

Approved By Vern Schrag Our Representative

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 56364

Well Name & No. McKenna Unit #1-9 Test No. 3 Date 3/15/11

Company Larson Engineering, Inc. Elevation 2804 KB 2797 GL

Address 522 West State Road 4 Olmitz, KS 67564

Co. Rep / Geo. Von Schling Rig HD #3

Location: Sec. 9 Twp. 18S Rge. 29W Co. Lane State KS

Interval Tested 4297 - 4395 Zone Tested Marmaton

Anchor Length 98 Drill Pipe Run 4164 Mud Wt. 9.3

Top Packer Depth 4293 Drill Collars Run 110 Vis 48

Bottom Packer Depth 4297 Wt. Pipe Run Ø WL 8.4

Total Depth 4395 Chlorides 4400 ppm System LCM 1

Blow Description IF: 3/4" Blow.

ISI: No Return.

FF: 1 3/4" Blow.

FSI: No Return.

Rec 90	Feet of WCM	%gas	%oil	10	%water	90	%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 90 BHT 117 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic	2134	☒ Test	1250	T-On Location	16:30
(B) First Initial Flow	17	☒ Jars	250	T-Started	16:48
(C) First Final Flow	21	☒ Safety Joint	75	T-Open	19:02
(D) Initial Shut-In	1055	☒ Circ Sub	N/C	T-Pulled	20:53
(E) Second Initial Flow	24	☐ Hourly Standby		T-Out	22:41
(F) Second Final Flow	51	☒ Mileage	4 4 RT	68.20	Comments
(G) Final Shut-In	1052	☐ Sampler			
(H) Final Hydrostatic	2013	☐ Straddle		☐ Ruined Shale Packer	
		☐ Shale Packer		☐ Ruined Packer	
Initial Open	5	☐ Extra Packer		☐ Extra Copies	
Initial Shut-In	15	☐ Extra Recorder		Sub Total	0
Final Flow	30	☐ Day Standby		Total	1643.20
Final Shut-In	60	☐ Accessibility		MP/DST Disc't	
		Sub Total	1643.20		

Approved By [signature] Our Representative

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 56365

Well Name & No. McKenna Unit #1-9 Test No. 4 Date 3/16/14

Company Larson Engineering, Inc. Elevation 2804 KB 2797 GL

Address 562 West State Road 4 Olmitz, KS 67564

Co. Rep / Geo. Vern Schrag Rig HD #3

Location: Sec. 9 Twp. 18S Rge. 29W Co. Lane State KS

Interval Tested 4439-4553 Zone Tested Cherokee

Anchor Length 114 Drill Pipe Run 4325 Mud Wt. 9.2

Top Packer Depth 4435 Drill Collars Run 116 Vis 62

Bottom Packer Depth 4439 Wt. Pipe Run 0 WL 8.4

Total Depth 4553 Chlorides 1600 ppm System LCM 1

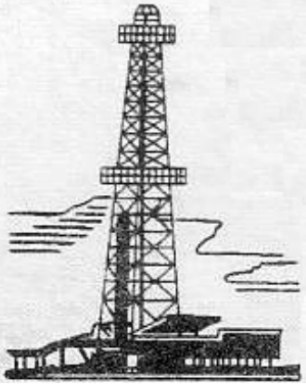
Blow Description IF: Weak Surface Blow.
ISI: No Return.
FF: Weak Surface Blow
FSI: No Return.

Rec 5	Feet of Mud	%gas	%oil	%water	100	%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 5 BHT 106 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic	2205	☒ Test	1250	T-On Location	18:00
(B) First Initial Flow	17	☒ Jars	250	T-Started	18:21
(C) First Final Flow	20	☒ Safety Joint	75	T-Open	20:31
(D) Initial Shut-In	458	☒ Circ Sub	N/C	T-Pulled	21:37
(E) Second Initial Flow	20	☐ Hourly Standby		T-Out	23:28
(F) Second Final Flow	22	☒ Mileage	44 R/T 68.20	Comments	Loaded 100/5
(G) Final Shut-In	604	☐ Sampler			
(H) Final Hydrostatic	2195	☐ Straddle		☐ Ruined Shale Packer	
		☐ Shale Packer		☐ Ruined Packer	
Initial Open	5	☐ Extra Packer		☐ Extra Copies	
Initial Shut-In	15	☐ Extra Recorder		Sub Total	0
Final Flow	15	☐ Day Standby		Total	1643.20
Final Shut-In	30	☐ Accessibility		MP/DST Disc't	
		Sub Total	1643.20		

Approved By Jerrad Tolar Our Representative



WELLSITE GEOLOGIST'S REPORT

VERNON C. SCHRAG
CONSULTANT GEOLOGIST

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

Well Name:	**MCKENNA UNIT #1-9**		
Location:	**SE NE NE SE SEC. 09-18S-29W**		
Licence Number:	**API: 15-101-22465**	**Region:**	**Lane Co., KS**
Spud Date:	**March 07, 2014**	**Drilling Completed:**	**March 17, 2014**
Surface Coordinates:	**2290' FSL & 155' FEL**		
Bottom Hole Coordinates:			
Ground Elevation (ft):	**2797'**	**K.B. Elevation (ft):**	**2804'**
Logged Interval (ft):	**3800' To: RTD**	**Total Depth (ft):**	**4625'**
Formation:	**Mississippi**		
Type of Drilling Fluid:	**Chemical Premix (Displaced)**		

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

OPERATOR:

Company: **Larson Engineering Inc.**
Address: **562 West State Road 4**
Olmitz, KS 67564-8561

DRILLING CONTRACTOR:

H. D. Drilling, LLC, Rig #3 (Co. Tools)

DP 4.5" XH (16.6#); DC 6.25" x 2.25" x 645', hardbanded; Kelly 40.30', Tool Joint 5.5" ; Bit: JZ-HA20-Q, 7-7/8", standard jets 14-14-14 down to 4120, 15-15-15 after; rpm 80, WOB 35k; Kelly Bushing 7' above ground level; LeWayne "Lew" Tresner (tool pusher).

CASING:

Set 8-5/8" casing at 264'

CIRCULATION SYSTEM:

Continental EMSCO D-300, duplex, 6 x 14, 56-58 spm, Chemical, premix, earth pits, Morgan Mud, Inc., Cade Lines.

OPEN HOLE LOGS:

GR-CAL (no radioactive source), LTD 4117, RTD 4120, to check hole conditions & gauge.

DN, DI (SP) (Run-1); ML (Run-2); No Sonic; 5" detail LTD-3600; 2" DI to suface casing; LogTech-Pioneer Wireline, Hays, KS, Chris Desaire, Log total depth (4625') was even with rotary total depth (4625').

Initially on Run-1 logger found LTD at 4622', then corelated the curves from GR-CAL run, and thereby determined LTD at 4625'.

DRILL STEM TEST #1:

LKC "I-zone": Interval: 4159-4185 (26'): Blow: weak surf IFP, no RB, weak surf died 11 min FFP, no RB; Times: 5-15-15-30; Recovery: 5' mud (100%M); Pressures: HP: 2130-2112, SIP: 20-30, FP: 14-15, 13-13; BHT: 106 F; Trilobite Testing, Inc., Scott City, KS, Sam Esparza.

DRILL STEM TEST #2:

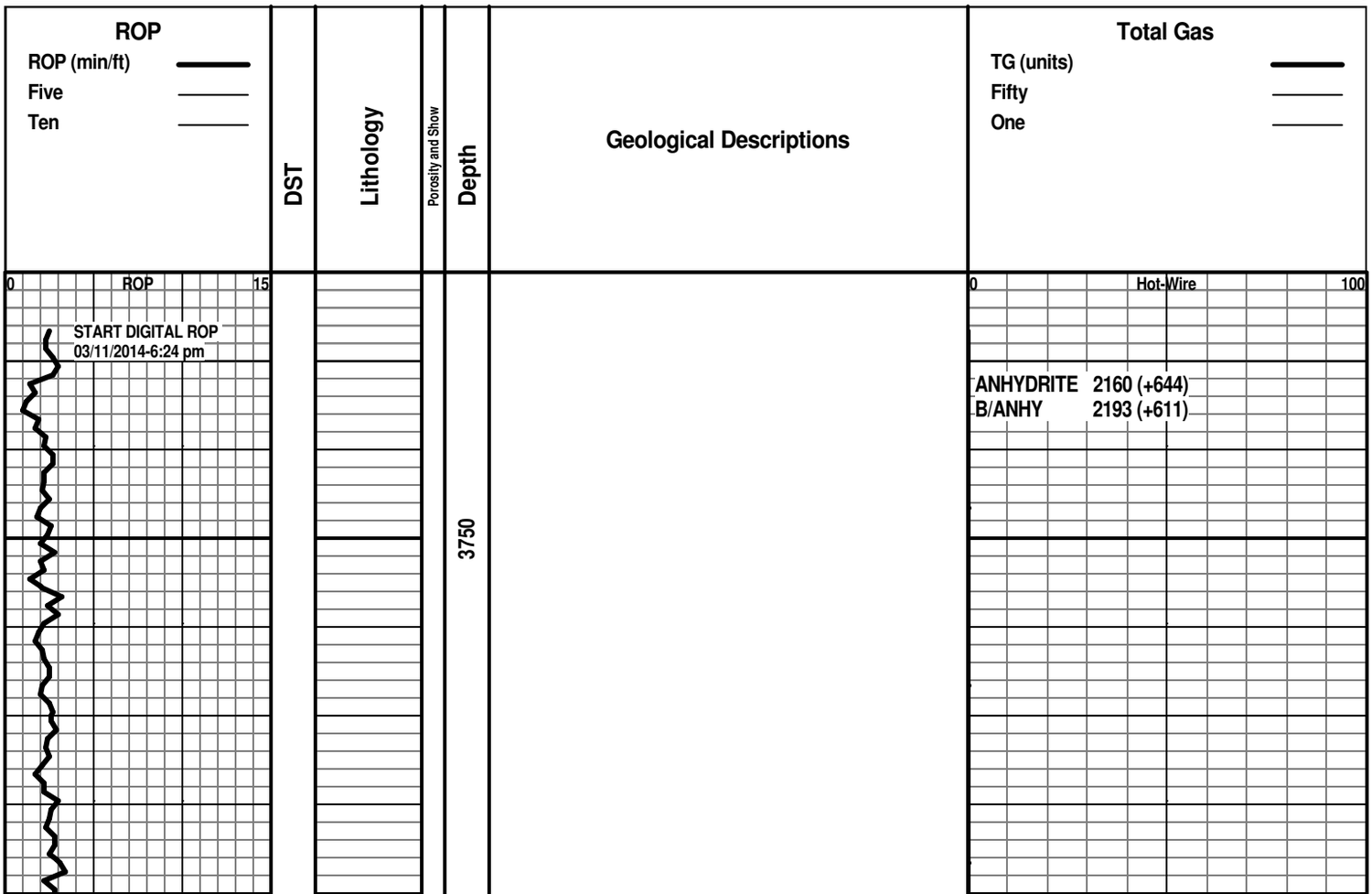
LKC "L-zone": Interval: 4250-4268 (18'); Blow: weak surf IFP, no RB, no blow FFP, no RB; Times: 5-15-15-30; Recovery: 5' mud (100%M); Pressures: HP: 2149-2134, SIP: 747-908, FP: 15-16, 16-17; BHT: 107 F; Trilobite Testing, Inc., Scott City, KS, Sam Esparza.

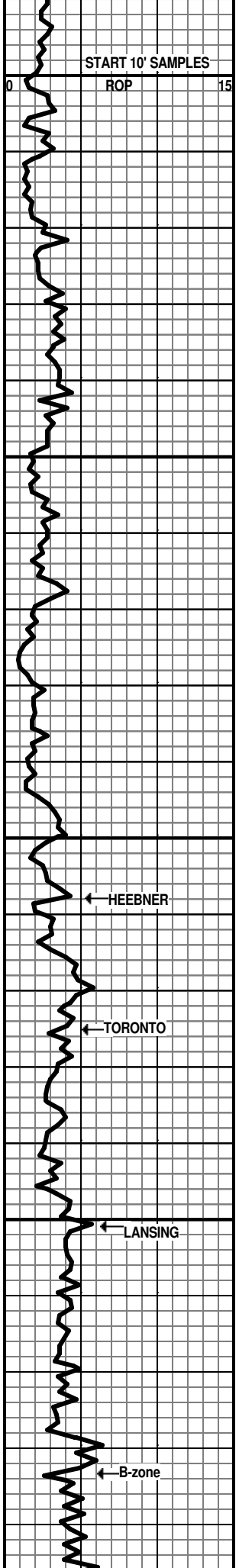
DRILL STEM TEST #3:

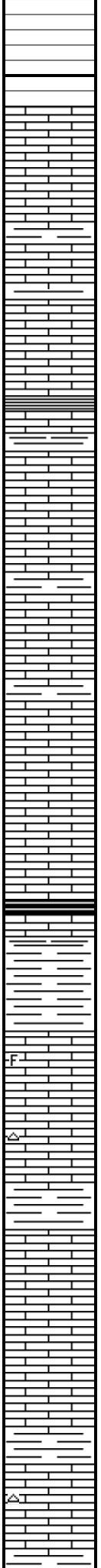
Pleasanton ~ Mamaton: Interval: 4297-4395 (98'): Blow: weak incr 3/4" IFP, no RB, weak incr 1-3/4" FFP, no RB; Times: 5-15-30-60; Recovery: 90' WM (10%W, 90%M); Pressures: HP: 2134-2013, SIP: 1055-1052, FP: 17-21, 24-51; BHT: 117 F; Trilobite Testing, Inc., Scott City, KS, Sam Esparza.

DRILL STEM TEST #4:

Myrick Station thru Cherokee: Interval: 4439-4553 (114'): Blow: weak surf IFP, no RB, weak surf FFP, no RB; Times: 5-15-15-30; Recovery: 5' mud (100%M); Pressures: HP: 2205-2195, SIP: 458-604, FP: 17-20, 20-22; BHT: 106 F; Trilobite Testing, Inc., Scott City, KS, Sam Esparza.







3800

3850

3900

3950

0 Hot-Wire 100

LS: lt brown; vf-xtal; dense to sli chalky; almost no grains; no visible porosity; N.S.

SAMPLES FROM 3810 THRU 3850 ARE VERY HIGH IN PERMIAN SLOUGH, SUB-SIZED DENSE LIME; SAMPLE QUALITY IMPROVES FROM 3860 TO 4000.

LS: lt brown; vf-xtal; trc gray, fos chert; finely granular to fos-frag; tight int frag porosity; N.S.

LS: lt brown to lt gray; vf-xtal; granular to fos-frag in part; dense; poor apparent porosity; N.S.

LS: lt-md grayish brown; mic-vf xtal; dense to argill in part; sli fos; poor apparent porosity; N.S.

Shale: gray, coarse sulfides;

LS: lt-md grayish brown; vf-xtal; rough; poor-fair vug porosity; N.S.

LS: lt brown, w/scattered dk gray to brown specks; mic-vf xtal; chalky in part; poor apparent porosity; N.S.

LS: as above;

HEEBNER 3908 (-1104)

Shale: black; carbon; many chips 3920.
LS: dense;

Shale: mostly green, some gray, maroon;

LS: white to v-lt brown; mic-vf xtal; dense to chalky; even mineral fluor; poor apparent porosity; N.S., good rep 3940.

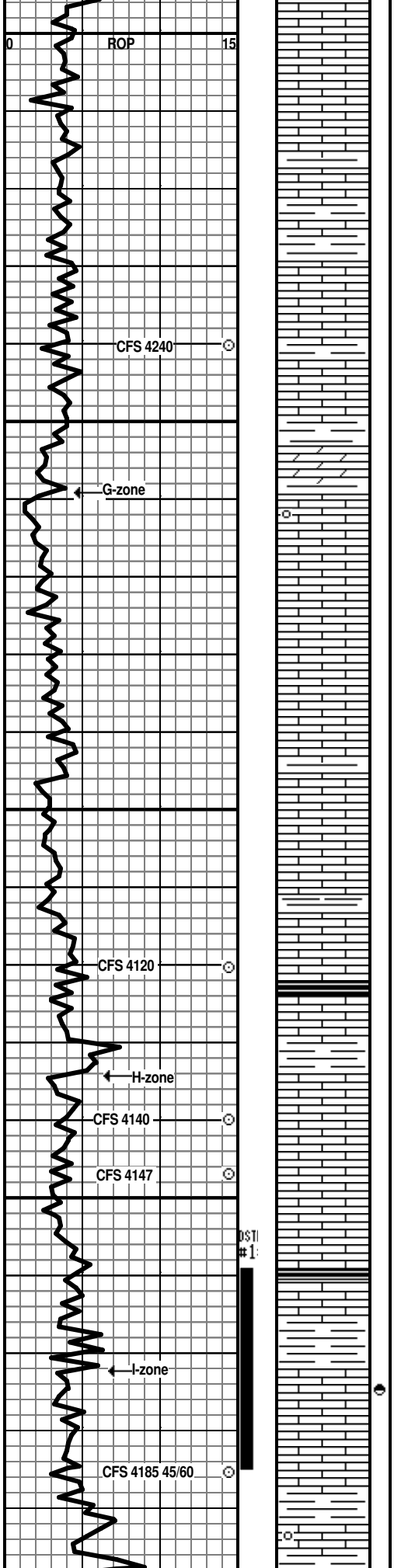
LS: as above w/trace opaq chert; N.S.

LANSING 3951 (-1147)

LS: lt brown; vf-xtal; dense w/white, mic-xtal chalky portions

LS: lt brown; mic-vf xtal; dense to sli chalky; trc opaq chert; trc oolitic; poor apparent porosity; N.S.

LS: white to lt brown; mic-vf xtal; dense to chalky in part; much trans chert; trc orange chert; poor porosity; N.S., 4000.



4000

LS: v-lt brown; mic-vf xtal; dense to chalky, platey; v-poor apparent porosity; N.S., gray shales;

LS: as above;

Shale: grays;

LS: lt brown; mic-vf xtal; dense to chalky in part; trc chert; sli granular in part; poor porosity; N.S.

LS: lt brown; vf-xtal; very finely granular in part; poor porosity; N.S.

4050

Dol: lt brown; f-xtal; tight int xtal porosity; N.S., 4070.

LS: lt-md brown; vf-f xtal; md oomoldic; fair oomoldic porosity; N.S., 4080.

LS: white to lt brown; mic-vf xtal; dense to chalky; platey; no visible porosity; N.S.

LS: as above;

4100

LS: white to lt gray; mic-xtal; chalky; poor porosity; N.S., much gray sh slough;

LS: lt brown w/dk brown & gray irregular grains; fos-frag; dense; poor porosity; N.S., 30 min., much gray shale slough.

MUNCIE CREEK 4122 (-1318)

LS: md-dk brown; vf-xtal; dense; no visible porosity; N.S., much Permian slough.

Shale: green

LS: white to lt gray, brown; mic-vf xtal; chalky to dense, platey; trc opaq chert; few if any grains; even, dull, white mineral fluor; v-poor porosity; N.S.

4150

LS: lt brown; mic-vf xtal; dense, platey to chalky in part; no grains; no visible porosity; N.S.

Shale: dk gray, trc black; 4170.

LS: md brown; vf-xtal; dense; platey; no visible porosity; N.S.

Shale: green, silty in part; some waxy; 4180.

LS: lt gray; vf-xtal; chalky in part; trace rounded packed oolites w/fair int ool & scattered vug porosity w/dark brown stain; no visible oil; no fluor; no odor; 4185.

LS: lt brown; vf-xtal; dense med-crs oolite; v-tight int ool porosity; N.S., 4200, 4210.

0 Hot-Wire 100

VIS 56, WT 9.1, FIL 8.0

SAMPLES FROM 4000 TO 4120 GRADUALLY DEGRADE UNTIL 90% GRAY SHALE & VERY POOR RETURNS BY CFS 4120.

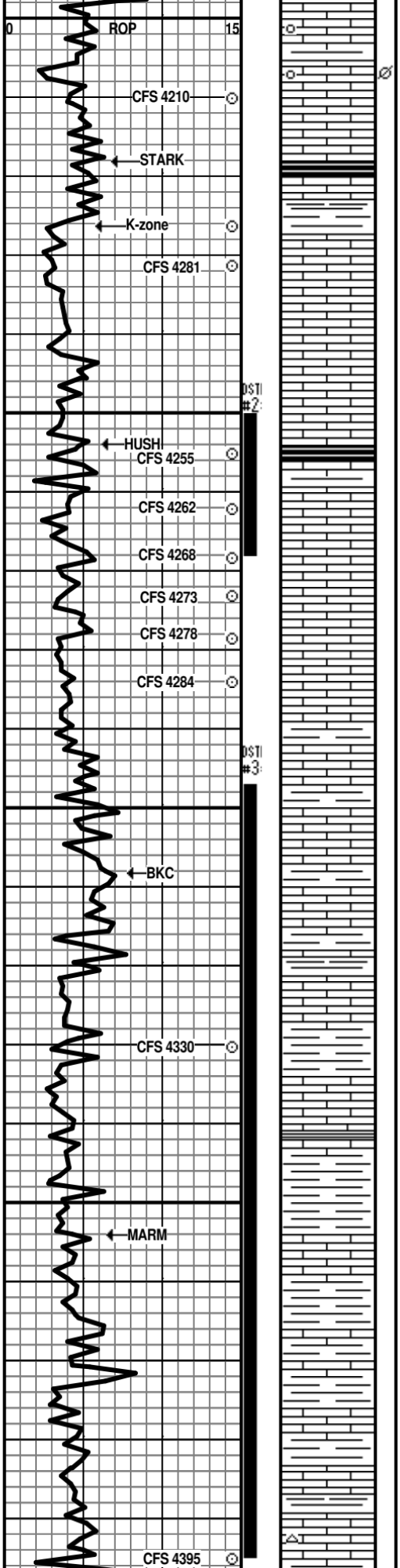
T.O.H. 4120, RUN CALIPER LOG, CHANGE JETS TO 15-15-15, CIRC 60 MIN BEFORE DRILLING.

SAMPLE QUALITY WAS GREATLY IMPROVED AFTER CHANGE TO 3-15s AND PUMP RATE 58 SPM.

DST #1: I-ZONE: 4159-4185: WEAK BLOW; 5-15-15-30; 5' MUD; SIP: 20-30, FP: 14-15, 13-13.

VIS 57, WT 9.3, FIL 8.4

57.9 SPM AT 4196'



4200

LS: oolitic as above;

LS: white to v-lt gray; vf-xtal; sli chalky; crumbly; poor oomoldic porosity; N.S., 30 min.

LS: lt gray; mic-vf xtal; dense to chalky; trc opaq chert; no visible porosity; N.S.

STARK SH 4218 (-1414)

Shale: black; carbon; 4226 stop.

LS: brown; vf-xtal; dense; blocky; sli ool; N.S.

Shale: lt-dk grays; silty; coarse pyrites; 60m.

LS: white to lt brown; mic-vf xtal; dense ool to very chalky, no fluor; poor apparent porosity; N.S.

LS: white; mic-xtal; soft chalky marl; mushy; white-wash 4240, 4250; no apparent porosity; N.S.

4250

LS: white to lt gray; vf-xtal; dense to chalky in part; opaq chert; no visible porosity; N.S., 4255.

HUSHPUCKNEY 4254 (-1450)

Shale: black; carbon; trc 30m, sli incr 60m.

LS: lt-dk browns; vf-f xtal; dense; pos tight int xtal por in part; no fluor; no shows;

LS: lt brown; vf-xtal; fos-frag, sli ool in part; scattered spar; poor vug por at best; N.S.

LS: lt brown to grayish; vf-xtal; dense to sli chalky; no visible porosity; N.S.

LS: lt gray; vf-xtal; dense to chalky in part; no visible porosity; N.S.

4300

LS: gray to brown; vf-xtal; chalky to dense; no visible porosity; N.S.

LS: as above;

Shale: gray, green; silty; coarse pyrites; 4330.

LS: lt-md brown; vf-xtal; dense, platey; no visible porosity; N.S.

Shale: green, gray, browns;

LS: lt brown to dk grayish brown, coarsely mottled; dense, platey; no visible porosity; N.S.

4350

MARMATON 4354 (-1550)

(corrected top)

Shale: mostly greens; some gray & maroon;

LS: md-dk brown; vf-xtal; dense; no visible porosity; N.S.

LS: lt brown; vf-xtal; sli chalky; no visible porosity; N.S.

LS: lt-md brown; vf-xtal; dense; no visible porosity; N.S.

LS: lt brown; mic-vf xtal; dense to chalky; trc orange, semi-trans chert; poor porosity; N.S.

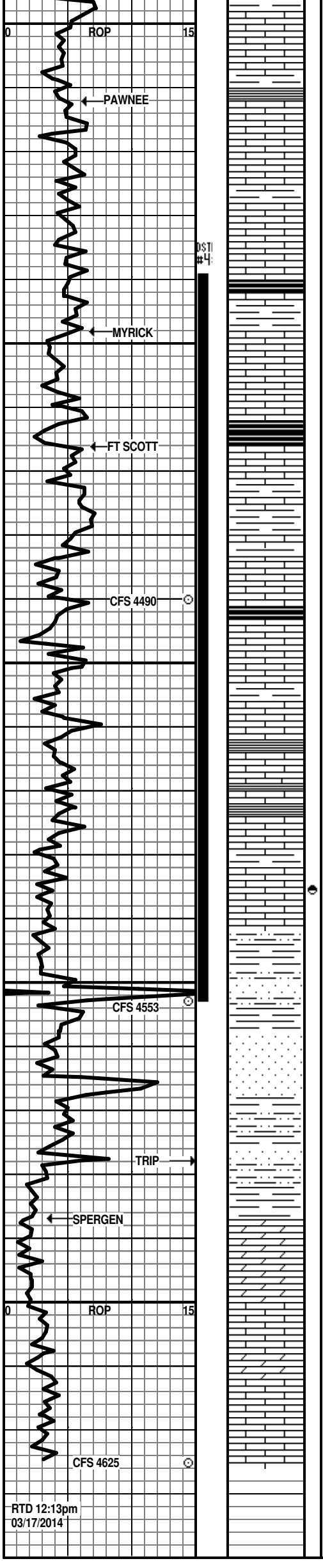
0 Hot-Wire 100

DST #2: L-ZONE: 4250-4268: WEAK BLOW DIED 2ND OP; 5-15-15-30; 5' MUD; SIP: 747-908, FP: 15-16, 16-17.

VIS 52, WT 9.2, FIL 8.4

VIS 48, WT 9.3, FIL 8.4

DST #3: MARMATON: 4297-4395: WEAK BLOW: 5-15-30-60: 90' WM; SIP: 1055-1052, FP: 17-21, 24-51.



4400

LS: lt-md brown; mic-vf xtal; dense to chalky; no visible porosity; N.S.

PAWNEE 4412 (-1608)

Shale: dk gray;

LS: lt-md brown; vf-xtal; dense; trc chert; no visible porosity; N.S.

LS: as above, incr chert;

4450

Shale: black; carbon; 4460.

Shale: gray, dk green;

LS: lt brown to lt gray; mic-vf xtal; dense to chalky in part; no visible porosity; N.S.

LS: lt-md brown; vf-xtal; dense; no visible porosity; N.S.

Shale: black; carbon; 4480, good rep;

FT. SCOTT 4466 (-1662)

LS: md-dk grayish brown; vf-xtal; trc oolitic; dense; no visible porosity; N.S.

LS: lt-md brown; vf-xtal; dense; trc smokey chert; no visible porosity; N.S.

CHEROKEE SH 4491 (-1687)

4500

LS: lt brown; vf-xtal; dense, platey; sli chalky in part; no visible porosity; N.S.

LS: lt brown to gray; vf-xtal; dense; no visible porosity; N.S., much shale;

LS: brown to gray; vf-xtal; dense; no visible porosity; N.S.

LS: lt gray; vf-xtal; dense, platey; trc pin-pt vug porosity w/gillsonitic stain; otherwise no shows.

Shale: green, gray, maroon; w/trace white siltst/ss;

4550

SandSt: white; v-fine; rnd-ang clusters; well cemented; poor int grain porosity; N.S.

Sand: white; vf-grain; well cemented; v-poor int grain porosity; N.S.

Shale: various; silty;

MISSISSIPPI 4587 (-1783)

(corrected top)

DOL: md-dk grayish-brown, mottled; vf-f xtal; fair int xtal porosity; N.S., 4610.

DOL: as above;

4600

LS: md-dk gray & brown, mixed grains; vf-xtal; dolomitic; v-tight int xtal porosity; N.S.

LS: as above;

ROTARY TOTAL DEPTH 4625 (-1821)

0 Hot-Wire 100

57.3 SPM AT 4435'

VIS 51, WT 9.1, FIL 8.4

57.1 SPM AT 4526'

DST #4: MYRICK, FT SCOTT, CHER: 4439-4553: WEAK BLOW: 5-15-15-30; 5' MUD; SIP: 458-604; FP: 17-20, 20-22.

BIT TRIP & DST 4553'

BIT TRIP 4578'

0 Hot-Wire 100

PIONEER OPEN HOLE SERV. LTD 4625'