KOLAR Document ID: 1289084

Confidentiality Requested:
☑ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1
January 2018
Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 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: Vern Schrag
Purchaser:

Designate Type of Completion:
☑ New Well ☐ Re-Entry ☐ Workover
☑ Oil ☐ WSW ☐ SWD
☐ Gas ☐ DH ☐ EOR
☐ OG ☐ GSW
☐ CM *(Coal Bed Methane)*
☐ Cathodic ☐ Other *(Core, Expl., etc.)*:

If Workover/Re-entry: Old Well Info as follows:
Operator:
Well Name:
Original Comp. Date: Original Total Depth:
☐ Deepening ☐ Re-perf. ☐ Conv. to EOR ☐ Conv. to SWD
☐ Plug Back ☐ Liner ☐ Conv. to GSW ☐ Conv. to Producer

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

12/9/2015	12/21/2015	1/6/2016
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No.: 15-101-22576-00-00
Spot Description:
SE - NW - NW - SW Sec. 27 Twp. 18 S. R. 28 ☐ East ☑ West
2300 Feet from ☐ North / ☑ South Line of Section
4792 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: Eugene Well #: 2-27
Field Name:
Producing Formation: Cherokee, Marmaton, L-KC
Elevation: Ground: 2737 Kelly Bushing: 2746
Total Vertical Depth: 4634 Plug Back Total Depth: 4589
Amount of Surface Pipe Set and Cemented at: 265 Feet
Multiple Stage Cementing Collar Used? ☑ Yes ☐ No
If yes, show depth set: 2060 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: 12800 ppm Fluid volume: 775 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: 04/06/2016
☑ **Confidential Release Date:** 04/06/2018
☑ **Wireline Log Received** ☐ **Drill Stem Tests Received**
☑ **Geologist Report / Mud Logs Received**
☐ **UIC Distribution**
ALT ☐ I ☑ II ☐ III **Approved by:** Karen Ritter **Date:** 04/06/2016

Page Two

Operator Name: Larson Engineering, Inc. dba Larson Operating Company Lease Name: Eugene Well #: 2-27

Sec. 27 Twp. 18 S. R. 28 ☐ 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

Geologist Report / Mud Logs ☐ Yes ☐ No

List All E. Logs Run:

Microresistivity
Dual Induction
Dual Comp Porosity

☑ 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	265	Class A	175	2% gel, 3% CC, 1/4#/sk flocele
Production	7.875	4.5	11.6	4635	EA-2	145	7#/sk gilsonite, 1/4#/sk flocele

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	0-2060	SMD	195	1/4#/sk flocele
	-			

1. Did you perform a hydraulic fracturing treatment on this well? ☐ Yes ☑ No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? ☐ Yes ☐ No *(If No, skip question 3)*
3. Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? ☐ Yes ☐ No *(If No, fill out Page Three of the ACO-1)*

Date of first Production/Injection or Resumed Production/ Injection: 1/6/2016

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)*

PRODUCTION INTERVAL:

Top	Bottom
4521 - 4339	

Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record *(Amount and Kind of Material Used)*

TUBING RECORD: Size: 2.375 Set At: 4581.35 Packer At:

Mail to: KCC - Conservation Division, 266 N. Main, Suite 220, Wichita, Kansas 67202

Form	ACO1 - Well Completion
Operator	Larson Engineering, Inc. dba Larson Operating Company
Well Name	Eugene 2-27
Doc ID	1289084

Tops

Name	Top	Datum
Anhydrite	2098	648
B Anhydrite	2134	+612
Heebner Sh	3930	-1184
Lansing	3971	-1225
Stark Sh	4239	-1493
Pawnee	4435	1689
Ft. Scott	4489	-1743
L Cher Sh	4513	-1767

Form	ACO1 - Well Completion
Operator	Larson Engineering, Inc. dba Larson Operating Company
Well Name	Eugene 2-27
Doc ID	1289084

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	265	Class A	175	2% gel, 3% CC, 1/4#/sk flocele
Production	7.875	4.5	11.6	4635	EA-2	145	7#/sk gilsonite, 1/4#/sk flocele

SWIFT Services, Inc.

CHARGE TO: Larson Engineering
ADDRESS
CITY, STATE, ZIP CODE

TICKET 29134

PAGE 1 OF 1

SERVICE LOCATIONS	WELL/PROJECT NO.	LEASE	COUNTY/PARISH	STATE	CITY	DATE	OWNER
1. Ness City KS	#2-27	Eugene	Lane	KS	Dighton	12-10-15	Same
2.	TICKET TYPE ☒ SERVICE ☐ SALES — CONTRACTOR: H-D Drilling		RIG NAME/NO. #3	SHIPPED VIA CT	DELIVERED TO Location	ORDER NO.	
3.	WELL TYPE: Oil	WELL CATEGORY: Development	JOB PURPOSE: Cement 8 5/8" Surface Pipe		WELL PERMIT NO.	WELL LOCATION: Dighton - 2E, 2S, 1E, Wnb	
4. REFERRAL LOCATION	INVOICE INSTRUCTIONS						

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING LOC	ACCT	DF	DESCRIPTION	QTY.	U/M	QTY.	U/M	UNIT PRICE	AMOUNT
575		1			MILEAGE Trk # 112			30	mi	5 00	150 00
576 S		1			Pump Charge - Shallow Surface	1	job	8 5/8	in	800 00	800 00
325		1			Standard Cement			175	sks	12 25	2143 75
278		1			Calcium Chloride	3	%	8	sks	40 00	320 00
279		1			Bentonite Gel	2	%	3	sks	25 00	75 00
276		1			Flocele	1/4	lb	50	lbs	2 25	112 50
290		1			D-Air			2	gal	42 00	84 00
581		1			Service Charge Cement			175	sks	1 50	262 50
582		1			Minimum Drayage Charge			1	ea	250 00	250 00

LEGAL TERMS: Customer hereby acknowledges and agrees to the terms and conditions on the reverse side hereof which include, but are not limited to, **PAYMENT, RELEASE, INDEMNITY,** and **LIMITED WARRANTY** provisions.

MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS

X [signature]

DATE SIGNED 12-10-15 TIME SIGNED 1645 ☐ A.M. ☒ P.M.

REMIT PAYMENT TO:

SWIFT SERVICES, INC.
P.O. BOX 466
NESS CITY, KS 67560
785-798-2300

SURVEY	AGREE	UN-DECIDED	DIS-AGREE
OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?			
WE UNDERSTOOD AND MET YOUR NEEDS?			
OUR SERVICE WAS PERFORMED WITHOUT DELAY?			
WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?			

ARE YOU SATISFIED WITH OUR SERVICE? ☐ YES ☐ NO

☐ CUSTOMER DID NOT WISH TO RESPOND

PAGE TOTAL	4197 75
Lane TAX 7.5%	205 14
TOTAL	4402 89

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES The customer hereby acknowledges receipt of the materials and services listed on this ticket.

SWIFT OPERATOR David Hurley APPROVAL

Thank You!

JOB LOG

SWIFT Services, Inc.

DATE 12-10-15 | PAGE NO. 1

CUSTOMER	WELL NO.	LEASE	JOB TYPE	TICKET NO.
Larson Engineering	2-27	Eugene	Cement 8⅝" Surface Pipe	29134

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS T	PUMPS C	PRESSURE (PSI) TUBING	PRESSURE (PSI) CASING	DESCRIPTION OF OPERATION AND MATERIALS
	1430							on Location 8⅝ 20#
								RTD - 267' TP. 265
								Rig running 8⅝" 20# casing
	1530							Break Circulation
	1545	4½	5		✓		200	pump 5 bbl water spacer
	1547	4½	42		✓		200	mix 175 sks 2% gel 3% CC @ 14.7 ppg
								wash out Pump & lines
	1615	4½	16½		✓		300	Displace Cement
								Circulate cement to surface
								* 20 sks *
	1620	Ø	16½		✓		300	Shut in value * Hold *
								wash up trucks
	1645							Job Complete
								Thank You
								Dave Wayne Preston

SWIFT Services, Inc.

CHARGE TO: Larson Engineering
ADDRESS
CITY, STATE, ZIP CODE

TICKET 29136

PAGE 1 OF 2

SERVICE LOCATIONS	WELL/PROJECT NO.	LEASE	COUNTY/PARISH	STATE	CITY	DATE	OWNER
1. Ness City KS	#2-27	Eugene	Lane	KS	Dighton	12-21-15	Same
2.	TICKET TYPE ☑ SERVICE ☐ SALES / CONTRACTOR: H-D Drilling		RIG NAME/NO. #3	SHIPPED VIA CT	DELIVERED TO Location	ORDER NO.	
3.	WELL TYPE: Oil	WELL CATEGORY: Development	JOB PURPOSE: Cement 4½" Longstring		WELL PERMIT NO.	WELL LOCATION: Dighton - 2E, 2S, 1E, Wimbo	
4. REFERRAL LOCATION	INVOICE INSTRUCTIONS						

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING LOC	ACCT	DF	DESCRIPTION	QTY.	U/M	QTY.	U/M	UNIT PRICE	AMOUNT
575		1			MILEAGE Trk # 112			30	mi	5 00	150 00
578		1			Pump Charge - Longstring	4½	in	1	job	1250 00	1250 00
419		1			Rotating Head Rental	4½	in	1	ea	200 00	200 00
280		1			Flocheck 21			500	gal	3 00	1500 00

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MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS

X [signature]

DATE SIGNED 12-21-15 | TIME SIGNED 1030 ☒ A.M. ☐ P.M.

REMIT PAYMENT TO:

SWIFT SERVICES, INC.
P.O. BOX 466
NESS CITY, KS 67560
785-798-2300

SURVEY	AGREE	UN-DECIDED	DIS-AGREE
OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?			
WE UNDERSTOOD AND MET YOUR NEEDS?			
OUR SERVICE WAS PERFORMED WITHOUT DELAY?			
WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?			

ARE YOU SATISFIED WITH OUR SERVICE? ☐ YES ☐ NO

☐ CUSTOMER DID NOT WISH TO RESPOND

PAGE TOTAL #1	3100 00
PAGE TOTAL #2	5422 25
subtotal	8522 75
Lane TAX 7.5%	495 77
TOTAL	9018 52

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES The customer hereby acknowledges receipt of the materials and services listed on this ticket.

SWIFT OPERATOR David Kuehn | APPROVAL

Thank You!

SWIFT Services, Inc.

PO Box 466
Ness City, KS 67560
Off: 785-798-2300

TICKET CONTINUATION

TICKET No. 29136

CUSTOMER: Larson Engineering | WELL: Eugene #2-22 | DATE: 12-21-15 | PAGE 1 OF 1

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING LOC	ACCT	DF	TIME	DESCRIPTION	QTY	U/M	QTY.	U/M	UNIT PRICE	AMOUNT
325		1				Standard Cement (EA-2)			175	sks	12 25	2143 75
284		1				Calseal	5	%	8	sks	30 00	240 00
283		1				Salt	10	%	900	lbs	00 20	180 00
292		1				Halad 322	1	%	150	lbs	8 00	1200 00
277		1				Cello Seal (Gilsonite)	7	lb	1200	lbs	0 75	900 00
276		1				Flocele	1/4	lb	50	lbs	2 25	112 50
221		1				Liquid KCL			2	gal	25 00	50 00
290		1				D-Air			2	gal	42 00	84 00
582		1				Minimum Drayage Charge			1	ea	250 00	250 00
581		1				SERVICE CHARGE	CUBIC FEET		175		1 50	262 50
						MILEAGE CHARGE / TOTAL WEIGHT / LOADED MILES	TON MILES					
											CONTINUATION TOTAL	5422. 75

JOB LOG

SWIFT Services, Inc.

DATE 12-21-15 PAGE NO. 1

CUSTOMER	WELL NO.	LEASE	JOB TYPE	TICKET NO.
Larson Engineering	#2-27	Eugene	Cement 4½ Longstring	29136

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS T	PUMPS C	PRESSURE (PSI) TUBING	PRESSURE (PSI) CASING	DESCRIPTION OF OPERATION AND MATERIALS
	0930							on Location 4½" 11.6#
								RTD - 4636 TD - 4645
								SJ - 42.21 P.C. - 2059
	0945							Drop Ball Circulate * Rotate *
	1045	6½	15		✓		400	Pump 15 bbl KCL Flush
		6½	12		✓		400	Pump 500 gal Flocheck
		6½	5		✓		400	Pump 5 bbl KCL Flush
			72					Plug RH (30 sks)
	1100	4½	~~32~~ 32				300	mix 145 sks EA-2 w/ 7# Gilsonite @ 15.3 ppg
								Wash out Pump + Lines
								Release Latch Down Plug
	1120	6½	0		✓		100	Start Displacement
		6½	50		✓		400	Lift Pressure
		6½	70		✓		800	Max Lift Pressure
	1130	6½	73		✓		1500	Land Latch Down Plug
								Release Pressure * Plug Held *
								wash up trucks
	1200							Job Complete
								Thank You
								Dave John Preston

SWIFT Services, Inc.

CHARGE TO: LARSON ENGINEERING
ADDRESS
CITY, STATE, ZIP CODE

TICKET 29099

PAGE 1 OF

SERVICE LOCATIONS	WELL/PROJECT NO.	LEASE	COUNTY/PARISH	STATE	CITY	DATE	OWNER
1. NESS CITY, KS.		EUGENE 2-27	LANE	KS.	DIGHTON, KS	23 DEC 15	
2.	TICKET TYPE ☐ SERVICE ☐ SALES — CONTRACTOR: CO. RIG.		RIG NAME/NO.	SHIPPED VIA	DELIVERED TO		ORDER NO.
3.	WELL TYPE	WELL CATEGORY	JOB PURPOSE		WELL PERMIT NO.		WELL LOCATION
4.	OIL	DEVELOPMENT	CEMENT PORT COLLAR				2E, 2S, 1E, NINTO
REFERRAL LOCATION	INVOICE INSTRUCTIONS						

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING LOC	ACCT	DF	DESCRIPTION	QTY.	U/M	QTY.	U/M	UNIT PRICE	AMOUNT
575					MILEAGE #115	30	MIL			5 00	150 00
576D					PUMP CHARGE	1	JOB			1250 00	1250 00
290					D-AIR	2	gal			42 00	84 00
276					FLOCELE	50	lbs			2 25	112 50
330					SMD CEMENT	195	SX			15 75	3071 25
581					CEMENT SERVICE CHARGE	300	SX			1 50	450 00
583					DRAYAGE	29878	lbs.	448.12	TM	75	336 09

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MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS

X

DATE SIGNED 23 Dec 15 | TIME SIGNED 1245 ☐ A.M. ☐ P.M.

REMIT PAYMENT TO:

SWIFT SERVICES, INC.
P.O. BOX 466
NESS CITY, KS 67560
785-798-2300

SURVEY	AGREE	UN-DECIDED	DIS-AGREE
OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?			
WE UNDERSTOOD AND MET YOUR NEEDS?			
OUR SERVICE WAS PERFORMED WITHOUT DELAY?			
WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?			

ARE YOU SATISFIED WITH OUR SERVICE? ☐ YES ☐ NO

☐ CUSTOMER DID NOT WISH TO RESPOND

PAGE TOTAL	5453 84
Lane TAX 7.5%	245 08
TOTAL	5698 92

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES The customer hereby acknowledges receipt of the materials and services listed on this ticket.

SWIFT OPERATOR J. Rooth | APPROVAL

Thank You!

JOB LOG

SWIFT Services, Inc.

DATE 23 Dec 15 | PAGE NO.

CUSTOMER: LARSON ENGINEERING | WELL NO. | LEASE: EUGENE 2-27 | JOB TYPE: CEMENT PORT COLLAR | TICKET NO.: 29099

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS T	PUMPS C	PRESSURE (PSI) TUBING	PRESSURE (PSI) CASING	DESCRIPTION OF OPERATION AND MATERIALS
	1050							ON LOCATION
								PORT COLLAR @ 2060
	1118				↘		1000	TEST - HELD
	1120							OPEN PORT COLLAR
	1124	4	108	↘		700		MIX 195 SX SMD
		3	7	↘				DISPLACE CEMENT
								CIRCULATE 20 SX TO PIT
	1152			↘		1000		CLOSE PORT COLLAR - TEST - HELD
								RUN 5 JTS.
	1203	3½	20		↘		400	REVERSE CLEAN
	1211							WASH TRUCK
	1245							JOB COMPLETE.
								THANKS #115
								JASON COLE ROB

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Larson Engineering**

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Eugene #2-27

27-18s-28w Lane,KS

Start Date: 2015.12.16 @ 02:00:49
End Date: 2015.12.16 @ 09:10:49
Job Ticket #: 61799 DST #: 1

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

Printed: 2015.12.21 @ 16:27:11

DRILL STEM TEST REPORT

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 61799 **DST#: 1**

Test Start: 2015.12.16 @ 02:00:49

GENERAL INFORMATION:

Formation: **LKC H**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 04:50:19
Time Test Ended: 09:10:49

Test Type: Conventional Bottom Hole (Initial)
Tester: Brandon Turley
Unit No: 79

Interval: 4142.00 ft (KB) To 4170.00 ft (KB) (TVD)
Total Depth: 4170.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

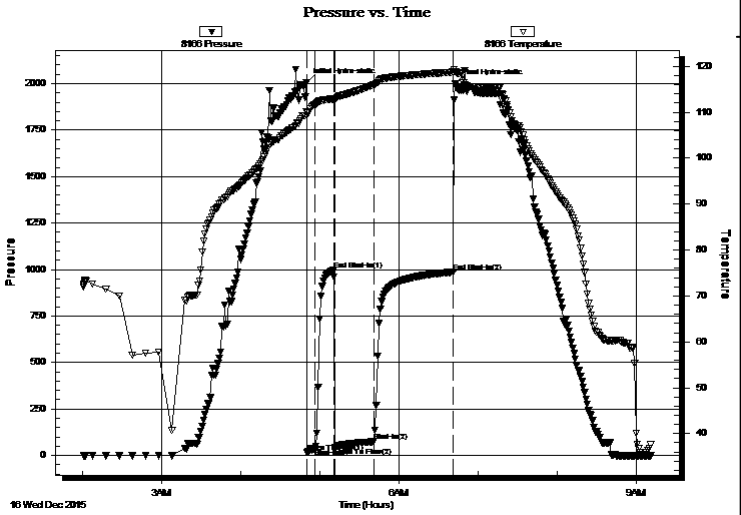
Reference Elevations: 2746.00 ft (KB)
2737.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8166 **Outside**

Press@RunDepth: 74.54 psig @ 4143.00 ft (KB)
Start Date: 2015.12.16 End Date: 2015.12.16
Start Time: 02:00:54 End Time: 09:10:48

Capacity: 8000.00 psig
Last Calib.: 2015.12.16
Time On Btm: 2015.12.16 @ 04:49:49
Time Off Btm: 2015.12.16 @ 06:42:49

TEST COMMENT: IF: 1/4" blow built to 3"
IS: No return.
FF: BOB in 20 min.
FS: No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2007.28	110.02	Initial Hydro-static
1	16.94	109.29	Open To Flow (1)
7	36.20	111.67	Shut-In(1)
21	997.87	112.87	End Shut-In(1)
22	43.36	112.79	Open To Flow (2)
51	74.54	115.96	Shut-In(2)
112	986.62	118.71	End Shut-In(2)
113	1999.57	118.89	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	mcgo 20%g 50%o 30%m	0.30
82.00	mco 60%o 40%m	0.59
20.00	oil 100%o	0.28
0.00	186 GIP	0.00

Gas Rates

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

DRILL STEM TEST REPORT

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 61799 **DST#: 1**

Test Start: 2015.12.16 @ 02:00:49

GENERAL INFORMATION:

Formation: **LKC H**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 04:50:19
Time Test Ended: 09:10:49

Test Type: Conventional Bottom Hole (Initial)
Tester: Brandon Turley
Unit No: 79

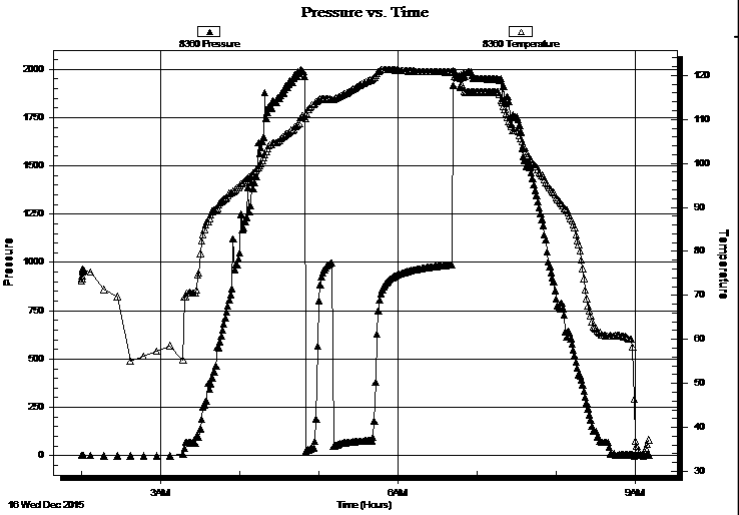
Interval: 4142.00 ft (KB) To 4170.00 ft (KB) (TVD)
Total Depth: 4170.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2746.00 ft (KB)
2737.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8360 **Inside**
Press@RunDepth: psig @ 4143.00 ft (KB)
Start Date: 2015.12.16 End Date: 2015.12.16
Start Time: 02:00:20 End Time: 09:10:44

Capacity: 8000.00 psig
Last Calib.: 2015.12.16
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: 1/4" blow built to 3"
IS: No return.
FF: BOB in 20 min.
FS: No return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
62.00	mcgo 20%g 50%o 30%m	0.30
82.00	mco 60%o 40%m	0.59
20.00	oil 100%o	0.28
0.00	186 GIP	0.00

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 61799 **DST#: 1**

Test Start: 2015.12.16 @ 02:00:49

Tool Information

Drill Pipe:	Length:	4017.00 ft	Diameter:	3.80	inches	Volume:	56.35	bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00	inches	Volume:	0.00	bbl	
Drill Collar:	Length:	124.00 ft	Diameter:	2.25	inches	Volume:	0.61	bbl	
						Total Volume:	56.96	bbl	

Drill Pipe Above KB:	26.00 ft
Depth to Top Packer:	4142.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	28.00 ft
Tool Length:	55.00 ft
Number of Packers:	2 Diameter: 6.75 inches

Tool Weight:		2000.00 lb
Weight set on Packer:		25000.00 lb
Weight to Pull Loose:		65000.00 lb
Tool Chased		0.00 ft
String Weight:	Initial	56000.00 lb
	Final	58000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Stubb	1.00			4116.00		
Shut In Tool	5.00			4121.00		
Hydraulic tool	5.00			4126.00		
Jars	5.00			4131.00		
Safety Joint	2.00			4133.00		
Packer	5.00			4138.00	27.00	Bottom Of Top Packer
Packer	4.00			4142.00		
Stubb	1.00			4143.00		
Recorder	0.00	8360	Inside	4143.00		
Recorder	0.00	8166	Outside	4143.00		
Perforations	22.00			4165.00		
Bullnose	5.00			4170.00	28.00	Bottom Packers & Anchor
Total Tool Length:	**55.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 61799 **DST#: 1**

Test Start: 2015.12.16 @ 02:00:49

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	0 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	0 ppm
Viscosity:	63.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.38 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	3000.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

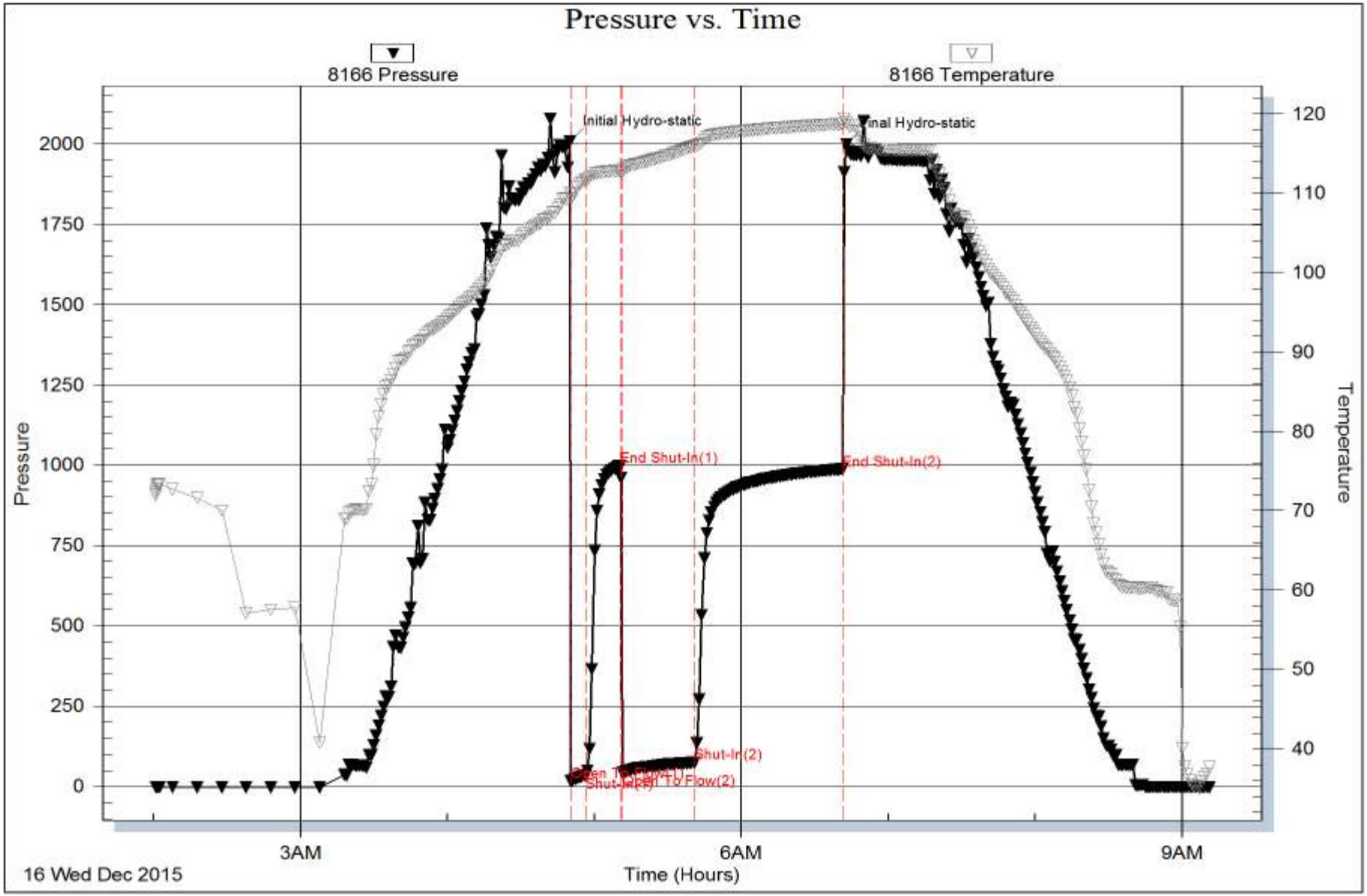
Recovery Table

Length ft	Description	Volume bbl
62.00	mcgo 20%g 50%o 30%m	0.305
82.00	mco 60%o 40%m	0.585
20.00	oil 100%o	0.281
0.00	186 GIP	0.000

Total Length: 164.00 ft Total Volume: 1.171 bbl

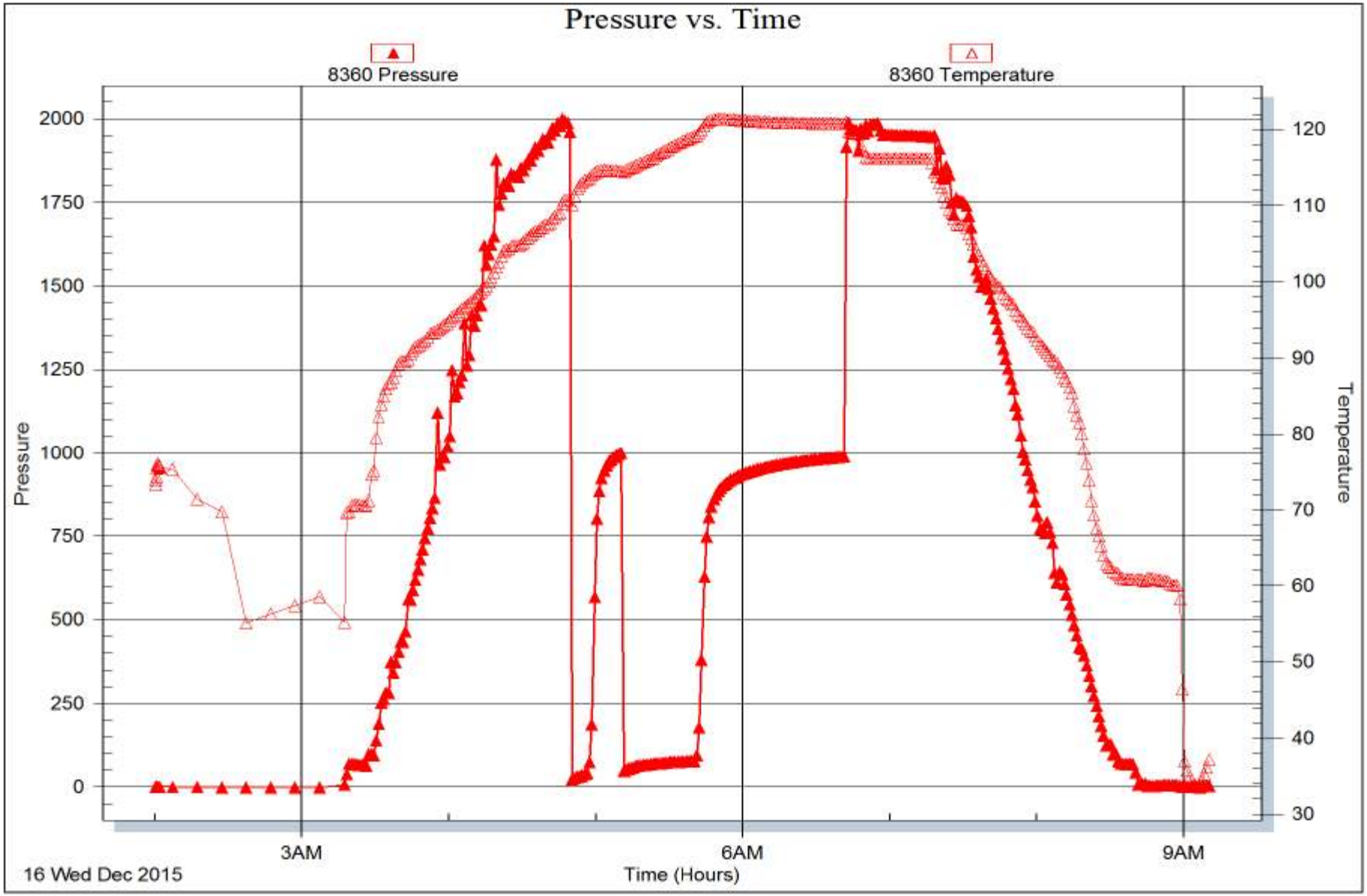
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8166 **Outside** Larson Engineering Eugene #2-27 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 61799 Printed: 2015.12.21 @ 16:27:14

Serial #: 8360 **Inside** Larson Engineering Eugene #2-27 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 61799 Printed: 2015.12.21 @ 16:27:15

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Larson Engineering**

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Eugene #2-27

27-18s-28w Lane,KS

Start Date: 2015.12.16 @ 20:07:55

End Date: 2015.12.17 @ 01:47:25

Job Ticket #: 61800 DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2015.12.21 @ 16:26:41

DRILL STEM TEST REPORT

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 61800 **DST#: 2**

Test Start: 2015.12.16 @ 20:07:55

GENERAL INFORMATION:

Formation: **LKC J**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 21:54:55
Time Test Ended: 01:47:25

Test Type: Conventional Bottom Hole (Reset)
Tester: Brandon Turley
Unit No: 79

Interval: 4199.00 ft (KB) To 4227.00 ft (KB) (TVD)
Total Depth: 4227.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

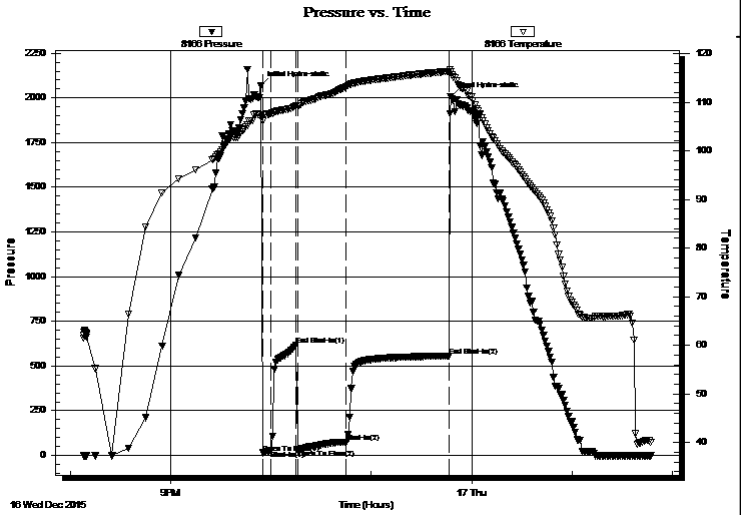
Reference Elevations: 2746.00 ft (KB)
2737.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8166 **Outside**

Press@RunDepth: 75.24 psig @ 4200.00 ft (KB)
Start Date: 2015.12.16 End Date: 2015.12.17
Start Time: 20:08:00 End Time: 01:47:24

Capacity: 8000.00 psig
Last Calib.: 2015.12.17
Time On Btm: 2015.12.16 @ 21:53:55
Time Off Btm: 2015.12.16 @ 23:47:25

TEST COMMENT: IF: 1/4" blow built to 1"
IS: No return.
FF: 1/4" blow built to 4"
FS: No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2066.85	107.45	Initial Hydro-static
1	13.56	106.06	Open To Flow (1)
6	28.24	107.62	Shut-In(1)
21	617.49	109.19	End Shut-In(1)
22	32.60	109.18	Open To Flow (2)
51	75.24	113.20	Shut-In(2)
113	556.07	116.33	End Shut-In(2)
114	2008.23	116.31	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	ocm 10%o 90%m	0.30
72.00	ocm 20%o 80%m	0.45

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 61800 **DST#: 2**

Test Start: 2015.12.16 @ 20:07:55

GENERAL INFORMATION:

Formation: **LKC J**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 21:54:55
Time Test Ended: 01:47:25

Test Type: Conventional Bottom Hole (Reset)
Tester: Brandon Turley
Unit No: 79

Interval: 4199.00 ft (KB) To 4227.00 ft (KB) (TVD)
Total Depth: 4227.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

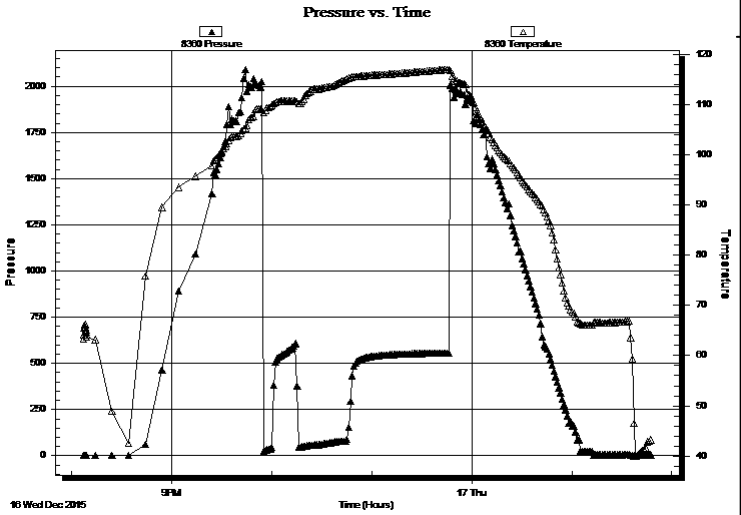
Reference Elevations: 2746.00 ft (KB)
2737.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8360 **Inside**

Press@RunDepth: psig @ 4200.00 ft (KB)
Start Date: 2015.12.16 End Date: 2015.12.17
Start Time: 20:07:20 End Time: 01:47:14

Capacity: 8000.00 psig
Last Calib.: 2015.12.17
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: 1/4" blow built to 1"
IS: No return.
FF: 1/4" blow built to 4"
FS: No return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
62.00	ocm 10%o 90%m	0.30
72.00	ocm 20%o 80%m	0.45

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 61800 **DST#: 2**

Test Start: 2015.12.16 @ 20:07:55

Tool Information

Drill Pipe:	Length:	4078.00 ft	Diameter:	3.80	inches	Volume:	57.20	bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00	inches	Volume:	0.00	bbl	
Drill Collar:	Length:	124.00 ft	Diameter:	2.25	inches	Volume:	0.61	bbl	
						Total Volume:	57.81	bbl	

Drill Pipe Above KB:	30.00 ft		
Depth to Top Packer:	4199.00 ft		
Depth to Bottom Packer:	ft		
Interval betw een Packers:	28.00 ft		
Tool Length:	55.00 ft		
Number of Packers:	2	Diameter:	6.75 inches

Tool Weight:		2000.00 lb
Weight set on Packer:		25000.00 lb
Weight to Pull Loose:		65000.00 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	
Stubb	1.00			4173.00		
Shut In Tool	5.00			4178.00		
Hydraulic tool	5.00			4183.00		
Jars	5.00			4188.00		
Safety Joint	2.00			4190.00		
Packer	5.00			4195.00	27.00	Bottom Of Top Packer
Packer	4.00			4199.00		
Stubb	1.00			4200.00		
Recorder	0.00	8360	Inside	4200.00		
Recorder	0.00	8166	Outside	4200.00		
Perforations	22.00			4222.00		
Bullnose	5.00			4227.00	28.00	Bottom Packers & Anchor
Total Tool Length:	**55.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 61800 **DST#: 2**

Test Start: 2015.12.16 @ 20:07:55

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	0 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	0 ppm
Viscosity:	44.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.38 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2800.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

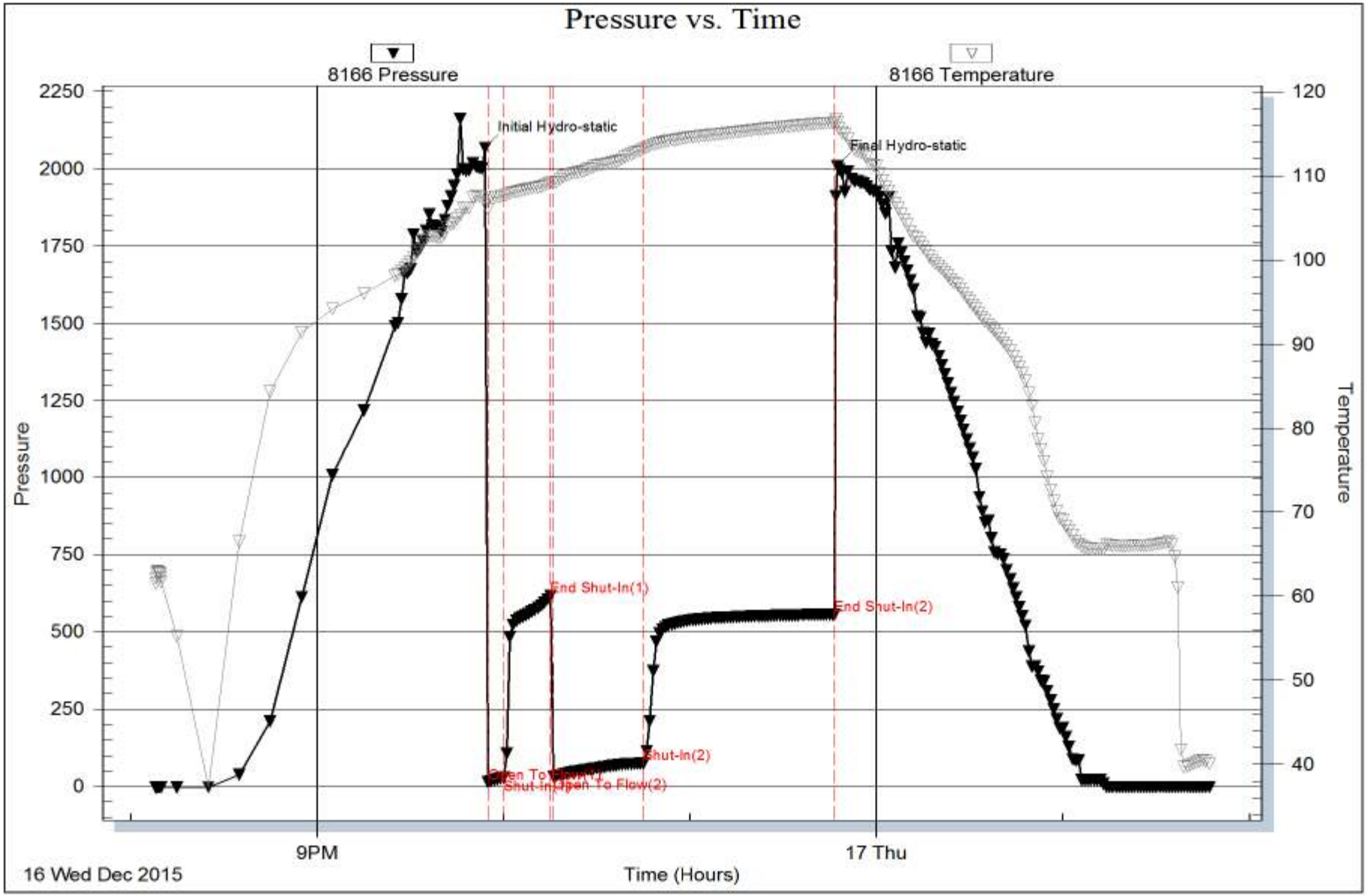
Recovery Table

Length ft	Description	Volume bbl
62.00	ocm 10%o 90%m	0.305
72.00	ocm 20%o 80%m	0.445

Total Length: 134.00 ft Total Volume: 0.750 bbl

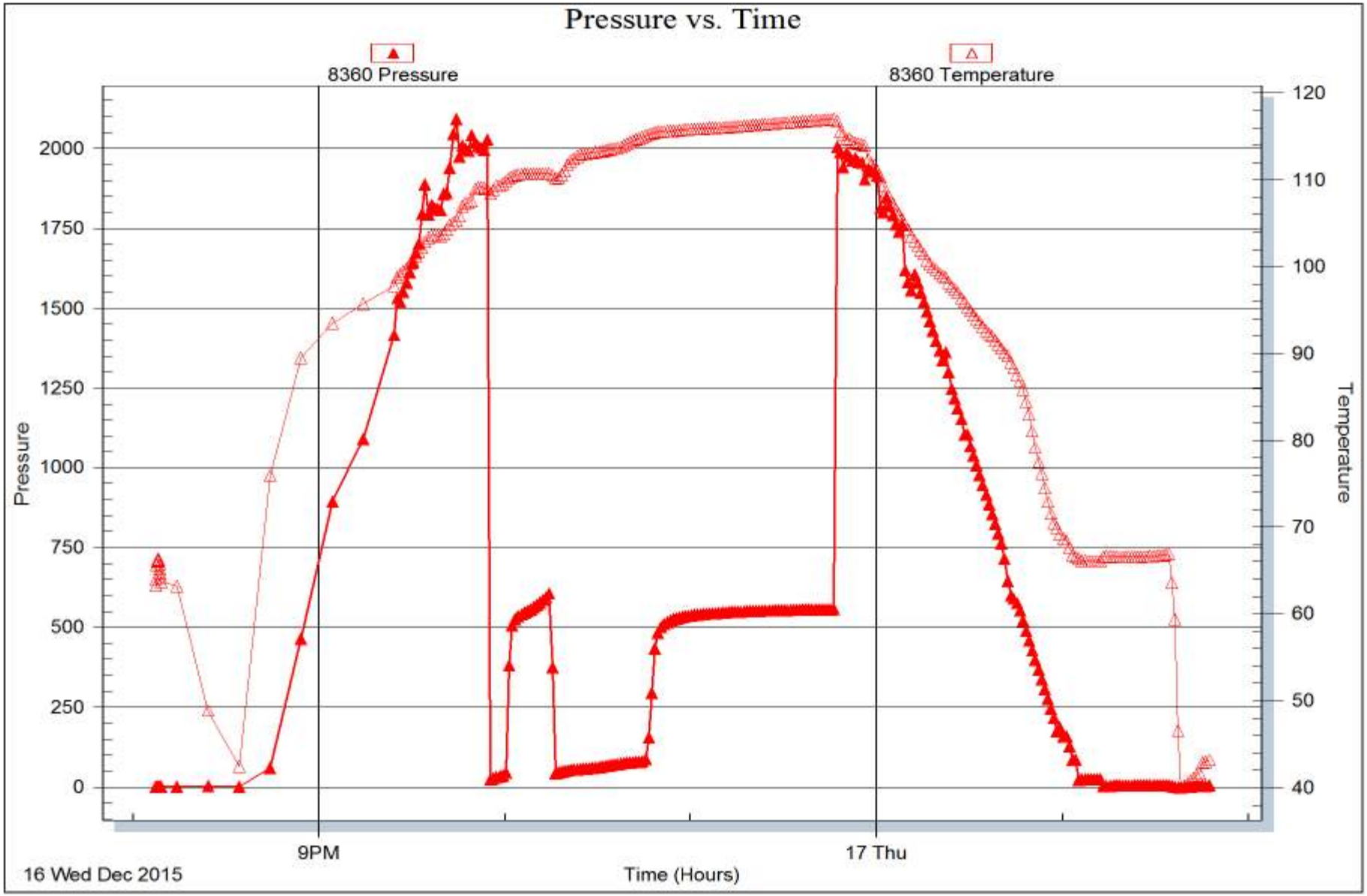
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8166 **Outside** Larson Engineering Eugene #2-27 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 61800 Printed: 2015.12.21 @ 16:26:45

Serial #: 8360 **Inside** Larson Engineering Eugene #2-27 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 61800 Printed: 2015.12.21 @ 16:26:45

DRILL STEM TEST REPORT

Prepared For: **Larson Engineering**

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Eugene #2-27

27-18s-28w Lane,KS

Start Date: 2015.12.17 @ 10:17:46
End Date: 2015.12.17 @ 16:03:16
Job Ticket #: 64526 DST #: 3

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

Printed: 2015.12.21 @ 16:26:13

DRILL STEM TEST REPORT

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64526 **DST#: 3**

Test Start: 2015.12.17 @ 10:17:46

GENERAL INFORMATION:

Formation: **LKC K**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 12:10:16
Time Test Ended: 16:03:16

Test Type: Conventional Bottom Hole (Reset)
Tester: Brandon Turley
Unit No: 79

Interval: 4239.00 ft (KB) To 4251.00 ft (KB) (TVD)
Total Depth: 4251.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

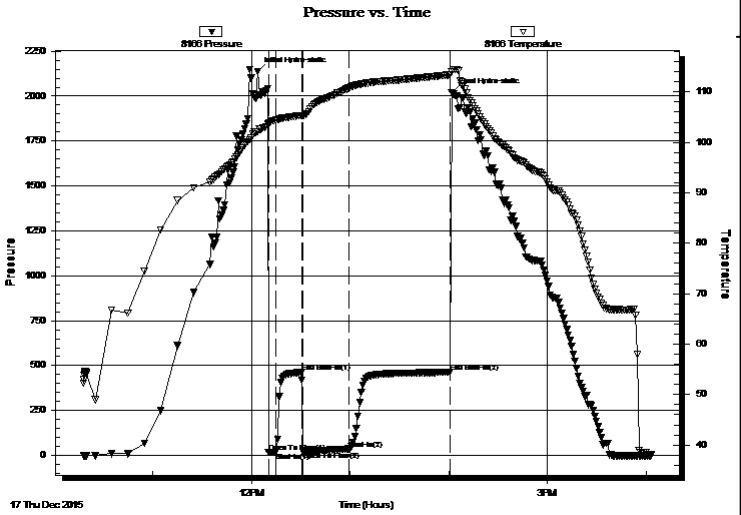
Reference Elevations: 2746.00 ft (KB)
2737.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8166 **Outside**

Press@RunDepth: 36.34 psig @ 4240.00 ft (KB)
Start Date: 2015.12.17 End Date: 2015.12.17
Start Time: 10:17:51 End Time: 16:03:15

Capacity: 8000.00 psig
Last Calib.: 2015.12.17
Time On Btm: 2015.12.17 @ 12:03:46
Time Off Btm: 2015.12.17 @ 14:01:46

TEST COMMENT: IF: Surface blow built to 1/4"
IS: No return.
FF: Surface blow built to 1 1/2"
FS: No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2135.74	102.16	Initial Hydro-static
7	15.34	103.49	Open To Flow (1)
11	18.05	104.42	Shut-In(1)
27	462.06	105.36	End Shut-In(1)
28	20.10	105.29	Open To Flow (2)
56	36.34	110.81	Shut-In(2)
117	462.12	113.38	End Shut-In(2)
118	2021.38	114.02	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
40.00	ocw m 10%o 10%w 80%m	0.20
2.00	oil 100%o	0.01

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64526 **DST#: 3**

Test Start: 2015.12.17 @ 10:17:46

GENERAL INFORMATION:

Formation: **LKC K**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 12:10:16
Time Test Ended: 16:03:16

Test Type: Conventional Bottom Hole (Reset)
Tester: Brandon Turley
Unit No: 79

Interval: 4239.00 ft (KB) To 4251.00 ft (KB) (TVD)
Total Depth: 4251.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

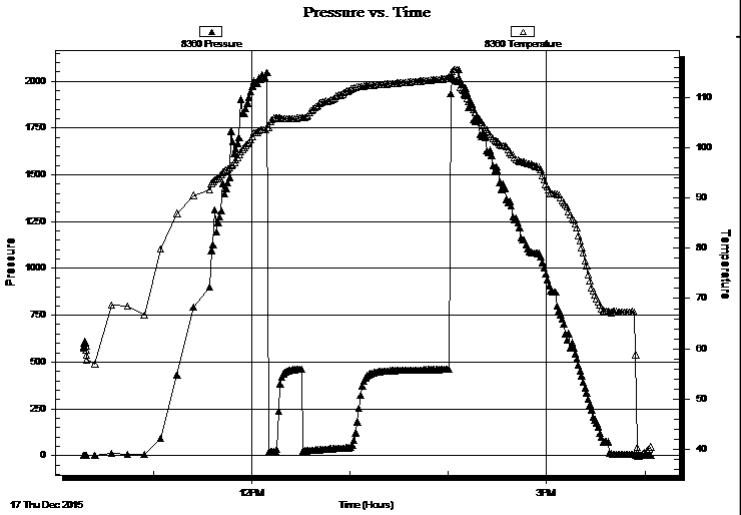
Reference Elevations: 2746.00 ft (KB)
2737.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8360 **Inside**

Press@RunDepth: psig @ 4240.00 ft (KB)
Start Date: 2015.12.17 End Date: 2015.12.17
Start Time: 10:17:35 End Time: 16:03:29

Capacity: 8000.00 psig
Last Calib.: 2015.12.17
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: Surface blow built to 1/4"
IS: No return.
FF: Surface blow built to 1 1/2"
FS: No return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
40.00	ocw m 10%o 10%w 80%m	0.20
2.00	oil 100%o	0.01

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64526 **DST#: 3**

Test Start: 2015.12.17 @ 10:17:46

Tool Information

Drill Pipe:	Length:	4108.00 ft	Diameter:	3.80	inches	Volume:	57.62	bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00	inches	Volume:	0.00	bbl	
Drill Collar:	Length:	124.00 ft	Diameter:	2.25	inches	Volume:	0.61	bbl	
						Total Volume:	58.23	bbl	

Drill Pipe Above KB:	20.00 ft
Depth to Top Packer:	4239.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	12.00 ft
Tool Length:	39.00 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:		80000.00 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	
Stubb	1.00			4213.00		
Shut In Tool	5.00			4218.00		
Hydraulic tool	5.00			4223.00		
Jars	5.00			4228.00		
Safety Joint	2.00			4230.00		
Packer	5.00			4235.00	27.00	Bottom Of Top Packer
Packer	4.00			4239.00		
Stubb	1.00			4240.00		
Recorder	0.00	8360	Inside	4240.00		
Recorder	0.00	8166	Outside	4240.00		
Perforations	6.00			4246.00		
Bullnose	5.00			4251.00	12.00	Bottom Packers & Anchor
Total Tool Length:	**39.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64526 **DST#: 3**

Test Start: 2015.12.17 @ 10:17:46

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	0 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	0 ppm
Viscosity:	44.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.39 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2800.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

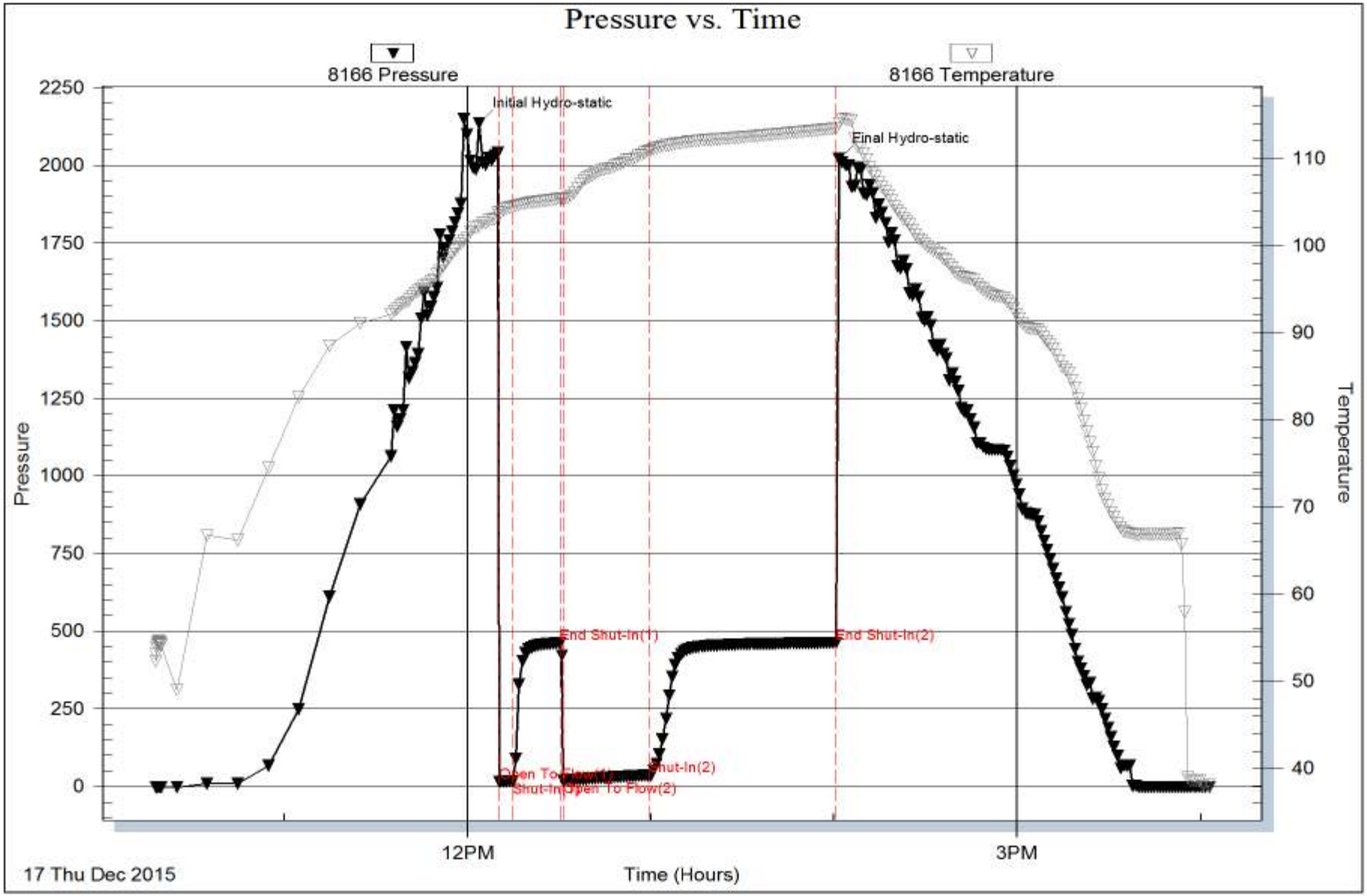
Recovery Table

Length ft	Description	Volume bbl
40.00	ocw m 10%o 10%w 80%m	0.197
2.00	oil 100%o	0.010

Total Length: 42.00 ft Total Volume: 0.207 bbl

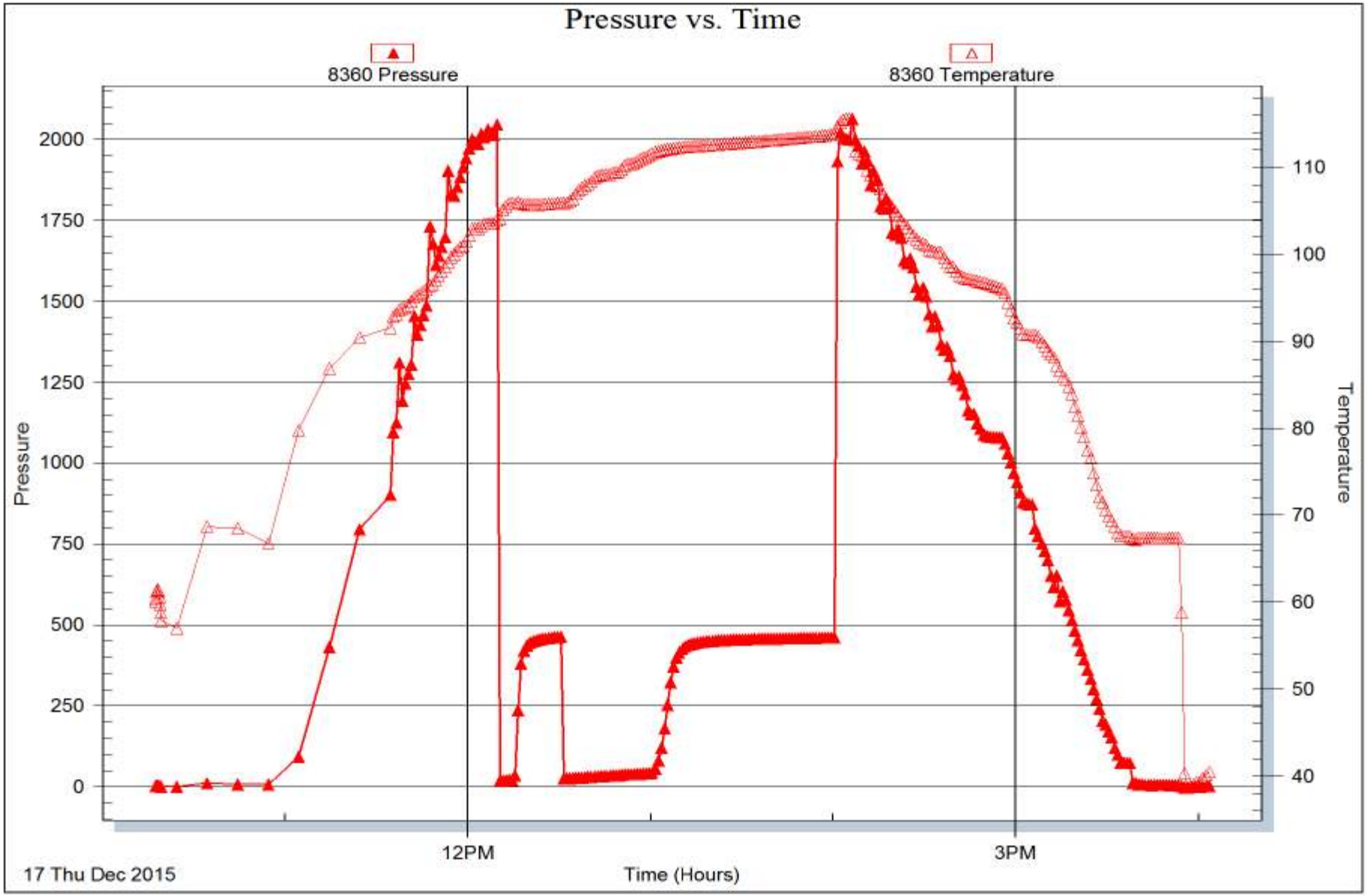
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8166 **Outside** Larson Engineering Eugene #2-27 DST Test Number: 3



Trilobite Testing, Inc Ref. No: 64526 Printed: 2015.12.21 @ 16:26:16

Serial #: 8360 **Inside** Larson Engineering Eugene #2-27 DST Test Number: 3



Trilobite Testing, Inc Ref. No: 64526 Printed: 2015.12.21 @ 16:26:17

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Larson Engineering**

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Eugene #2-27

27-18s-28w Lane,KS

Start Date: 2015.12.18 @ 00:26:07
End Date: 2015.12.18 @ 06:07:07
Job Ticket #: 64527 DST #: 4

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

Printed: 2015.12.21 @ 16:23:40

DRILL STEM TEST REPORT

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64527 **DST#: 4**

Test Start: 2015.12.18 @ 00:26:07

GENERAL INFORMATION:

Formation: **LKC L**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 02:27:07
Time Test Ended: 06:07:07

Test Type: Conventional Bottom Hole (Reset)
Tester: Brandon Turley
Unit No: 79

Interval: 4270.00 ft (KB) To 4283.00 ft (KB) (TVD)
Total Depth: 4283.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

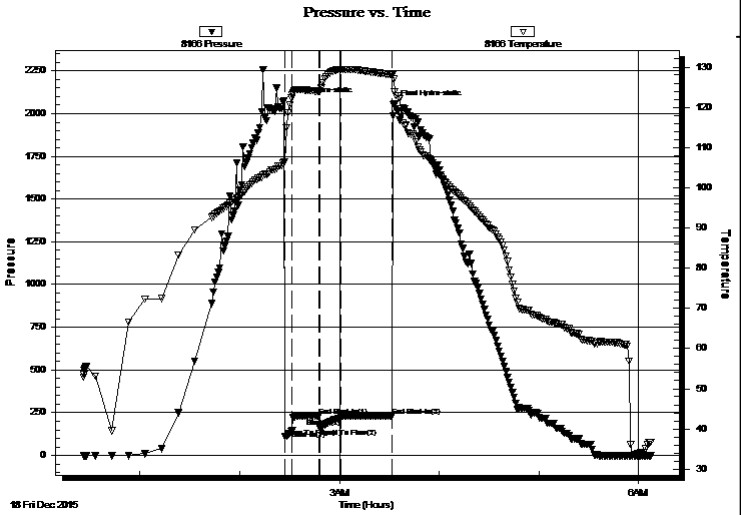
Reference Elevations: 2746.00 ft (KB)
2737.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8166 **Outside**

Press@RunDepth: 218.02 psig @ 4271.00 ft (KB)
Start Date: 2015.12.18 End Date: 2015.12.18
Start Time: 00:26:12 End Time: 06:07:06

Capacity: 8000.00 psig
Last Calib.: 2015.12.18
Time On Btm: 2015.12.18 @ 02:26:37
Time Off Btm: 2015.12.18 @ 03:32:37

TEST COMMENT: IF: BOB in 30 sec.
IS: BOB in 12 min.
FF: BOB in 2 1/2 min.
FS: Surface blow built to 6"



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2072.89	106.43	Initial Hydro-static
1	109.01	106.42	Open To Flow (1)
5	145.85	123.04	Shut-In(1)
21	230.92	123.92	End Shut-In(1)
22	157.89	123.89	Open To Flow (2)
34	218.02	129.40	Shut-In(2)
65	231.24	128.07	End Shut-In(2)
66	2051.59	126.99	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
126.00	gocm 30%g 10%o 60%m	0.64
388.00	go 30%g 70%o	5.44
0.00	935 GIP	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64527 **DST#: 4**

Test Start: 2015.12.18 @ 00:26:07

GENERAL INFORMATION:

Formation: **LKC L**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 02:27:07
Time Test Ended: 06:07:07

Test Type: Conventional Bottom Hole (Reset)
Tester: Brandon Turley
Unit No: 79

Interval: 4270.00 ft (KB) To 4283.00 ft (KB) (TVD)
Total Depth: 4283.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

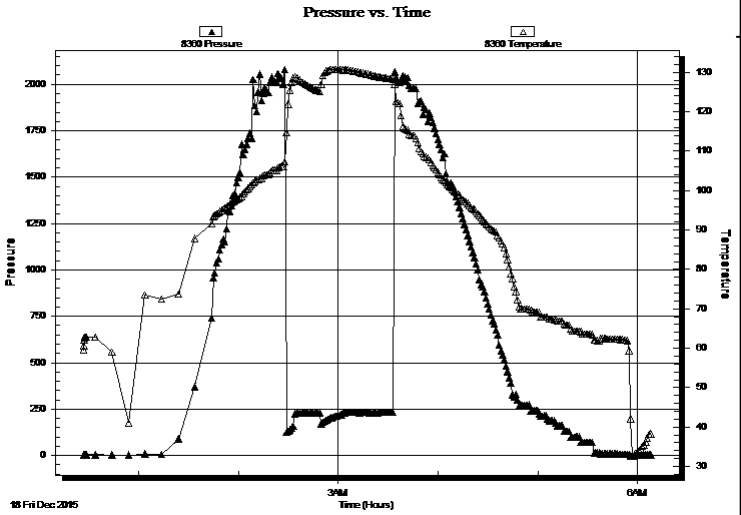
Reference Elevations: 2746.00 ft (KB)
2737.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8360 **Inside**

Press@RunDepth: psig @ 4271.00 ft (KB)
Start Date: 2015.12.18 End Date: 2015.12.18
Start Time: 00:26:58 End Time: 06:08:22

Capacity: 8000.00 psig
Last Calib.: 2015.12.18
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: BOB in 30 sec.
IS: BOB in 12 min.
FF: BOB in 2 1/2 min.
FS: Surface blow built to 6"



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
126.00	gocm 30%g 10%o 60%m	0.64
388.00	go 30%g 70%o	5.44
0.00	935 GIP	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64527 **DST#: 4**

Test Start: 2015.12.18 @ 00:26:07

Tool Information

Drill Pipe:	Length:	4141.00 ft	Diameter:	3.80 inches	Volume:	58.09 bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	
Drill Collar:	Length:	124.00 ft	Diameter:	2.25 inches	Volume:	0.61 bbl	
					Total Volume:	58.70 bbl	

Drill Pipe Above KB:	22.00 ft
Depth to Top Packer:	4270.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	13.00 ft
Tool Length:	40.00 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:		65000.00 lb
Tool Chased		0.00 ft
String Weight:	Initial	58000.00 lb
	Final	60000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Stubb	1.00			4244.00		
Shut In Tool	5.00			4249.00		
Hydraulic tool	5.00			4254.00		
Jars	5.00			4259.00		
Safety Joint	2.00			4261.00		
Packer	5.00			4266.00	27.00	Bottom Of Top Packer
Packer	4.00			4270.00		
Stubb	1.00			4271.00		
Recorder	0.00	8360	Inside	4271.00		
Recorder	0.00	8166	Outside	4271.00		
Perforations	7.00			4278.00		
Bullnose	5.00			4283.00	13.00	Bottom Packers & Anchor
Total Tool Length:	**40.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64527 **DST#: 4**

Test Start: 2015.12.18 @ 00:26:07

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	38 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	0 ppm
Viscosity:	56.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.39 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2700.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

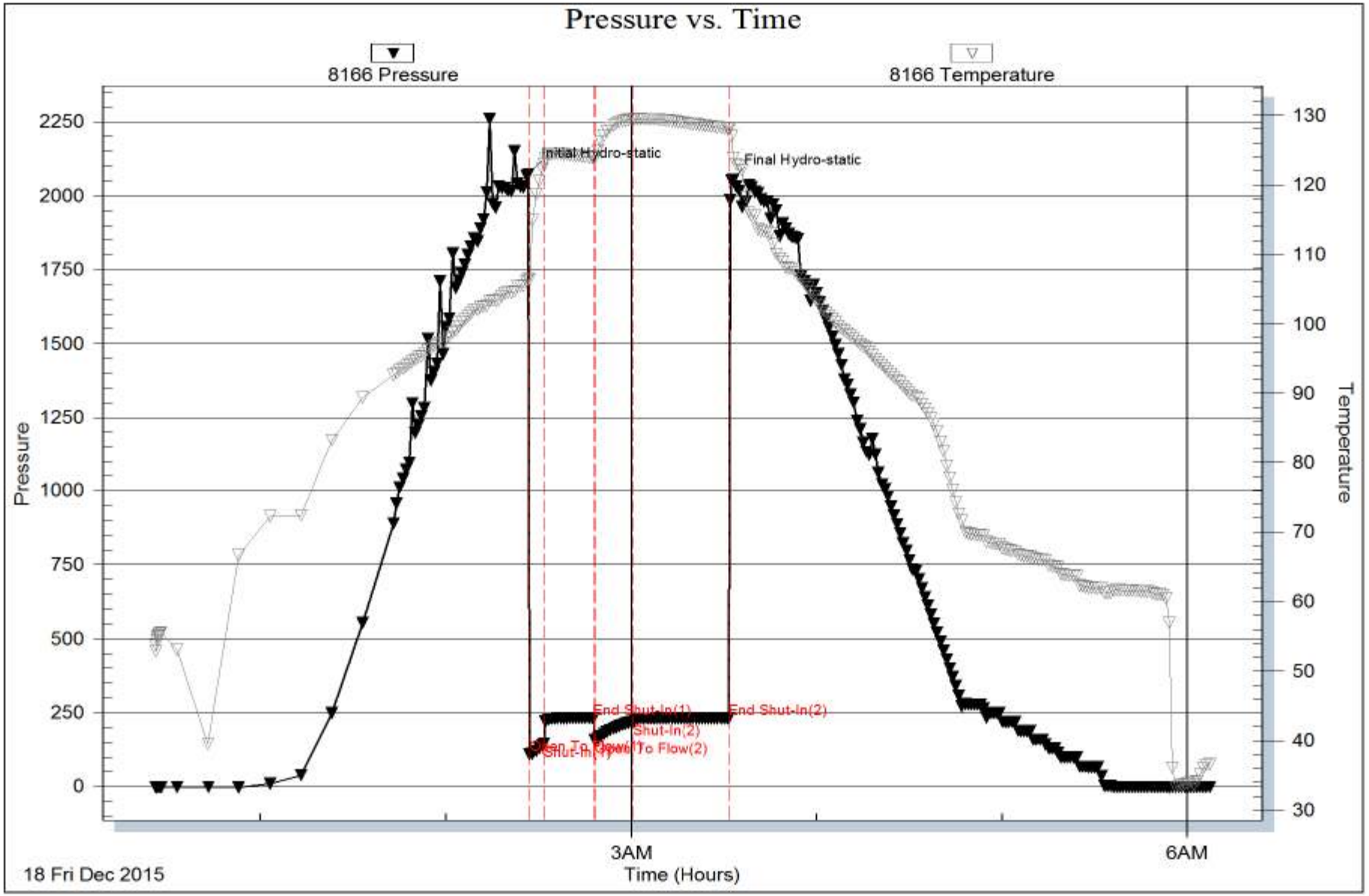
Recovery Table

Length ft	Description	Volume bbl
126.00	gocm 30%g 10%o 60%m	0.638
388.00	go 30%g 70%o	5.443
0.00	935 GIP	0.000

Total Length: 514.00 ft Total Volume: 6.081 bbl

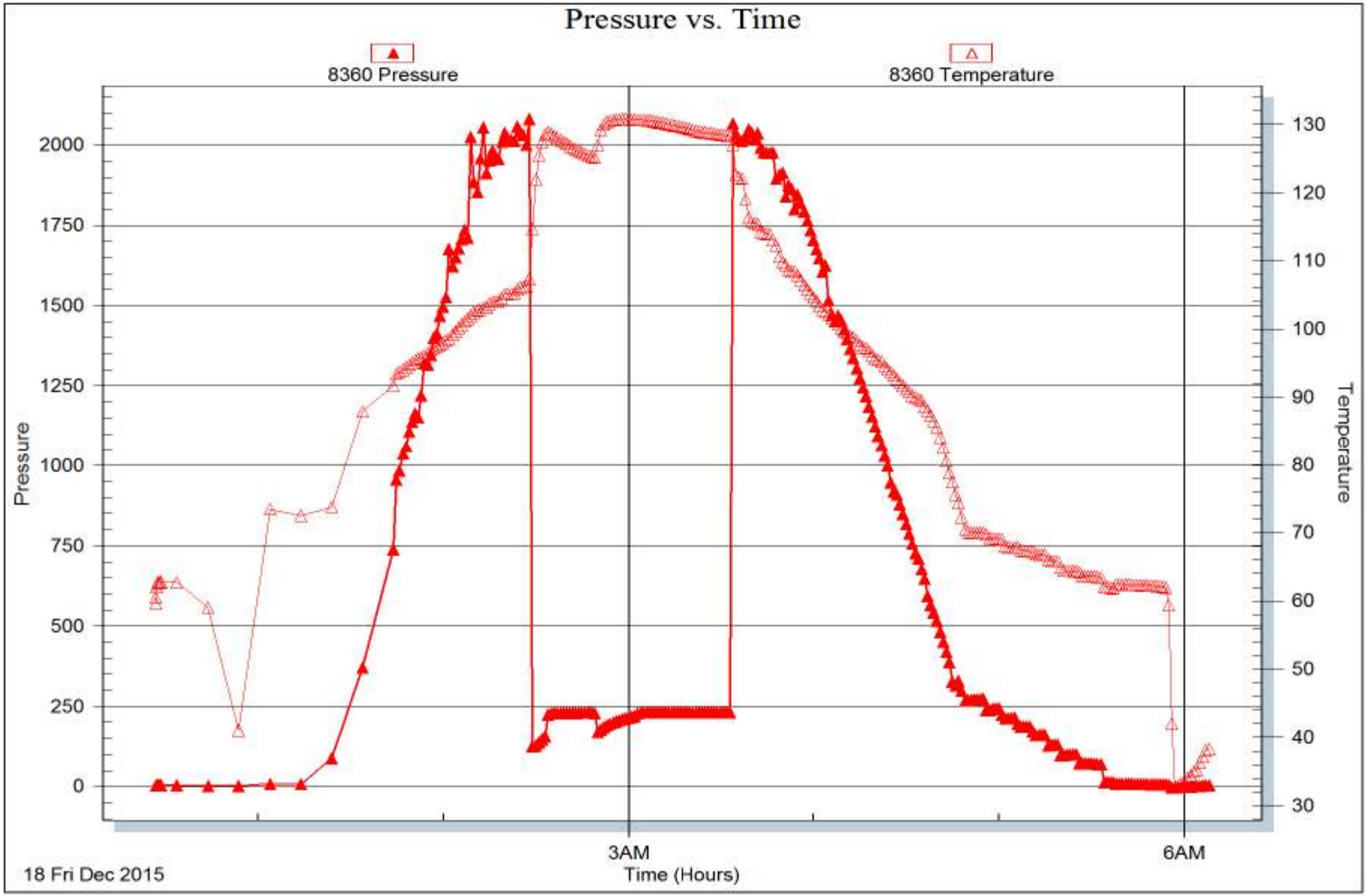
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments: 34@20=38

Serial #: 8166 **Outside** Larson Engineering Eugene #2-27 DST Test Number: 4



Trilobite Testing, Inc Ref. No: 64527 Printed: 2015.12.21 @ 16:23:43

Serial #: 8360 **Inside** Larson Engineering Eugene #2-27 DST Test Number: 4



Trilobite Testing, Inc Ref. No: 64527 Printed: 2015.12.21 @ 16:23:43

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Larson Engineering**

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Eugene #2-27

27-18s-28w Lane,KS

Start Date: 2015.12.19 @ 00:40:18

End Date: 2015.12.19 @ 05:42:18

Job Ticket #: 64528 DST #: 5

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

Printed: 2015.12.21 @ 16:23:17

DRILL STEM TEST REPORT

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64528 **DST#: 5**

Test Start: 2015.12.19 @ 00:40:18

GENERAL INFORMATION:

Formation: **Marmaton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 02:33:48
Time Test Ended: 05:42:18

Test Type: Conventional Bottom Hole (Reset)
Tester: Brandon Turley
Unit No: 79

Interval: 4319.00 ft (KB) To 4415.00 ft (KB) (TVD)
Total Depth: 4415.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

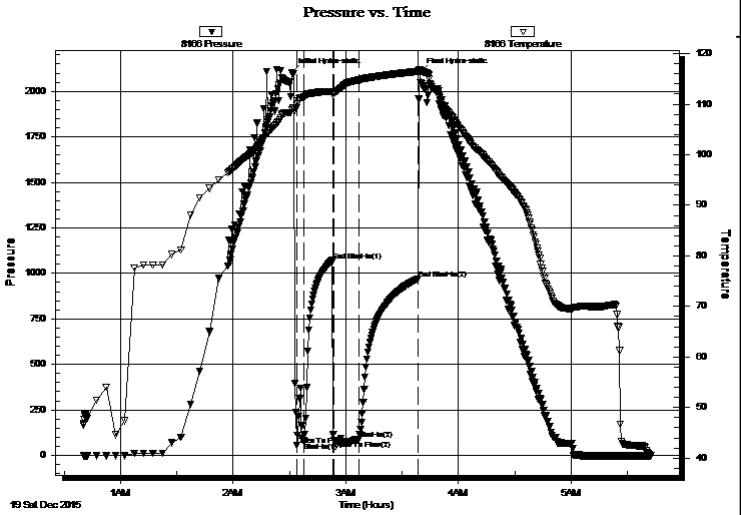
Reference Elevations: 2746.00 ft (KB)
2737.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8166 **Outside**

Press@RunDepth: 87.67 psig @ 4320.00 ft (KB)
Start Date: 2015.12.19 End Date: 2015.12.19
Start Time: 00:40:23 End Time: 05:42:17

Capacity: 8000.00 psig
Last Calib.: 2015.12.19
Time On Btm: 2015.12.19 @ 02:31:18
Time Off Btm: 2015.12.19 @ 03:39:18

TEST COMMENT: IF: 1/4" blow built to 6"
IS: No return.
FF: BOB in 5 min.
FS: Surface blow built to 1/2"



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2103.35	108.86	Initial Hydro-static
3	56.27	109.35	Open To Flow (1)
7	74.32	111.40	Shut-In(1)
22	1070.70	112.42	End Shut-In(1)
23	81.45	112.13	Open To Flow (2)
36	87.67	114.75	Shut-In(2)
67	968.23	116.45	End Shut-In(2)
68	2101.54	116.88	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	gocm 20%g 10%o 70%m	0.30
102.00	gocm 10%g 20%o 70%m	0.87
0.00	270 GIP	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64528 **DST#: 5**

Test Start: 2015.12.19 @ 00:40:18

GENERAL INFORMATION:

Formation: **Marmaton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 02:33:48
Time Test Ended: 05:42:18

Test Type: Conventional Bottom Hole (Reset)
Tester: Brandon Turley
Unit No: 79

Interval: 4319.00 ft (KB) To 4415.00 ft (KB) (TVD)
Total Depth: 4415.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

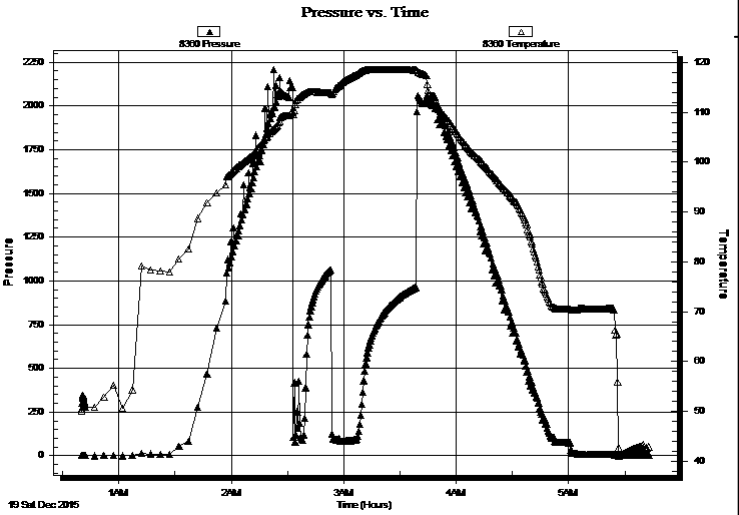
Reference Elevations: 2746.00 ft (KB)
2737.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8360 **Inside**

Press@RunDepth: psig @ 4320.00 ft (KB)
Start Date: 2015.12.19 End Date: 2015.12.19
Start Time: 00:40:13 End Time: 05:42:37

Capacity: 8000.00 psig
Last Calib.: 2015.12.19
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: 1/4" blow built to 6"
IS: No return.
FF: BOB in 5 min.
FS: Surface blow built to 1/2"



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
62.00	gocm 20%g 10%o 70%m	0.30
102.00	gocm 10%g 20%o 70%m	0.87
0.00	270 GIP	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64528 **DST#: 5**

Test Start: 2015.12.19 @ 00:40:18

Tool Information

Drill Pipe:	Length:	4173.00 ft	Diameter:	3.80 inches	Volume:	58.54 bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	
Drill Collar:	Length:	124.00 ft	Diameter:	2.25 inches	Volume:	0.61 bbl	
					Total Volume:	59.15 bbl	

Drill Pipe Above KB:	5.00 ft
Depth to Top Packer:	4319.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	96.00 ft
Tool Length:	123.00 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	64000.00 lb
	Final	66000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Stubb	1.00			4293.00		
Shut In Tool	5.00			4298.00		
Hydraulic tool	5.00			4303.00		
Jars	5.00			4308.00		
Safety Joint	2.00			4310.00		
Packer	5.00			4315.00	27.00	Bottom Of Top Packer
Packer	4.00			4319.00		
Stubb	1.00			4320.00		
Recorder	0.00	8360	Inside	4320.00		
Recorder	0.00	8166	Outside	4320.00		
Perforations	25.00			4345.00		
Change Over Sub	1.00			4346.00		
Drill Pipe	63.00			4409.00		
Change Over Sub	1.00			4410.00		
Bullnose	5.00			4415.00	96.00	Bottom Packers & Anchor
Total Tool Length:	**123.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64528 **DST#: 5**

Test Start: 2015.12.19 @ 00:40:18

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	0 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	0 ppm
Viscosity:	51.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.39 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2700.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

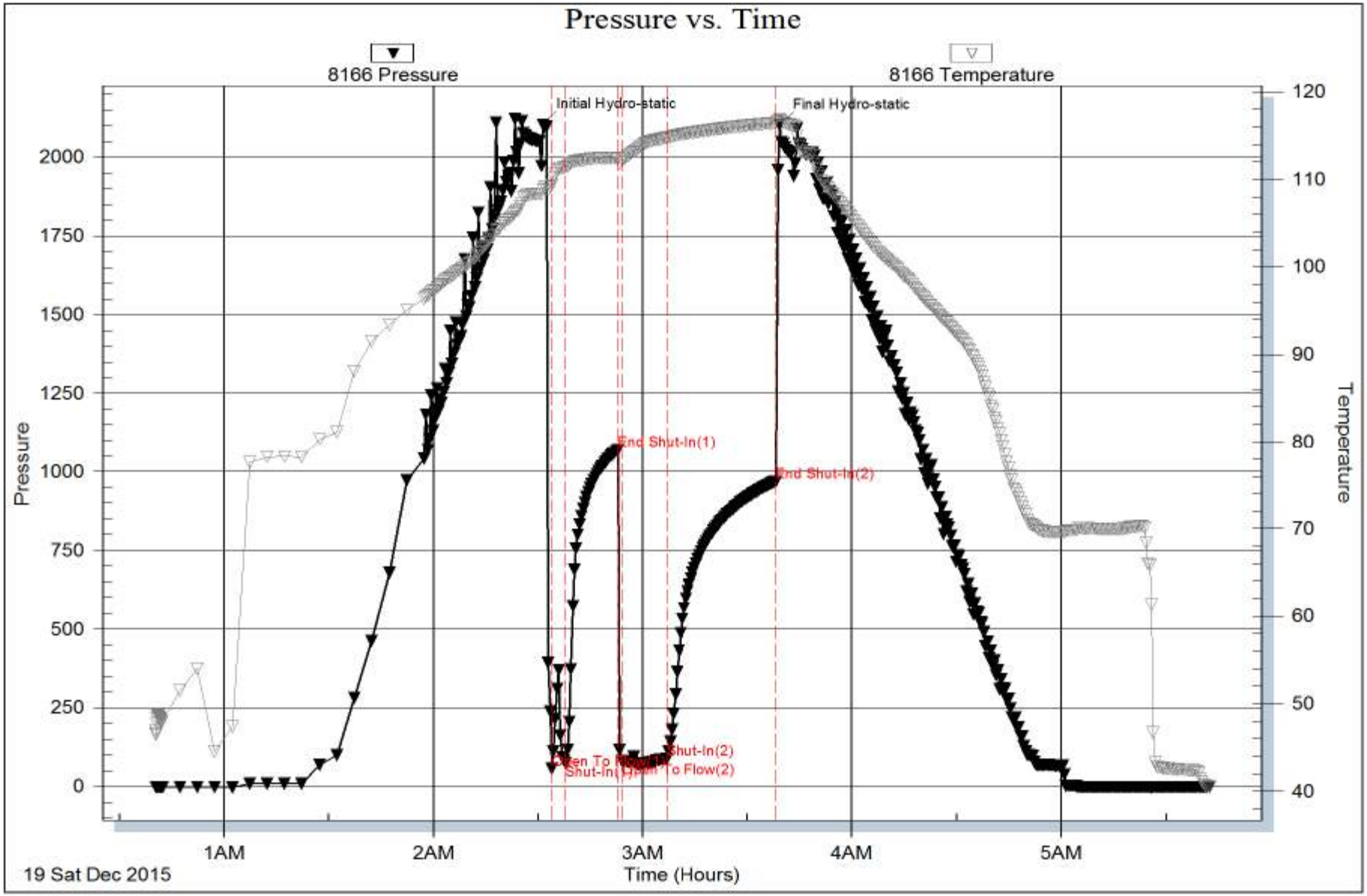
Recovery Table

Length ft	Description	Volume bbl
62.00	gocm 20%g 10%o 70%m	0.305
102.00	gocm 10%g 20%o 70%m	0.866
0.00	270 GIP	0.000

Total Length: 164.00 ft Total Volume: 1.171 bbl

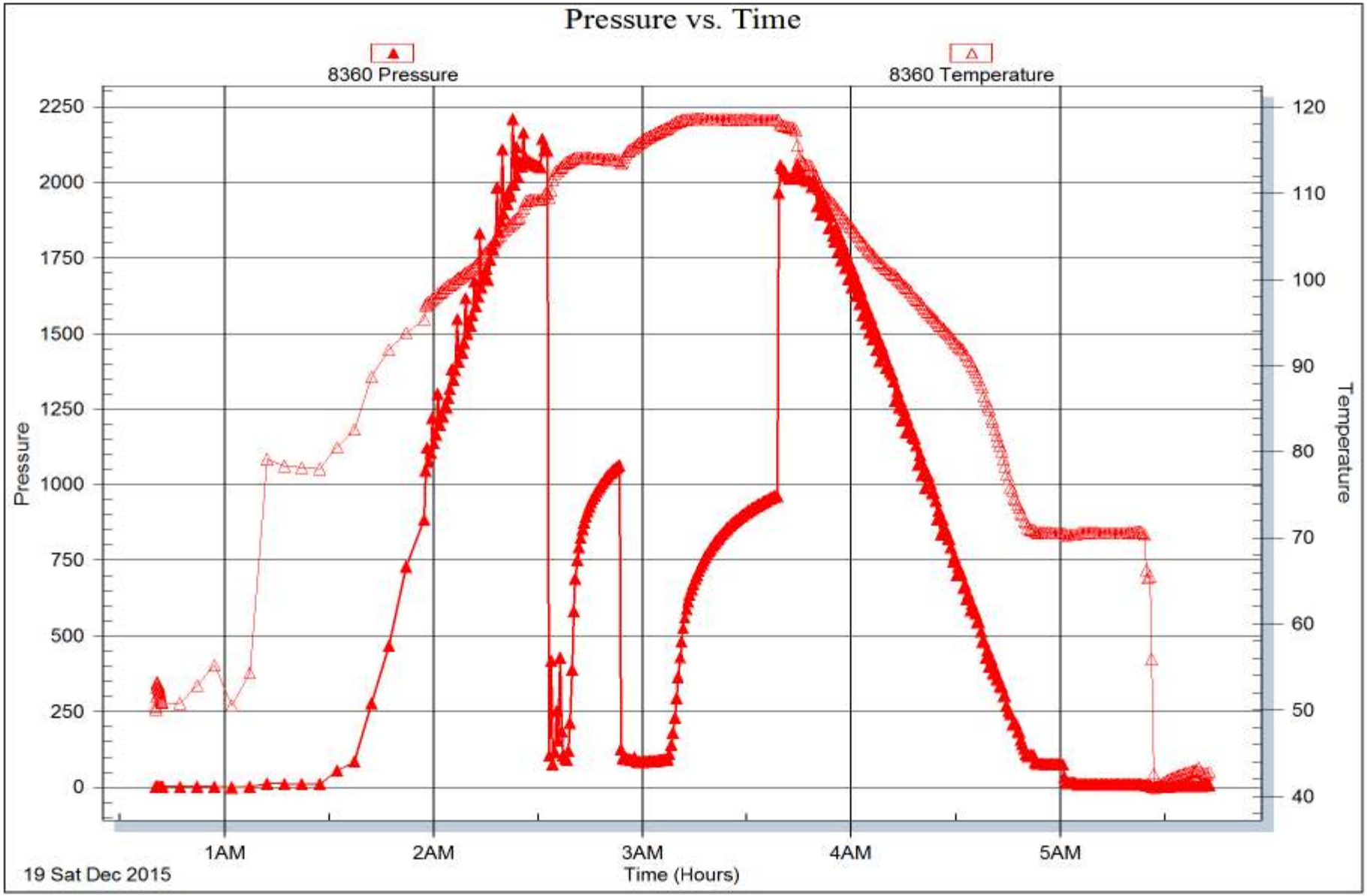
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8166 **Outside** Larson Engineering Eugene #2-27 DST Test Number: 5



Trilobite Testing, Inc Ref. No: 64528 Printed: 2015.12.21 @ 16:23:22

Serial #: 8360 **Inside** Larson Engineering Eugene #2-27 DST Test Number: 5



Trilobite Testing, Inc Ref. No: 64528 Printed: 2015.12.21 @ 16:23:22

DRILL STEM TEST REPORT

Prepared For: **Larson Engineering**

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

Eugene #2-27

27-18s-28w Lane,KS

Start Date: 2015.12.20 @ 04:04:39
End Date: 2015.12.20 @ 09:27:39
Job Ticket #: 64529 DST #: 6

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

Printed: 2015.12.21 @ 16:22:53

DRILL STEM TEST REPORT

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64529 **DST#: 6**

Test Start: 2015.12.20 @ 04:04:39

GENERAL INFORMATION:

Formation: **Cherokee**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 06:05:09
Time Test Ended: 09:27:39

Test Type: Conventional Bottom Hole (Reset)
Tester: Brandon Turley
Unit No: 79

Interval: 4425.00 ft (KB) To 4572.00 ft (KB) (TVD)
Total Depth: 4572.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

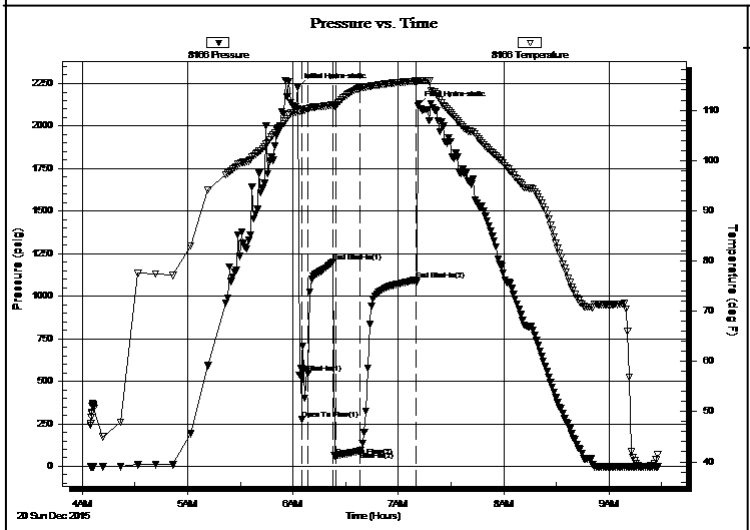
Reference Elevations: 2746.00 ft (KB)
2737.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8166 **Outside**

Press@RunDepth: 90.94 psig @ 4426.00 ft (KB)
Start Date: 2015.12.20 End Date: 2015.12.20
Start Time: 04:04:44 End Time: 09:27:38

Capacity: 8000.00 psig
Last Calib.: 2015.12.20
Time On Btm: 2015.12.20 @ 06:02:39
Time Off Btm: 2015.12.20 @ 07:11:09

TEST COMMENT: IF: 1/4" blow built to 2 1/2"
IS: No return.
FF: BOB in 12 min.
FS: Surface blow built to 1"



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2226.92	110.25	Initial Hydro-static
3	274.75	109.72	Open To Flow (1)
6	549.03	110.19	Shut-In(1)
20	1200.31	111.00	End Shut-In(1)
22	59.07	110.81	Open To Flow (2)
36	90.94	114.46	Shut-In(2)
68	1097.60	115.79	End Shut-In(2)
69	2122.47	115.91	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	gocm 20%g 20%o 60%m	0.30
112.00	gocm 20%g 10%o 70%m	1.01
0.00	248 GIP	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64529 **DST#: 6**

Test Start: 2015.12.20 @ 04:04:39

GENERAL INFORMATION:

Formation: **Cherokee**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 06:05:09
Time Test Ended: 09:27:39

Test Type: Conventional Bottom Hole (Reset)
Tester: Brandon Turley
Unit No: 79

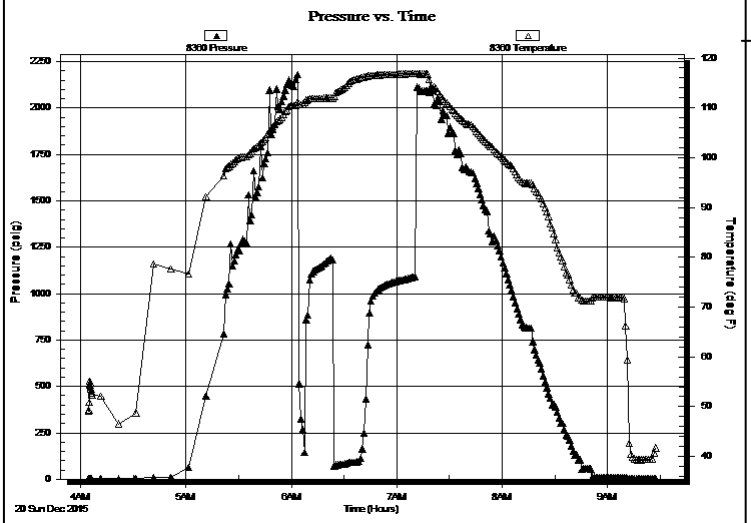
Interval: 4425.00 ft (KB) To 4572.00 ft (KB) (TVD)
Total Depth: 4572.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2746.00 ft (KB)
2737.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8360 **Inside**
Press@RunDepth: psig @ 4426.00 ft (KB)
Start Date: 2015.12.20 End Date: 2015.12.20
Start Time: 04:04:30 End Time: 09:27:54

Capacity: 8000.00 psig
Last Calib.: 2015.12.20
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: 1/4" blow built to 2 1/2"
IS: No return.
FF: BOB in 12 min.
FS: Surface blow built to 1"



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
62.00	gocm 20%g 20%o 60%m	0.30
112.00	gocm 20%g 10%o 70%m	1.01
0.00	248 GIP	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64529 **DST#: 6**

Test Start: 2015.12.20 @ 04:04:39

Tool Information

Drill Pipe:	Length:	4296.00 ft	Diameter:	3.80 inches	Volume:	60.26 bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	
Drill Collar:	Length:	124.00 ft	Diameter:	2.25 inches	Volume:	0.61 bbl	
					Total Volume:	60.87 bbl	

Drill Pipe Above KB:	22.00 ft
Depth to Top Packer:	4425.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	147.00 ft
Tool Length:	174.00 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:	65000.00 lb
Tool Chased	0.00 ft
String Weight: Initial	62000.00 lb
Final	62000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Stubb	1.00			4399.00		
Shut In Tool	5.00			4404.00		
Hydraulic tool	5.00			4409.00		
Jars	5.00			4414.00		
Safety Joint	2.00			4416.00		
Packer	5.00			4421.00	27.00	Bottom Of Top Packer
Packer	4.00			4425.00		
Stubb	1.00			4426.00		
Recorder	0.00	8360	Inside	4426.00		
Recorder	0.00	8166	Outside	4426.00		
Perforations	14.00			4440.00		
Change Over Sub	1.00			4441.00		
Drill Pipe	125.00			4566.00		
Change Over Sub	1.00			4567.00		
Bullnose	5.00			4572.00	147.00	Bottom Packers & Anchor
Total Tool Length:	**174.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering

562 W State Rd 4
Olmitz, KS 67564

ATTN: Vern Schrag

27-18s-28w Lane,KS

Eugene #2-27

Job Ticket: 64529 **DST#: 6**

Test Start: 2015.12.20 @ 04:04:39

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	0 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	0 ppm
Viscosity:	50.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.39 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2900.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

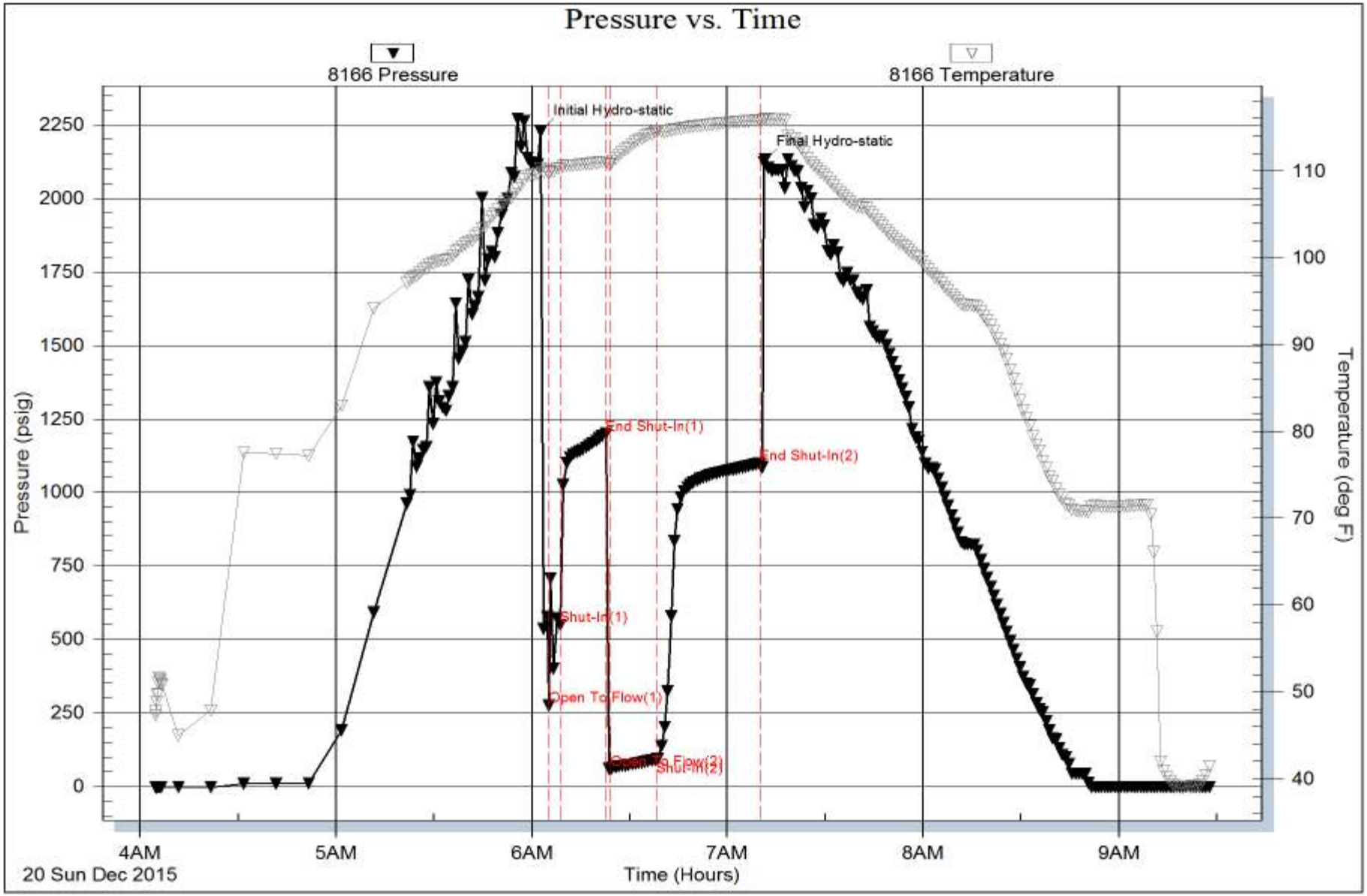
Recovery Table

Length ft	Description	Volume bbl
62.00	gocm 20%g 20%o 60%m	0.305
112.00	gocm 20%g 10%o 70%m	1.006
0.00	248 GIP	0.000

Total Length: 174.00 ft Total Volume: 1.311 bbl

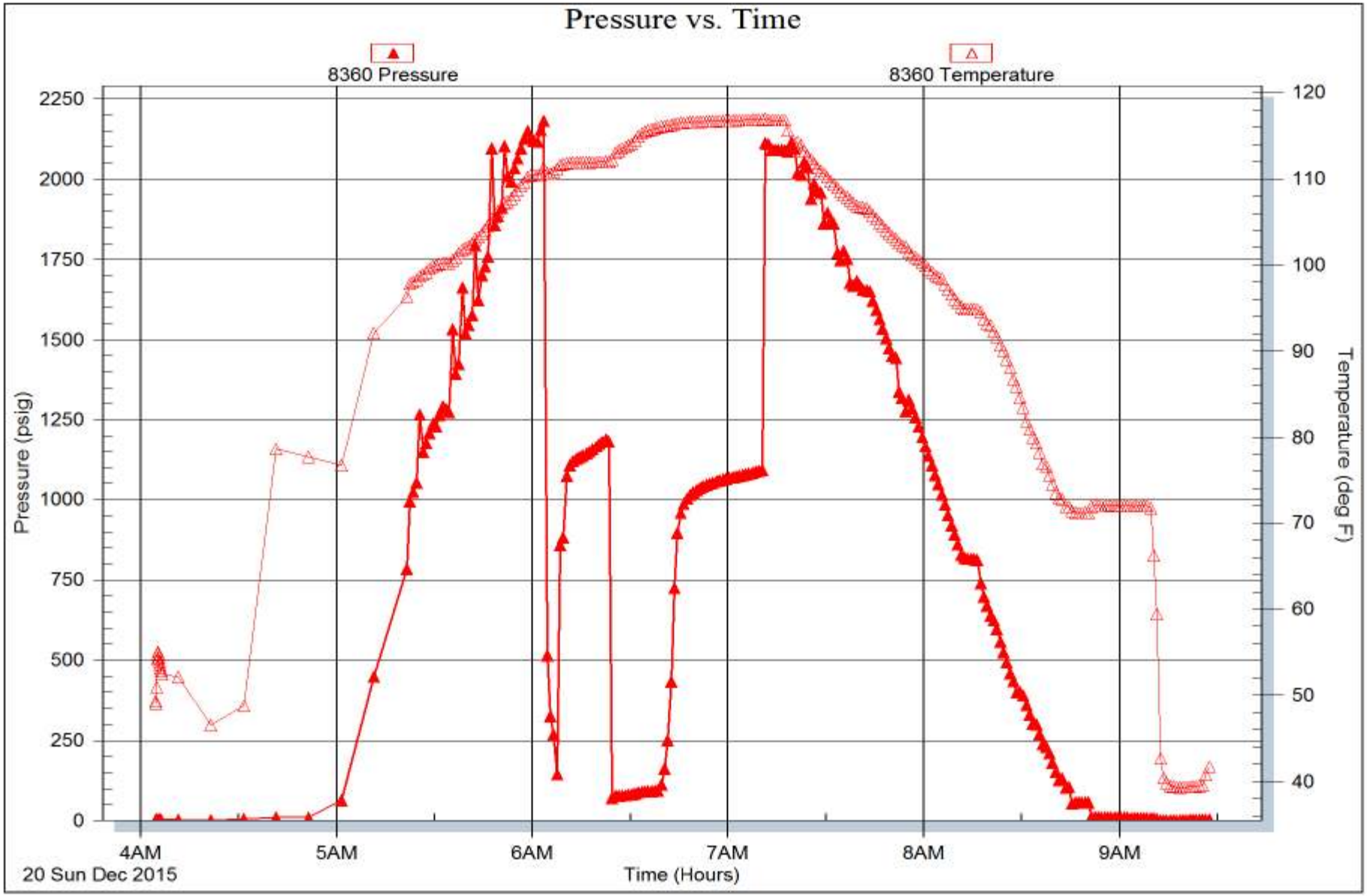
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8166 **Outside** Larson Engineering Eugene #2-27 DST Test Number: 6



Trilobite Testing, Inc Ref. No: 64529 Printed: 2015.12.21 @ 16:23:03

Serial #: 8360 **Inside** Larson Engineering Eugene #2-27 DST Test Number: 6



Trilobite Testing, Inc Ref. No: 64529 Printed: 2015.12.21 @ 16:23:03

TRILOBITE TESTING INC.

4/10

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 61799

Well Name & No. Eugene 2-27 Test No. 1 Date 12-16-15

Company Larson Engineering INC Elevation 2746 KB 2737 GL

Address 562 W State Rd 4 Olmitz, KS 67564

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

Location: Sec. 27 Twp. 18S Rge. 28W Co. Lane State KS

Interval Tested 4142 4170 Zone Tested H

Anchor Length 28 Drill Pipe Run 4017 Mud Wt. 9.0

Top Packer Depth 4137 Drill Collars Run 124 Vis 63

Bottom Packer Depth 4142 Wt. Pipe Run — WL 6.4

Total Depth 4170 Chlorides 3000 ppm System LCM 3

Blow Description IF: 1/4 blow built to 3.

IS: No return.

FF: BoB in 20 min.

FS: No return.

Rec 20	Feet of O,I	%gas	100 %oil	%water		%mud
Rec 82	Feet of MCO	%gas	60 %oil	%water	40	%mud
Rec 62	Feet of MCGO	20 %gas	50 %oil	%water	30	%mud
Rec	Feet of 186 GIP	%gas	%oil	%water		%mud
Rec	Feet of	%gas	%oil	%water		%mud

Rec Total 164 BHT 118 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 2007	☑ Test 1150	T-On Location 12:40
(B) First Initial Flow 16	☑ Jars 250	T-Started 2:00
(C) First Final Flow 36	☑ Safety Joint 75	T-Open 4:48
(D) Initial Shut-In 997	☑ Circ Sub N/C	T-Pulled 6:38
(E) Second Initial Flow 43	☐ Hourly Standby	T-Out 9:11
(F) Second Final Flow 74	☑ Mileage 64	Comments
(G) Final Shut-In 986	☐ Sampler	
(H) Final Hydrostatic 1999	☐ Straddle	☐ Ruined Shale Packer
	☐ Shale Packer	☐ Ruined Packer
Initial Open 35	☐ Extra Packer	☐ Extra Copies
Initial Shut-In 15	☐ Extra Recorder	Sub Total 0
Final Flow 30	☐ Day Standby	Total 1539
Final Shut-In 66	☐ Accessibility	MP/DST Disc't
	Sub Total 1539	

Approved By Vern C Schrag Our Representative

Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 61800

Well Name & No. Eugene 2-27 Test No. 2 Date 12-16-15

Company Larson Engineering Elevation 2746 KB 2737 GL

Address

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

Location: Sec. 27 Twp. 18S Rge. 28W Co. Lane State KS

Interval Tested 4199 4227 Zone Tested J

Anchor Length 28 Drill Pipe Run 4078 Mud Wt. 8.9

Top Packer Depth 4194 Drill Collars Run 124 Vis 44

Bottom Packer Depth 4199 Wt. Pipe Run — WL 6.4

Total Depth 4227 Chlorides 2800 ppm System LCM 2

Blow Description IF: 1/4 blow built to 6.

IS: No return.

FF: 1/4 blow built to 4.

FS: No return.

Rec 72	Feet of ocm	%gas	20	%oil	%water	80	%mud
Rec 62	Feet of ocm	%gas	10	%oil	%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 Total 134 BHT 116 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic	2066	☑ Test	1150	T-On Location	19:45
(B) First Initial Flow	13	☑ Jars	250	T-Started	20:07
(C) First Final Flow	28	☑ Safety Joint	75	T-Open	21:34
(D) Initial Shut-In	617	☑ Circ Sub	N/C	T-Pulled	23:44
(E) Second Initial Flow	32	☐ Hourly Standby		T-Out	1:50
(F) Second Final Flow	75	☑ Mileage	64	Comments	
(G) Final Shut-In	556	☐ Sampler			
(H) Final Hydrostatic	2008	☐ 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	1539
Final Shut-In	60	☐ Accessibility		MP/DST Disc't	
		Sub Total	1539		

Approved By Vern Schrag Our Representative

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 64526

Well Name & No. Eugene 2-27 Test No. 3 Date 12-17-15

Company Larson Engineering Elevation 2746 KB 2737 GL

Address

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

Location: Sec. 27 Twp. 18S Rge. 28W Co. Lane State KS

Interval Tested 4239 4251 Zone Tested K

Anchor Length 12 Drill Pipe Run 4108 Mud Wt. 8.9

Top Packer Depth 4234 Drill Collars Run 124 Vis 44

Bottom Packer Depth 4239 Wt. Pipe Run — WL 6.4

Total Depth 4251 Chlorides 2800 ppm System LCM 2

Blow Description IF: Surface blow built to 1/4.

ISI: No return.

FF: Surface blow built to 1½.

FSI: No return.

Rec 2	Feet of oil	%gas	100 %oil	%water	%mud	
Rec 40	Feet of OCWM	%gas	10 %oil	10 %water	80 %mud	
Rec	Feet of	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	

Rec Total 42 BHT 113 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 2135	☑ Test 1150	T-On Location 9:50	
(B) First Initial Flow 15	☑ Jars 250	T-Started 10:17	
(C) First Final Flow 18	☑ Safety Joint 75	T-Open 12:10	
(D) Initial Shut-In 462	☑ Circ Sub N/C	T-Pulled 14:00	
(E) Second Initial Flow 20	☐ Hourly Standby	T-Out 16:05	
(F) Second Final Flow 36	☑ Mileage 64	Comments	
(G) Final Shut-In 462	☐ Sampler		
(H) Final Hydrostatic 2021	☐ 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 1539	
Final Shut-In 60	☐ Accessibility	MP/DST Disc't	
	Sub Total 1539		

Approved By [signature] Our Representative [signature]

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 64527

Well Name & No. Eugene 2-27 Test No. 4 Date 12-17-15

Company Larson Engineering Elevation 2746 KB 2737 GL

Address

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

Location: Sec. 27 Twp. 18S Rge. 28W Co. Lane State KS

Interval Tested 4270 4283 Zone Tested L

Anchor Length 13 Drill Pipe Run 4141 Mud Wt. 9.1

Top Packer Depth 4265 Drill Collars Run 124 Vis 56

Bottom Packer Depth 4270 Wt. Pipe Run — WL 6.4

Total Depth 4283 Chlorides 2700 ppm System LCM 2

Blow Description IF: BoB in 30 sec.

IS: BoB in 12 min.

FF: BoB in 2½ min.

FS: surface blow built to 6.

Rec 388	Feet of 90	30 %gas	70 %oil	%water	%mud	
Rec 126	Feet of gocm	30 %gas	10 %oil	%water	60 %mud	
Rec	Feet of	%gas	%oil	%water	%mud	
Rec	Feet of 935 GIP	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	

Rec Total 514 BHT 128 Gravity 38 API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic	2072	☑ Test	1150	T-On Location	23:50
(B) First Initial Flow	109	☑ Jars	250	T-Started	00:26
(C) First Final Flow	145	☑ Safety Joint	75	T-Open	2:26
(D) Initial Shut-In	230	☑ Circ Sub	N/C	T-Pulled	3:31
(E) Second Initial Flow	157	☐ Hourly Standby		T-Out	6:10
(F) Second Final Flow	218	☑ Mileage	64	Comments	
(G) Final Shut-In	231	☐ Sampler			
(H) Final Hydrostatic	2051	☐ 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	1539
Final Shut-In	30	☐ Accessibility		MP/DST Disc't	
		Sub Total	1539		

Approved By Vern Schrag Our Representative

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 64528

Well Name & No. Eugene 2-27 Test No. 5 Date 12-19-15

Company Larson Engineering Elevation 2746 KB 2737 GL

Address

Co. Rep / Geo. Vern schrag Rig #0 #3

Location: Sec. 27 Twp. 18S Rge. 28W Co. Lane State KS

Interval Tested 4319 4415 Zone Tested Marmaton

Anchor Length 96 Drill Pipe Run 4173 Mud Wt. 9.1

Top Packer Depth 4314 Drill Collars Run 124 Vis 51

Bottom Packer Depth 4319 Wt. Pipe Run — WL 6.4

Total Depth 4415 Chlorides 2700 ppm System LCM 2

Blow Description IF: 1/4 blow built to 6.

FSI: No return.

FF: BoB in 5 min.

FSI: Surface blow built 1/2.

Rec 102	Feet of 90cm	10 %gas	20 %oil	%water	70 %mud	
Rec 62	Feet of 90cm	20 %gas	10 %oil	%water	70 %mud	
Rec	Feet of 270 GIP	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	

Rec Total 164 BHT 116 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic	2103	☑ Test	1150	T-On Location	00:20
(B) First Initial Flow	56	☑ Jars	250	T-Started	00:40
(C) First Final Flow	74	☑ Safety Joint	75	T-Open	2:30
(D) Initial Shut-In	1070	☑ Circ Sub	N/C	T-Pulled	3:35
(E) Second Initial Flow	81	☐ Hourly Standby		T-Out	5:45
(F) Second Final Flow	87	☑ Mileage	64	Comments	
(G) Final Shut-In	968	☐ Sampler			
(H) Final Hydrostatic	2101	☐ Straddle			
		☐ Shale Packer		☐ Ruined Shale Packer	
Initial Open	5	☐ Extra Packer		☐ Ruined Packer	
Initial Shut-In	15	☐ Extra Recorder		☐ Extra Copies	
Final Flow	15	☐ Day Standby		Sub Total	0
Final Shut-In	30	☐ Accessibility		Total	1539
		Sub Total	1539	MP/DST Disc't	

Approved By Vernon C. Schrag Our Representative

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 64529

Well Name & No. Eugene 2-27 Test No. 6 Date 12-20-15

Company Larson Engineering Elevation 2746 KB 2737 GL

Address

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

Location: Sec. 27 Twp. 18S Rge. 28W Co. Lane State KS

Interval Tested 4425 4572 Zone Tested Cherokee

Anchor Length 147 Drill Pipe Run 4296 Mud Wt. 9.0

Top Packer Depth 4420 Drill Collars Run 124 Vis 50

Bottom Packer Depth 4425 Wt. Pipe Run — WL 6.4

Total Depth 4572 Chlorides 2900 ppm System LCM 2

Blow Description IF: 1/4 blow built to 2½.
IS: No return.
FF: BoB in 12 min.
FS: Surface blow built 1.

Rec 112	Feet of gocm	20 %gas	10 %oil	%water	70 %mud
Rec 62	Feet of gocm	20 %gas	20 %oil	%water	60 %mud
Rec	Feet of 248 GEP	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 174 BHT 116 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 2226	☑ Test 1150	T-On Location 3:50
(B) First Initial Flow 274	☑ Jars 250	T-Started 4:04
(C) First Final Flow 549	☑ Safety Joint 75	T-Open 6:02
(D) Initial Shut-In 1200	☑ Circ Sub N/C	T-Pulled 7:07
(E) Second Initial Flow 59	☐ Hourly Standby	T-Out 9:30
(F) Second Final Flow 90	☑ Mileage 64	Comments
(G) Final Shut-In 1097	☐ Sampler	
(H) Final Hydrostatic 2122	☐ 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 1539
Final Shut-In 30	☐ Accessibility	MP/DST Disc't
	Sub Total 1539	

Approved By Vern Schrag Our Representative

WELLSITE GEOLOGIST'S REPORT

VERNON C. SCHRAG
CONSULTANT GEOLOGIST

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

Well Name: EUGENE #2-27
Location: SE NW NW SW SEC. 27-18S-28W
Licence Number: API: 15-101-22576
Region: Lane Co., KS
Spud Date: December 10, 2015
Drilling Completed: December 20, 2015
Surface Coordinates: 2291' FSL & 418' FWL

Bottom Hole Coordinates:
Ground Elevation (ft): 2737'
K.B. Elevation (ft): 2746'
Logged Interval (ft): 3800' To: RTD
Total Depth (ft): 4636'
Formation: Mississippi
Type of Drilling Fluid: Chemical Premix (Displaced)

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 6-1/4" x 2-3/8" x 556', Kelly 40.30', Tool Joint 5.5" ; Bit: JZ-HA20Q, 7-7/8", standard jets 15-15-15; rpm 80, WOB 35k; Kelly Bushing 9' above ground level; LeWayne "Lew" Tresner (tool pusher).

CASING:

Ran 6 jts new 8-5/8" 20# R3 STC 8rd csg. Tallied 253.68', set @ 265' KB.

Ran 110 jts new 4-1/2" 11.6# API R3 LTC 8rd csg. Tallied 4641.70', set @ 4635' KB.

CIRCULATION SYSTEM:

Continental EMSCO D-300, duplex, 6 x 14, 60-62 spm, Chemical, premix, earth pits, Mud-Co/Service Mud, Inc., Jason Whiting.

OPEN HOLE LOGS:

DN, DI (SP), ML, No Sonic; 5" detail LTD-3600; 2" DI to suface casing; LogTech-Pioneer Wireline, Colby, KS, J. Hendrickson & D. Schmidt, LTD 4634', RTD 4636'.

DRILL STEM TEST #1:

LKC (H-zone): Interval: 4242-4270 (28'): Blow: weak incr to 3" IFP, no RB, BOB 20 min. FFP, no RB; Times: 5-15-30-60: Recovery: 186' GIP, 164' TF: Grindouts: 20' oil (100%O), 82' MCO (60%O, 40%M), 62' MGCO (20%G, 50%O, 30%M); Pressures: HP: 2007-1999, SIP: 997-986, FP: 16-36, 43-74; BHT: 118 deg. F; Trilobite Testing, Inc., Scott City, KS, Brandon Turley.

DRILL STEM TEST #2:

LKC (J-zone): Interval: 4199-4227 (28'): Blow: weak incr 1" IFP, no RB, weak incr 4", no RB; Times: 5-15-30-60: Recovery: 134' TF: Grindouts: 72' OCM (20%O, 80%M), 62' OCM (10%O, 90%M); Pressures: HP: 2066-2008, SIP: 617-556, FP: 13-28, 32-75; BHT: 116 deg. F; Trilobite Testing, Inc., Scott City, KS, Brandon Turley.

DRILL STEM TEST #3:

LKC (K-zone): Interval: 4239-4251 (12'): Blow: weak incr 1/4" IFP, no RB, weak incr 1-1/2" FFP, no RB; Times: 5-15-30-60; Recovery: 2' Oil and 40' O&WCM (10%O, 10%W, 80%M); Pressures: HP: 2135-2021, SIP: 462-462, FP: 15-18, 20-36; BHT: 113 deg. F; Trilobite Testing, Inc., Scott City, KS, Brandon Turley.

DRILL STEM TEST #4:

LKC: (Middle Creek / L-zone): Interval: 4270-4283 (13'): Blow BOB in 30 sec. IFP, RB BOB 12 min ISIP, BOB in 2-1/2 min. FFP, RB incr to 6" FSIP; Recovery: 935' GIP, 514' TF: Grindouts: 388' gassy oil (30%G, 70%O, grav. 38), 126' GOCM (30%G, 10%O, 60%M); Pressures: HP: 2072-2051, SIP: 230-231, FP: 109-145, 157-218; BHT: 128 deg. F; Trilobite Testing, Inc., Scott City, KS, Brandon Turley.

DRILL STEM TEST #5

Pleasanton thru Marmaton (Altamont): Interval: 4319-4415 (96'): Blows: weak incr 6" IFP, no RB, BOB 5 min FFP, 1/2" RB; Times: 5-15-15-30; Recovery: 270' GIP, 164' TF: Grindouts: 102' GOCM (10%G, 20%O, 70%M), 62' GOCM (20%G, 10%O, 70%M); Pressures: HP: 2103-2101, SIP: 1070-968; FP: 56-74, 81-87; BHT: 116 deg. F; Trilobite Testing, Inc., Scott City, KS, Brandon Turley.

DRILL STEM TEST #6

Pawnee thru Cher. Sand: Interval: 4425-4572 (147'): Blows: weak incr 2-1/2" IFP, no RB, BOB 12 min. FFP, 1" RB; Times: 5-15-15-30; Recovery: 248' GIP, 174' TF: Grindouts: 112' GOCM (20%G, 10%O, 70%M), 62' GOCM (20%G, 20%O, 60%M); Pressures: HP: 2226-2122, SIP: 1200-1097, FP: 274-549 (plugging action), 59-90; BHT: 116 deg. F; Trilobite Testing, Inc., Scott City, KS, Brandon Turley.

REMARKS:

It was determined that production casing should be set for further testing.

Geological Descriptions

Total Gas
TG (units)
Fifty
One

LOST CIRC. AT 71' WHILE DRILLING SURFACE HOLE.

CALL GEO. AT 3411', 14-DEC-2am

ANHYDRITE 2098-2134.

Shale: dk gray to black;

LS: lt grayish brown; mic-vf xtal; v-fos; chalky in part; tight int frag. porosity; N.S.

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

LS: as above.

LS: dk grayish brown; vf-xtal; chalky to argillaceous in part; poor apparent porosity; N.S.

LS: as above w/ dark, calcareous shales;

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

HEEBNER SH 3930 (-1184)
Shale: black; carbonaceous; fissile; 3950.

Shale: green; sli. silty & marly;

LS: off-white to lt brown; mic-vf xtal; dense to chalky in part; trc chert; distinctive mineral fluor.; poor porosity; N.S. 3970.

LANSING 3971 (-1225)
(Corrected Top)
LS: lt brown; vf-xtal; dense to chalky in part; mineral fluor.; includes fine to coarse, dk brn or dk gray, scattered grains; v-tight int grain porosity; N.S., 3990.

LS: lt brown; mic-vf xtal; dense, blocky; wht to gray, opaq. chert; trc. spar; v-poor porosity; N.S., 4000. pin-point vug porosity; N.S., 4010.

Shale: green to gray; silty; sli. marly; trc. v-fine sulfides; 4020.
LS: lt brown; vf-xtal; finely oolitic in part; dense; no visible porosity; starts 4020.
LS: lt brown; vf-xtal; chalky in part; rough; trc. fine moldic porosity; N.S., 4030.

LS: lt-md grayish brown; vf-xtal; dense, platey; trc. chert; no visible porosity; N.S., 4040.

LS: off-white to lt gray; mic-vf xtal; dense to chalky in part; few chips poor vugular porosity; trc druse; N.S., 4050.

LS: as above.

Shale: green;
LS: lt-md brown; vf-xtal; dense, platey; N.S., 4070.

LS: lt brown; vf-xtal; oolitic; chalky, washes white; tight int ool porosity; N.S., 4075.

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

LS: lt brown; vf-xtal; chalky; minor chert; poor apparent porosity; N.S.

LS: lt-md grayish brown; vf-xtal; coarsely oomoldic; good oom. porosity; N.S., 4110.

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

LS: lt brown; mic-vf xtal; dense; trc isolated moldic porosity; N.S.

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

15 STAND SHORT TRIP AT 4130' WAS UNEVENTFUL; CIRC 15 MIN PRIOR AND 30 MIN AFTER.

LS: lt-brown to grayish-brn; mic-vf xtal; dense, platey; no visible porosity; N.S.

MUNCIE CREEK 4142 (-1396)
Shale: black; carbonaceous; 4160.
LS: md -dk grayish-brn; vf-xtal; dense; few chips tight int xtal por. w/spotted stain; no visible oil; 4160.

DST #1: H-ZONE: 4242-4270: BOB 20 MIN FFP; 5-15-30-60; 186' GIP, 164' OIL & MO; SIP: 997-986, FP: 16-36, 43-74.

Shale: green;
LS: lt gray; vf-xtal; f-m granular in part; poor to fair int gran & fine vug porosity; spotted wet & dry stain, int-grain fluor; v sli. S.O., 4170. Shows & porosity greatly decreased at 30 min.

CIRC 30 MIN AFTER DST #1 BEFORE DRILLING.

LS: lt gray; mic-vf xtal; chalky portions; poor porosity; N.S.

Shale: dk gray to green;
LS: md-dk gray; vf-xtal; dense; N.S.

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

LS: lt-md grayish brown; vf-xtal; sli oolitic; dense; trace pin-point porosity; only dull fluor; N.S., 4210. 1 chip dry stain float from H-zn at 30 min.

DST #2: J-ZONE: 4199-4227: WK BLOW; 5-15-30-60: 134' OCM; SIP: 617-556, FP: 13-28, 32-75.

LS: md-dk grayish brown; vf-xtal; dense; no visible porosity; N.S.
LS: lt grayish brown; vf-xtal; poor-fair vug & oom por.; spotted wet & dry stain & S.O., trc fluor. chalk, faint odor 30 min. much baren oom & decr. show 60 min.

STARK SH 4239 (-1493)
Shale: black; carbonaceous; trc. 4250.
LS: dk brown; vf-xtal; drusy vug por. w/spotted to even wet & dry stain & trc. fluor. chalk at 30 min. It gray lime, vugular to int-granular por. w/stains, fluor. & S.S.O., faint odor, incr fluor. chalk & barren oom. (float?) at 60 min, 10% fluor. overall.

DST #3: K-ZONE: 4239-4251: WK BLOW: 5-15-30-60; 2' OIL, 40' OWCM; SIP: 462-462; FP: 15-18, 20-36.

LS: white; mic-xtal; v-chalky; 4270.

LS: lt brown; mic-vf xtal; dense, platey in part; no visible porosity; N.S., 4280.

HUSHPUCKNEY 4275 (-1529)
Shale: black; trace 4283.
LS: dk brn; vf-xtal; dnse; gray, opaq chert; pin-pt por. bleeds S.S.O.; sptd wet fluor & trc bright chalk; 4283-stop. It-gray lime w/vug por, sptd stn, wet fluor., S.S.O., only sli dry fluor. at 30, 60 min.

DST #4: MID CRK-L: 4270-4283: BOB 30 sec.; 5-15-15-30; 935' GIP, 514' GO & HOCM; SIP: 230-218, FP: 109-145, 157-218.

LS: lt gray to lt brown; vfx-tal; oolitic in part; looks sli re-xtalized; fair vug & tight int grain por., spotted fluor & stain; sli. S.O., 4300.

LS: lt gray to brown; vf-xtal; dense to platey; trace vug porosity w/spotted stains & fluor.; no visible oil; 4310, 4320.

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

Shale: green; silty;

LS: lt brown; vf-xtal; fair drusy vug porosity; spotted wet stain & trc fluor.; v-sli S.O.; 4360.

Shale: dk gray to green;

LS: lt brown; vf-xtal; dense, platey; no visible porosity; N.S., 4380.

SiltSt: green to gray; calcareous; mixed w/lime;

DST #5: PLEAS THRU MARM: 4319-4415: BOB 5 MIN FFP; 5-15-15-30: 270' GIP, 164' GOCM; SIP: 1070-968, FP: 58-74, 81-87.

Shale: mostly gray, some green; calcareous in part;

LS: lt brown; vf-xtal, trace euhedral calcite; 1% spotted dry stain & sli. fluor.; no visible oil; 4410.

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

LS: lt brown; vf-xtal; dense, platey to blocky; mineral fluor.; no visible porosity; N.S.

LS: as above;

PAWNEE 4435 (-1689)
LS: lt brown; vf-xtal; dense; lt gray, opaq. cherts; trc tight int-xtal porosity, dry stain & fluor; no visible oil; N.S., 4450.

LS: lt brown; vf-xtal; dense, platey to blocky; gray chert; minor chalk; no visible porosity; N.S.

Shale: black; 4470.
LS: md-dk brown; vf-xtal; dense; smokey chert; N.S.

Shale: gray to greenish gray;

LS: lt brown; vf-xtal; dense, blocky; minor chalk; no visible porosity; N.S.

Shale: black; carbonaceous; 4500.
FT. SCOTT 4489 (-1743)
LS: dk grayish brown; vf-xtal; dense; sli. ool.; opaq. chert; no visible porosity; N.S.

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

LS: md-dk grayish brown; vf-xtal; oolitic; cherty; trc vug porosity; N.S.

L. CHER. SH 4513 (-1767)
LS: lt brown; vf-xtal; dense; no visible por.; N.S.

LS: lt-md brown; vf-xtal; sli. fos-frag; few chips fair drusy vug porosity, spotted fluor & wet stain; S.S.O.; spotted to sat. dry stain & fluor; 4540.

SHORT TRIP REQUIRED BEFORE DST #6.

LS/Shale: interbedded; N.S.

DST #6: PAW THRU CHER: 4425-4572: BOB 12 MIN FFP; 5-15-15-30; 248' GIP, 174' OGCM; SIP: 1200-1097; FP: 274-549, 59-90, PLUGGING ON IFP.

LS: lt gray to brown; vf-xtal; dense; only trc (1 chip) fine vug porosity w/dark stain; no fluor. or visible oil; 4570.

SD: stained brown; vf-grain; w-cem, blocky; v-tight int grain porosity; no visible oil; trc 4570, 4572-30 min.; white & green silty sand w/N.S. at 30 min.

Shale: w/various lime; tight sands; minor chert; N.S.

Shale: as above;

DOL: calcitic; lt gray; vf-f xtal; fair vugular & tight int xtal porosity; N.S.

DOL: calcitic; lt brown; vf-f xtal; fair vug & int xtal porosity; N.S.

BREAK CIRC AT RTD, TRIP OUT 5 STANDS TO FIX MUD PUMP. T.I.H. & CIRC.

DOL: as above;

PIONEER WIRELINE LTD 4634'

ROTARY TOTAL DEPTH 4636 (-1890)