Confidentiality Requested:
☐ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

1074819

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: NCRA

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 #:

11/1/2011	11/15/2011	1/4/2012
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No. 15 - 15-101-22325-00-00
Spot Description:
SE - SW - NE - NE Sec. 21 Twp. 18 S. R. 29 ☐ East ☑ West
1165 Feet from ☑ North / ☐ South Line of Section
950 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: Gail Well #: 1-21
Field Name: Reifschneider Southeast
Producing Formation: Cherokee, Lansing-KC
Elevation: Ground: 2808 Kelly Bushing: 2815
Total Vertical Depth: 4659 Plug Back Total Depth: 4616
Amount of Surface Pipe Set and Cemented at: 258 Feet
Multiple Stage Cementing Collar Used? ☑ Yes ☐ No
If yes, show depth set: 2118 Feet
If Alternate II completion, cement circulated from: 2118
feet depth to: 0 w/ 170 sx cmt.

Drilling Fluid Management Plan
(Data must be collected from the Reserve Pit)

Chloride content: 11200 ppm Fluid volume: 900 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: 02/28/2012
☑ **Confidential Release Date:** 02/27/2014
☑ **Wireline Log Received**
☐ **Geologist Report Received**
☐ **UIC Distribution**
ALT ☐ I ☑ II ☐ III **Approved by:** NAOMI JAMES **Date:** 02/29/2012

[redacted] 1074819

Operator Name: Larson Engineering, Inc. dba Larson Operating Company Lease Name: Gail Well #: 1-21

Sec. 21 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	258	Class A	175	2% gel, 3% CC
Production	7.875	5.5	15.5	4658	EA-2	125	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	0-2118	SMD	170	1/4#/sk flocele
	-			

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
4	4594-99	250 Gal 15% NEFe W/10 gal AS-29 &5 gal RE-Nab	4552-56
4	4552-56, 4408-4410	250 Gal MCA	4408-4410
4	4352-54	250 Gal 15% RWR-1 MCA	4352-54
	CIBP 4585		

TUBING RECORD: Size: 2.375 Set At: 4579 Packer At: Liner Run: ☐ Yes ☑ No

Date of First, Resumed Production, SWD or ENHR. 1/4/2012

Producing Method: ☐ Flowing ☑ Pumping ☐ Gas Lift ☐ Other *(Explain)*

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity
	55	0	5		32

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)*

PRODUCTION INTERVAL:
4352 - 4556

Mail to: KCC - Conservation Division, 130 S. Market - Room 2078, Wichita, Kansas 67202

Form	ACO1 - Well Completion
Operator	Larson Engineering, Inc. dba Larson Operating Company
Well Name	Gail 1-21
Doc ID	1074819

Tops

Name	Top	Datum
Anhydrite	2850	+665
Base Anhydrite	2178	+637
Heebner	3919	-1104
Lansing	3963	-1148
Stark Sh	4232	-1417
Pawnee	4427	-1612
Cherokee Sh	4505	-1690
Mississippi	4582	-1767
Spergen	4489	-1674

SWIFT Services, Inc.

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

TICKET Nº 22445

PAGE 1 OF 1

SERVICE LOCATIONS	WELL/PROJECT NO.	LEASE	COUNTY/PARISH	STATE	CITY	DATE	OWNER
1. Ness City, KS	1-21	~~Stanley~~ GAIL	Lane	KS	Dighton	21 NOV 11	
2.	TICKET TYPE ☐ SERVICE ☐ SALES	CONTRACTOR	RIG NAME/NO.	SHIPPED VIA	DELIVERED TO	ORDER NO.	
3.		WILD WEST		CT	location		
4.	WELL TYPE	WELL CATEGORY	JOB PURPOSE		WELL PERMIT NO.	WELL LOCATION	
REFERRAL LOCATION	oil	Development	cement PORT COLLAR			21-18S-29W	
	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 114	40	mi			6 00	240 00
576D		1			Pump Charge	1	ea			1250 00	1250 00
330		1			SMD cement	170	sk			16 50	2805 00
276		1			Flocele	50	lb			2 00	100 00
290		1			D-AIR	2	gal			35 00	70 00
581		1			Service Charge	235	sk			2 00	470 00
583		1			Drayage	23385	lb	467.7	TM	1 00	467 70

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

DATE SIGNED | TIME SIGNED ☐ A.M. ☑ P.M. 1350

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	5402 70
Lane TAX 6.3%	187 43
TOTAL	5590 13

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

SWIFT OPERATOR | APPROVAL

Thank You!

JOB LOG

SWIFT Services, Inc.

DATE 21 NOV 11 | PAGE NO. 1

CUSTOMER Larson Engineering | WELL NO. 1-21 | LEASE ~~Stanley~~ GAIL | JOB TYPE cement PORT COLLAR | TICKET NO. 2445

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS T	PUMPS C	PRESSURE (PSI) TUBING	PRESSURE (PSI) CASING	DESCRIPTION OF OPERATION AND MATERIALS
								235 sk SMD w/ ¼# flocele
								2⅜ × 5½ PC @ 2118'
	1100							on loc TRK 114
	1118					1000	1000	test to 1000 psi - held
								open PORT COLLAR
	1122	3				300		inj rate 3 bpm @ 300 psi
	1130	4				300		mix SMD w/ ¼# Flocele
	1135		20					fluid to pit
	1155		92					- cement to surface -
								{170 sks mixed 20 bbls to pit}
	1203							close PORT COLLAR
						1000	1000	test to 1000 psi - held
								Run 5 joints
								Reverse hole clean
	1213		20					2 cement flags
								wash truck
								pull tool out of hole
								RACK UP
	1250							job complete
								Thanks
								Doug, Blaine, Dane

SWIFT Services, Inc.

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

TICKET Nº 22528

PAGE 1 OF 2

SERVICE LOCATIONS	WELL/PROJECT NO.	LEASE	COUNTY/PARISH	STATE	CITY	DATE	OWNER
1. NESS CITY, KS.		GAIL 1-21	LANE	KS.	DIGHTON, KS.	15 NOV 11	
2.	TICKET TYPE ☒ SERVICE ☐ SALES / CONTRACTOR: HD DRILLING		RIG NAME/NO.	SHIPPED VIA	DELIVERED TO	ORDER NO.	
3.	WELL TYPE: OIL	WELL CATEGORY: DEVELOPMENT	JOB PURPOSE: 5½ LONGSTRING		WELL PERMIT NO.	WELL LOCATION: 3¼W, 5 1/2 TO	
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					MILEAGE #110	40	MIL			6 00	240 00
578					PUMP CHARGE	1	JOB			1500 00	1500 00
280					FLOCHECK	500	LBS			2 50	1250 00
221					LIQUID KCL	2	GAL			25 00	50 00
290					D-AIR	1½	GAL			35 00	52 50
419					ROTATING HEAD RENTAL	1	JOB			200 00	200 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

DATE SIGNED: 15 NOV 11 TIME SIGNED: 1500 ☐ 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	3292 50
2	4883 90
subtotal	8176 40
Lane TAX 6.3%	364 14
TOTAL	8540 54

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

SWIFT OPERATOR: Jason E Kaufman

APPROVAL

Thank You!

SWIFT Services, Inc.

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

TICKET CONTINUATION

TICKET No. 22528

CUSTOMER LARSON ENGINEERING | WELL GAIL 1-21 | DATE 15 NOV 11 | PAGE 2 OF 2

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING LOC	ACCT	DF	TIME	DESCRIPTION	QTY.	U/M	QTY.	U/M	UNIT PRICE	AMOUNT
276						FLOCELE	40	lbs.			2 00	80 00
277						GILSONITE	1100	lbs.			75	825 00
283						SALT	800	lbs.			20	160 00
284						CALSEAL	7	sx			35 00	245 00
286						HALAD-1	110	lbs			7 50	825 00
325						STANDARD CEMENT	155	sx			13 50	2092 50
581						SERVICE CHARGE	CUBIC FEET 155 sx				2 00	310 00
583						MILEAGE CHARGE TOTAL WEIGHT 11320 LOADED MILES 40	TON MILES 346.4				1 00	346 40

CONTINUATION TOTAL 4883 90

JOB LOG

SWIFT Services, Inc.

DATE 15 Nov 11 | PAGE NO.

CUSTOMER	WELL NO.	LEASE	JOB TYPE	TICKET NO.
Larson Engineering		Gail 1-21	5½ Longstring	22528

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS T	PUMPS C	PRESSURE (PSI) TUBING	PRESSURE (PSI) CASING	DESCRIPTION OF OPERATION AND MATERIALS
	1115							ON LOCATION
								5½ - 15.5# - LTD @ 4659
								RTD @ 4655, SET @ 1' off Bottom
								Shoe Joint 39'
								Port Collar @ 2116'
	1240							Drop Ball Circulate.
	1344	6	15		✓		300	Pump 15 BW & KCL
		6	12		✓			Pump 500 gal Flocheck
		6	5		✓			Pump 5 BW & KCL
	1351		7					Plug RH (30 sx)
	1354	4	30		✓			mix 125 sx EA2
	1407							Wash out Pumping Lines.
	1410	6			✓			Release Plug, Start Displacement
		6	80		✓		100	Lift
		6	90		✓		400	
		6	100		✓		550	
		6	109		✓		750	
	1428	8	110		✓		1500	Plug Down PSI up Latch Plug In
	1430							Release PSI - Dry
	1432							Wash Truck
	1500							Job Complete.
								Thanks #110
								Jason Jeff David

CONSOLIDATED OIL WELL SERVICES, LLC

TICKET NUMBER 33690
LOCATION Oakley
FOREMAN Kelly Gabel

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
11-1-11	4802	Gail 1-21	21	18S	29W	Lane KS

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

Dighton 3½ W 5 into

TRUCK #	DRIVER	TRUCK #	DRIVER
399	Miles S		
460	Cory D		

JOB TYPE Surface HOLE SIZE 12 1/4 HOLE DEPTH 261' CASING SIZE & WEIGHT 8 5/8 24#
CASING DEPTH 261 DRILL PIPE TUBING OTHER
SLURRY WEIGHT 14.8 SLURRY VOL WATER gal/sk CEMENT LEFT in CASING 20'
DISPLACEMENT 15 bbl DISPLACEMENT PSI MIX PSI RATE

REMARKS: Safety meeting. Rigged upon H D Drilling Rig #3. Hooked up to circulate. Mixed 175 SKS Com 3%cc & 2% gel. Switched over and displaced with 15 bbl H2O. Shut in. Washed out pumps & lines. Rigged down & left location.

Cement Did circulate
circulated approx. 7 bbl to pit

Thank You
Kelly & crew

ACCOUNT CODE	QUANITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
54015	1	PUMP CHARGE	1025.00	1025.00
5406	30	MILEAGE	5.00	150.00
11045	175 SKS	Class A cement	16.80	2940.00
1102	493	calcium chloride	.84	414.13
1118B	329	Bentonite	.24	78.96
5407	8.2 T	Ton Mileage Delivery (min)	1.58	410.00
				5018.09
		Less 10% DISC		501.81
				4516.27
		245584	SALES TAX	194.65
			ESTIMATED TOTAL	4710.92

Ravin 3737
11:00 PM
AUTHORIZTION [signature] TITLE Toolpusher DATE 11-1-11

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.

DRILL STEM TEST REPORT

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 44472 **DST#: 1**

Test Start: 2011.11.09 @ 07:09:00

GENERAL INFORMATION:

Formation: **LKC 'K'**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 09:34:50
Time Test Ended: 13:15:00

Test Type: Conventional Bottom Hole (Initial)
Tester: Chuck Smith
Unit No: 37

Interval: 4231.00 ft (KB) To 4272.00 ft (KB) (TVD)
Total Depth: 4272.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

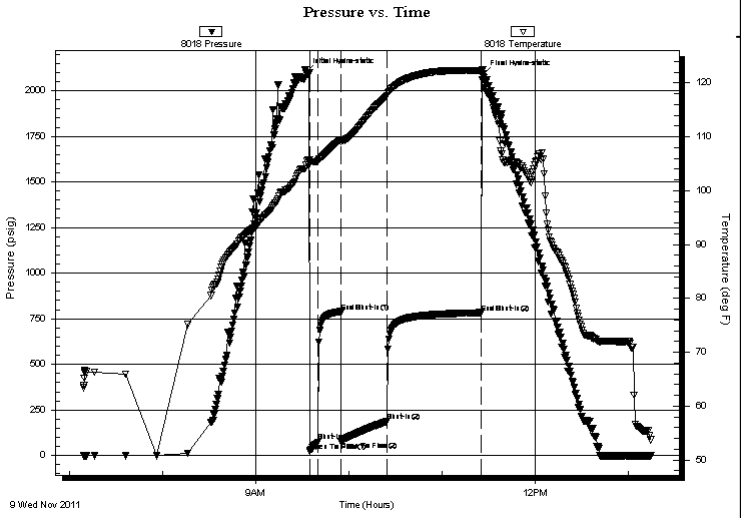
Reference Elevations: 2815.00 ft (KB)
2808.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8018 **Inside**

Press@RunDepth: 188.54 psig @ 4232.00 ft (KB)
Start Date: 2011.11.09 End Date: 2011.11.09
Start Time: 07:09:02 End Time: 13:15:00

Capacity: 8000.00 psig
Last Calib.: 2011.11.09
Time On Btm: 2011.11.09 @ 09:32:30
Time Off Btm: 2011.11.09 @ 11:26:09

TEST COMMENT: 6" Blow .
No return.
B.O.B @ 14 min.
No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2100.37	104.88	Initial Hydro-static
3	25.17	105.04	Open To Flow (1)
8	76.31	105.51	Shut-In(1)
23	789.05	109.51	End Shut-In(1)
23	80.65	109.06	Open To Flow (2)
53	188.54	117.72	Shut-In(2)
113	783.88	122.27	End Shut-In(2)
114	2090.50	122.52	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	RW:.245 @ 45 Degrees F = 50000PPM	0.00
242.00	MW 15m 85w	2.03
140.00	MW 25m 75w	1.96
0.00	Oil spots in tool.	0.00

Gas Rates

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

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 44472 **DST#: 1**

Test Start: 2011.11.09 @ 07:09:00

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:	50000 ppm
Viscosity:	58.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.80 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	3000.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

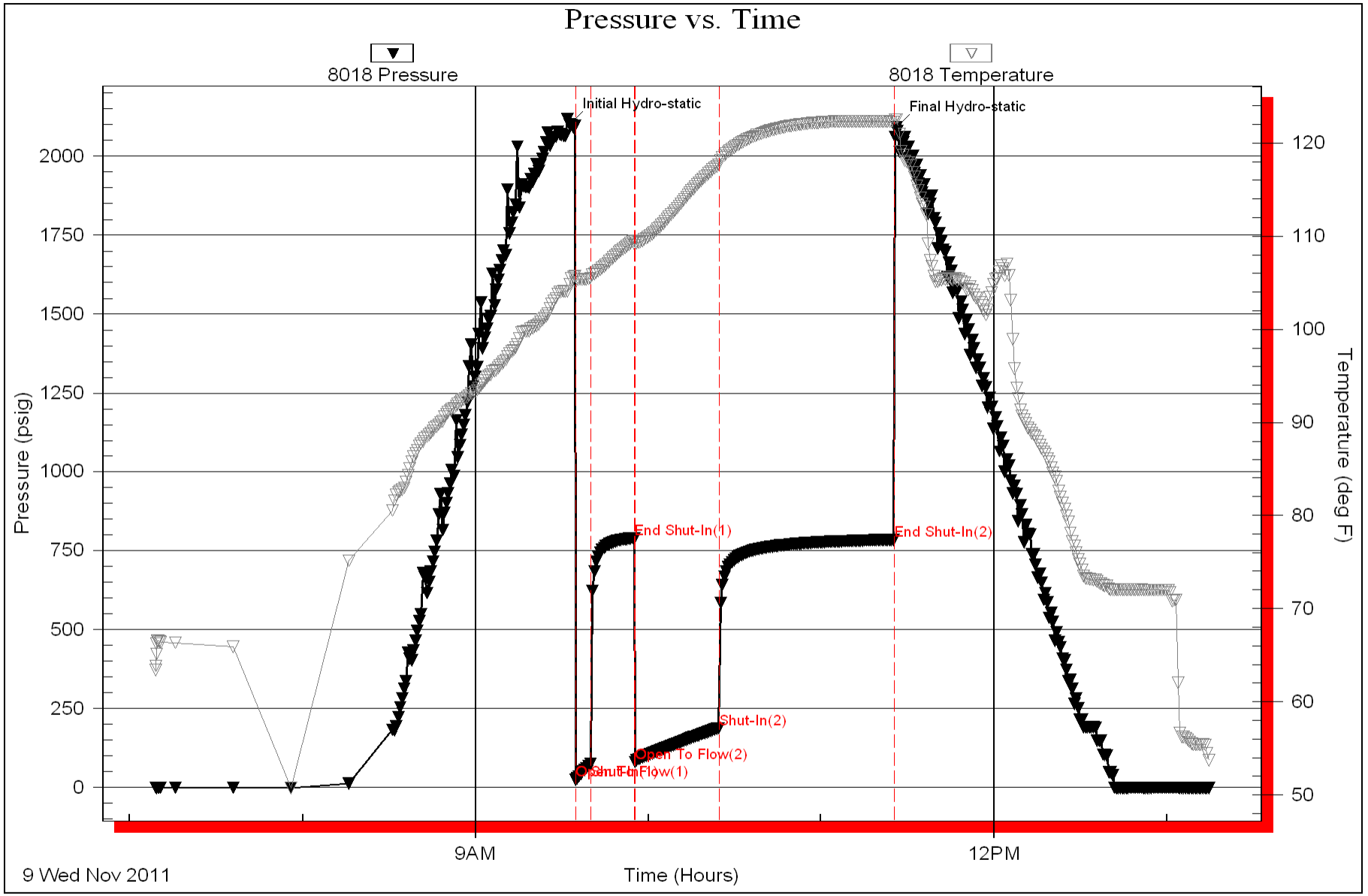
Recovery Table

Length ft	Description	Volume bbl
0.00	RW:.245 @ 45 Degrees F = 50000PPM	0.000
242.00	MW 15m 85w	2.028
140.00	MW 25m 75w	1.964
0.00	Oil spots in tool.	0.000

Total Length: 382.00 ft Total Volume: 3.992 bbl

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

Serial #: 8018 **Inside** Larson Engineering Gail #1-21 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 44472 Printed: 2011.11.09 @ 14:14:20

DRILL STEM TEST REPORT

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 44473 **DST#: 2**

Test Start: 2011.11.09 @ 21:07:00

GENERAL INFORMATION:

Formation: **Middle Creek**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 23:38:10
Time Test Ended: 02:38:50

Test Type: Conventional Bottom Hole (Reset)
Tester: Chuck Smith
Unit No: 37

Interval: 4274.00 ft (KB) To 4284.00 ft (KB) (TVD)
Total Depth: 4284.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

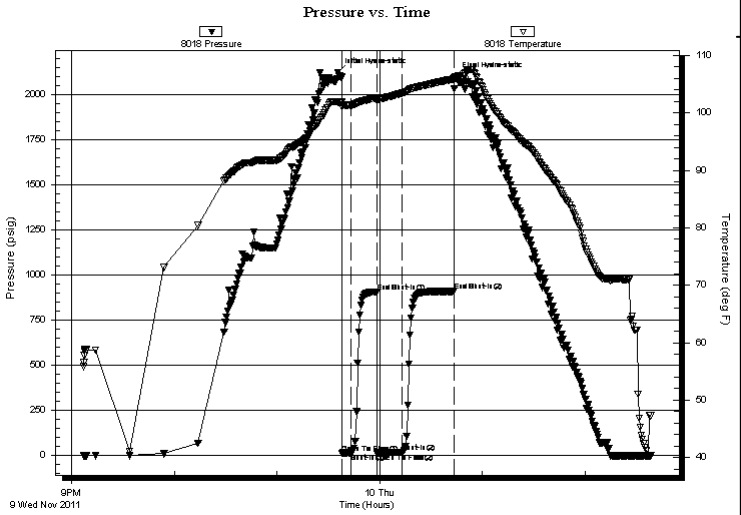
Reference Elevations: 2815.00 ft (KB)
2808.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8018 **Inside**

Press@RunDepth: 17.79 psig @ 4275.00 ft (KB)
Start Date: 2011.11.09 End Date: 2011.11.10
Start Time: 21:07:02 End Time: 02:38:50

Capacity: 8000.00 psig
Last Calib.: 2011.11.10
Time On Btm: 2011.11.09 @ 23:35:50
Time Off Btm: 2011.11.10 @ 00:44:20

TEST COMMENT: Weak surface blow .
No return.
No blow .
No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2120.80	101.83	Initial Hydro-static
3	14.07	101.04	Open To Flow (1)
8	15.12	101.34	Shut-In(1)
23	905.96	102.65	End Shut-In(1)
23	13.09	102.02	Open To Flow (2)
38	17.79	103.43	Shut-In(2)
68	909.20	105.91	End Shut-In(2)
69	2096.43	106.30	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1.00	M 100m	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 44473 **DST#: 2**

Test Start: 2011.11.09 @ 21:07:00

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:	53.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.79 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	3000.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1.00	M 100m	0.005

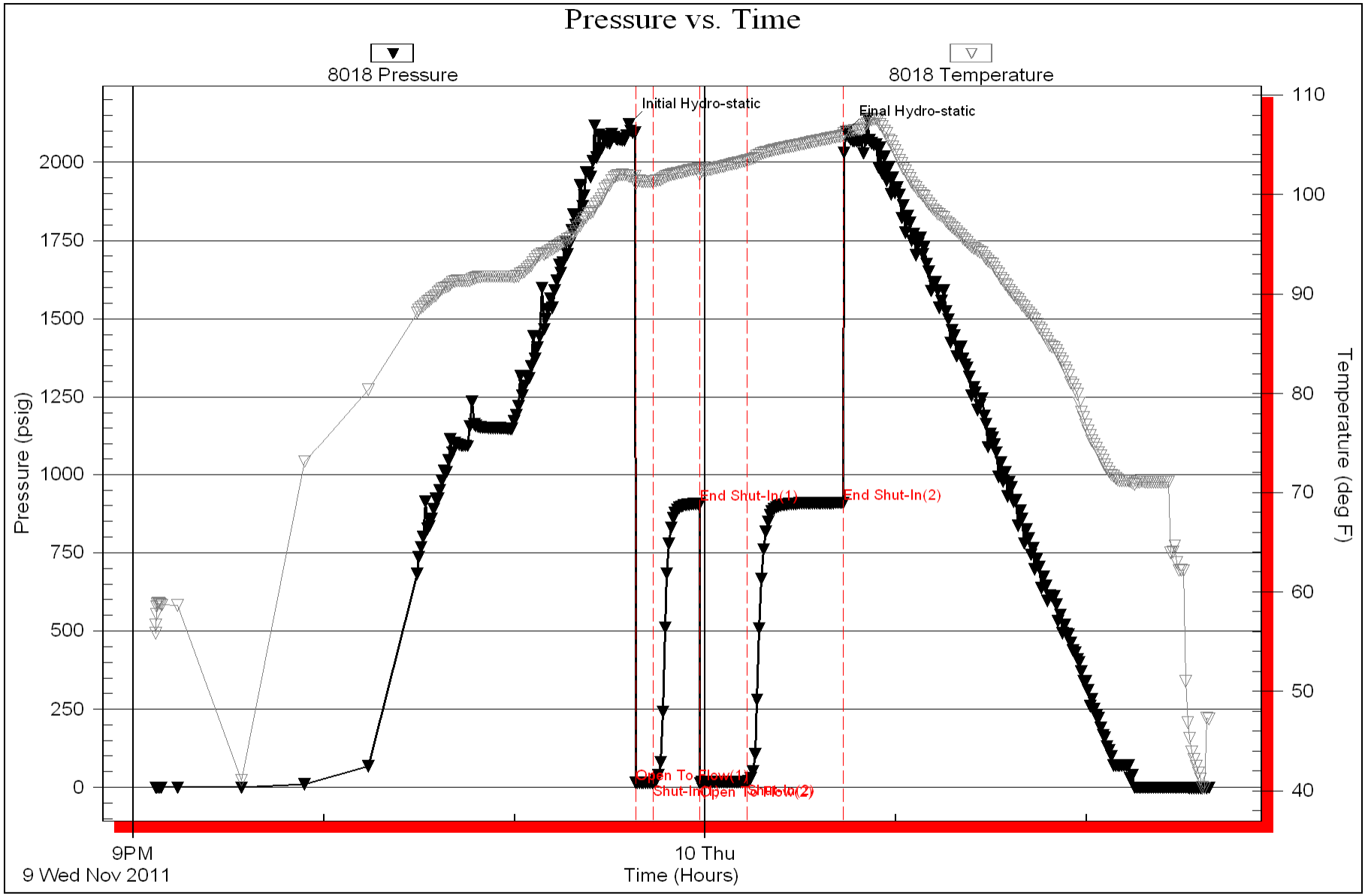
Total Length: 1.00 ft Total Volume: 0.005 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments:

Serial #: 8018 **Inside** Larson Engineering Gail #1-21 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 44473 Printed: 2011.11.10 @ 08:07:29

DRILL STEM TEST REPORT

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 44474 **DST#: 3**

Test Start: 2011.11.10 @ 10:02:00

GENERAL INFORMATION:

Formation: **LKC 'L'**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 11:33:10
Time Test Ended: 14:35:20

Test Type: Conventional Bottom Hole (Reset)
Tester: Chuck Smith
Unit No: 37

Interval: 4284.00 ft (KB) To 4294.00 ft (KB) (TVD)
Total Depth: 4294.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

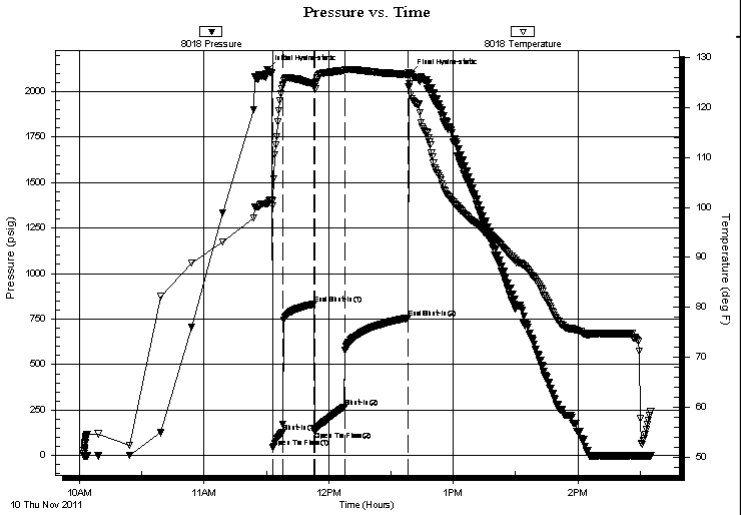
Reference Elevations: 2815.00 ft (KB)
2808.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8018 **Inside**

Press@RunDepth: 268.22 psig @ 4285.00 ft (KB)
Start Date: 2011.11.10 End Date: 2011.11.10
Start Time: 10:02:02 End Time: 14:35:20

Capacity: 8000.00 psig
Last Calib.: 2011.11.10
Time On Btm: 2011.11.10 @ 11:30:30
Time Off Btm: 2011.11.10 @ 12:39:00

TEST COMMENT: B.O.B. @ 4 min.
No return.
B.O.B. @ 4 1/2 min.
No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2121.73	100.69	Initial Hydro-static
3	43.29	101.40	Open To Flow (1)
8	128.45	124.39	Shut-In(1)
23	831.75	124.79	End Shut-In(1)
23	135.43	124.28	Open To Flow (2)
38	268.22	127.45	Shut-In(2)
68	755.82	126.61	End Shut-In(2)
69	2098.74	124.79	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	MW 20m 80w	0.30
493.00	MW 5m 95w	6.10
62.00	OSMW 30m 70w	0.87

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 44474 **DST#: 3**

Test Start: 2011.11.10 @ 10:02:00

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:	60000 ppm
Viscosity:	57.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.79 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	3000.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	MW 20m 80w	0.295
493.00	MW 5m 95w	6.096
62.00	OSMW 30m 70w	0.870

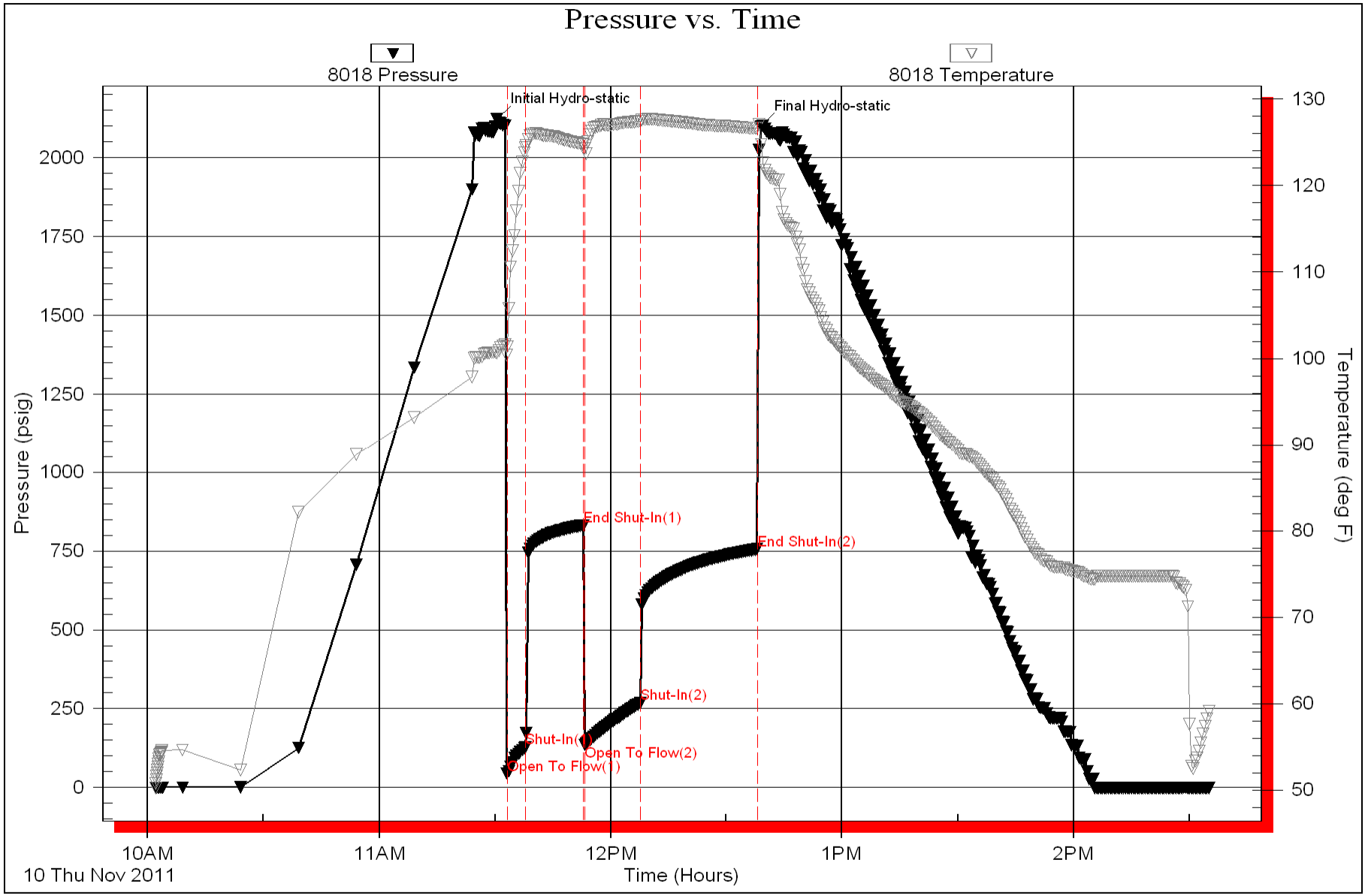
Total Length: 615.00 ft Total Volume: 7.261 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments: RW:.156 @ 57 Degrees F = 60000 PPM

Serial #: 8018 **Inside** Larson Engineering Gail #1-21 DST Test Number: 3



Trilobite Testing, Inc Ref. No: 44474 Printed: 2011.11.10 @ 14:54:14

DRILL STEM TEST REPORT

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 44475 **DST#: 4**

Test Start: 2011.11.11 @ 02:40:00

GENERAL INFORMATION:

Formation: **Pleasanton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 04:29:40
Time Test Ended: 08:59:20

Test Type: Conventional Bottom Hole (Reset)
Tester: Chuck Smith
Unit No: 37

Interval: 4316.00 ft (KB) To 4335.00 ft (KB) (TVD)
Total Depth: 4335.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

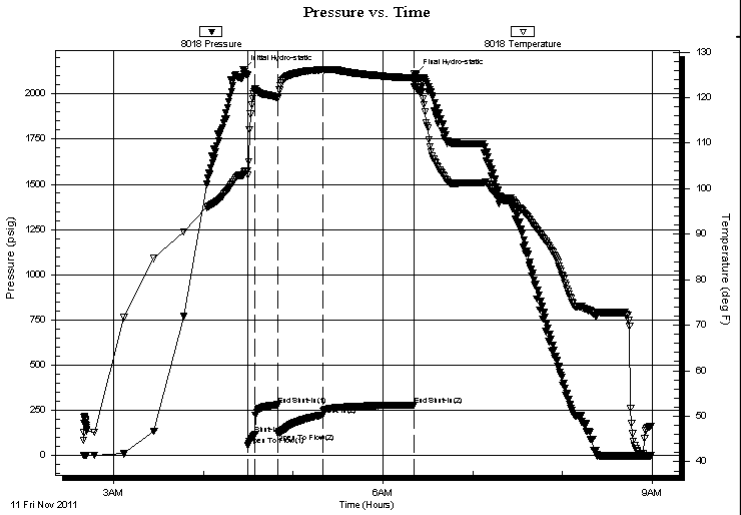
Reference Elevations: 2815.00 ft (KB)
2808.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8018 **Inside**

Press@RunDepth: 223.68 psig @ 4317.00 ft (KB)
Start Date: 2011.11.11 End Date: 2011.11.11
Start Time: 02:40:02 End Time: 08:59:20

Capacity: 8000.00 psig
Last Calib.: 2011.11.11
Time On Btm: 2011.11.11 @ 04:26:40
Time Off Btm: 2011.11.11 @ 06:21:50

TEST COMMENT: B.O.B. @ 4 1/2 min.
Weak surface return.
B.O.B. @ 8 min.
No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2135.38	103.08	Initial Hydro-static
3	57.68	102.93	Open To Flow (1)
8	118.01	121.68	Shut-In(1)
23	280.32	119.83	End Shut-In(1)
24	122.67	119.71	Open To Flow (2)
53	223.68	126.09	Shut-In(2)
114	280.06	124.36	End Shut-In(2)
116	2110.17	122.85	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	RW:.206 @ 45 Degrees F = 46000PPM	0.00
60.00	OSWM 40w 60m	0.30
397.00	OSMW 10m 90w	4.75
3.00	CGO 5g 90o	0.04

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 44475 **DST#: 4**

Test Start: 2011.11.11 @ 02:40:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	31 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	46000 ppm
Viscosity:	51.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.00 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2600.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

Recovery Table

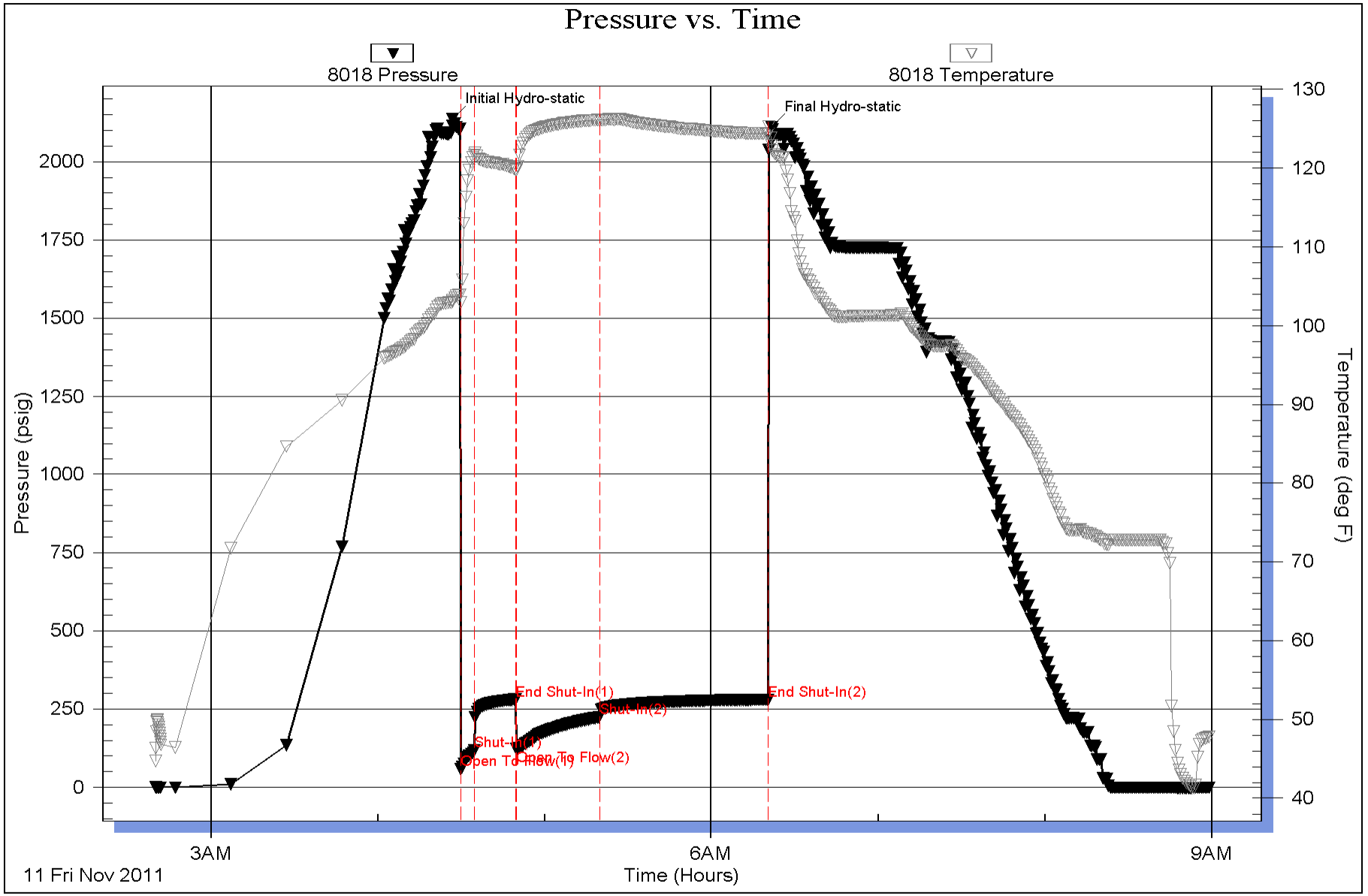
Length ft	Description	Volume bbl
0.00	RW:.206 @ 45 Degrees F = 46000PPM	0.000
60.00	OSWM 40w 60m	0.295
397.00	OSMW 10m 90w	4.749
3.00	CGO 5g 90o	0.042

Total Length: 460.00 ft Total Volume: 5.086 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments: API: 29 @ 40 Degrees F = 31.


Pressure vs. Time
8018 Pressure
8018 Temperature
Initial Hydro-static
Final Hydro-static
End Shut-In(1)
End Shut-In(2)
Shut-In(2)
Shut-In(1)
Open To Flow(2)
Open To Flow(1)
2000
1750
1500
1250
1000
750
500
250
0
Pressure (psig)
130
120
110
100
90
80
70
60
50
40
Temperature (deg F)
3AM
6AM
9AM
11 Fri Nov 2011
Time (Hours)

DRILL STEM TEST REPORT

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 45476 **DST#: 5**

Test Start: 2011.11.11 @ 22:46:00

GENERAL INFORMATION:

Formation: **Marmaton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 00:48:50
Time Test Ended: 04:39:20

Test Type: Conventional Bottom Hole (Reset)
Tester: Chuck Smith
Unit No: 37

Interval: 4340.00 ft (KB) To 4396.00 ft (KB) (TVD)
Total Depth: 4396.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

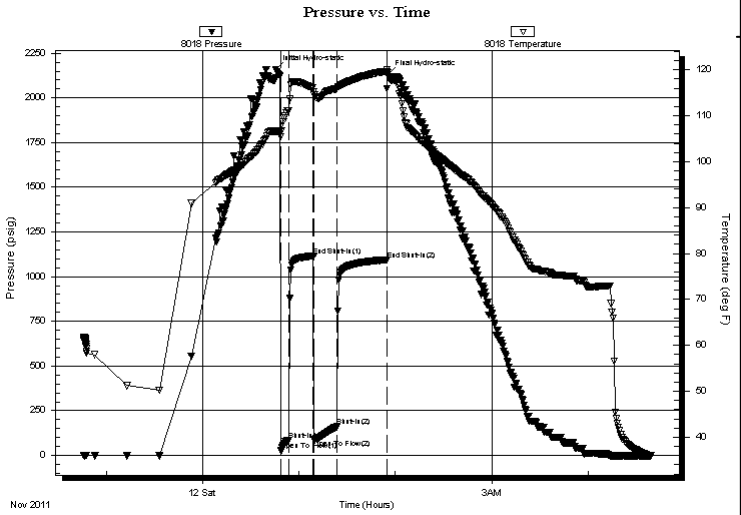
Reference Elevations: 2815.00 ft (KB)
2808.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8018 **Inside**

Press@RunDepth: 161.03 psig @ 4341.00 ft (KB)
Start Date: 2011.11.11 End Date: 2011.12
Start Time: 22:46:02 End Time: 04:39:20

Capacity: 8000.00 psig
Last Calib.: 2011.11.12
Time On Btm: 2011.11.12 @ 00:45:40
Time Off Btm: 2011.11.12 @ 01:55:30

TEST COMMENT: 9" Blow .
3/4" Return.
B.O.B. @ 7 min.
5" Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2159.25	106.60	Initial Hydro-static
4	26.71	105.50	Open To Flow (1)
8	86.51	111.12	Shut-In(1)
23	1115.81	116.04	End Shut-In(1)
24	90.03	115.18	Open To Flow (2)
38	161.03	115.89	Shut-In(2)
69	1094.30	119.67	End Shut-In(2)
70	2130.94	119.33	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	GOCM 10g 20o 70m	0.30
60.00	GMCO 20g 10m 70o	0.30
258.00	GMCO 20g 30m 50o	3.35
0.00	248 Feet 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 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 45476 **DST#: 5**

Test Start: 2011.11.11 @ 22:46:00

GENERAL INFORMATION:

Formation: **Marmaton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 00:48:50
Time Test Ended: 04:39:20

Test Type: Conventional Bottom Hole (Reset)
Tester: Chuck Smith
Unit No: 37

Interval: 4340.00 ft (KB) To 4396.00 ft (KB) (TVD)
Total Depth: 4396.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

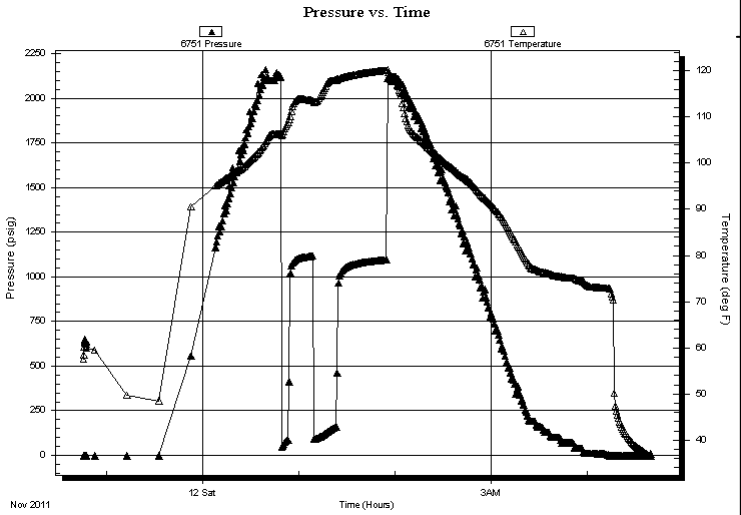
Reference Elevations: 2815.00 ft (KB)
2808.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 6751 **Outside**

Press@RunDepth: psig @ 4341.00 ft (KB)
Start Date: 2011.11.11 End Date: 2011.11.12
Start Time: 22:46:02 End Time: 04:39:50

Capacity: 8000.00 psig
Last Calib.: 2011.11.12
Time On Btm:
Time Off Btm:

TEST COMMENT: 9" Blow .
3/4" Return.
B.O.B. @ 7 min.
5" Return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
60.00	GOCM 10g 20o 70m	0.30
60.00	GMCO 20g 10m 70o	0.30
258.00	GMCO 20g 30m 50o	3.35
0.00	248 Feet GIP	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 45476 **DST#: 5**

Test Start: 2011.11.11 @ 22:46:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	33 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	ppm
Viscosity:	50.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.00 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2900.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	GOCM 10g 20o 70m	0.295
60.00	GMCO 20g 10m 70o	0.295
258.00	GMCO 20g 30m 50o	3.346
0.00	248 Feet GIP	0.000

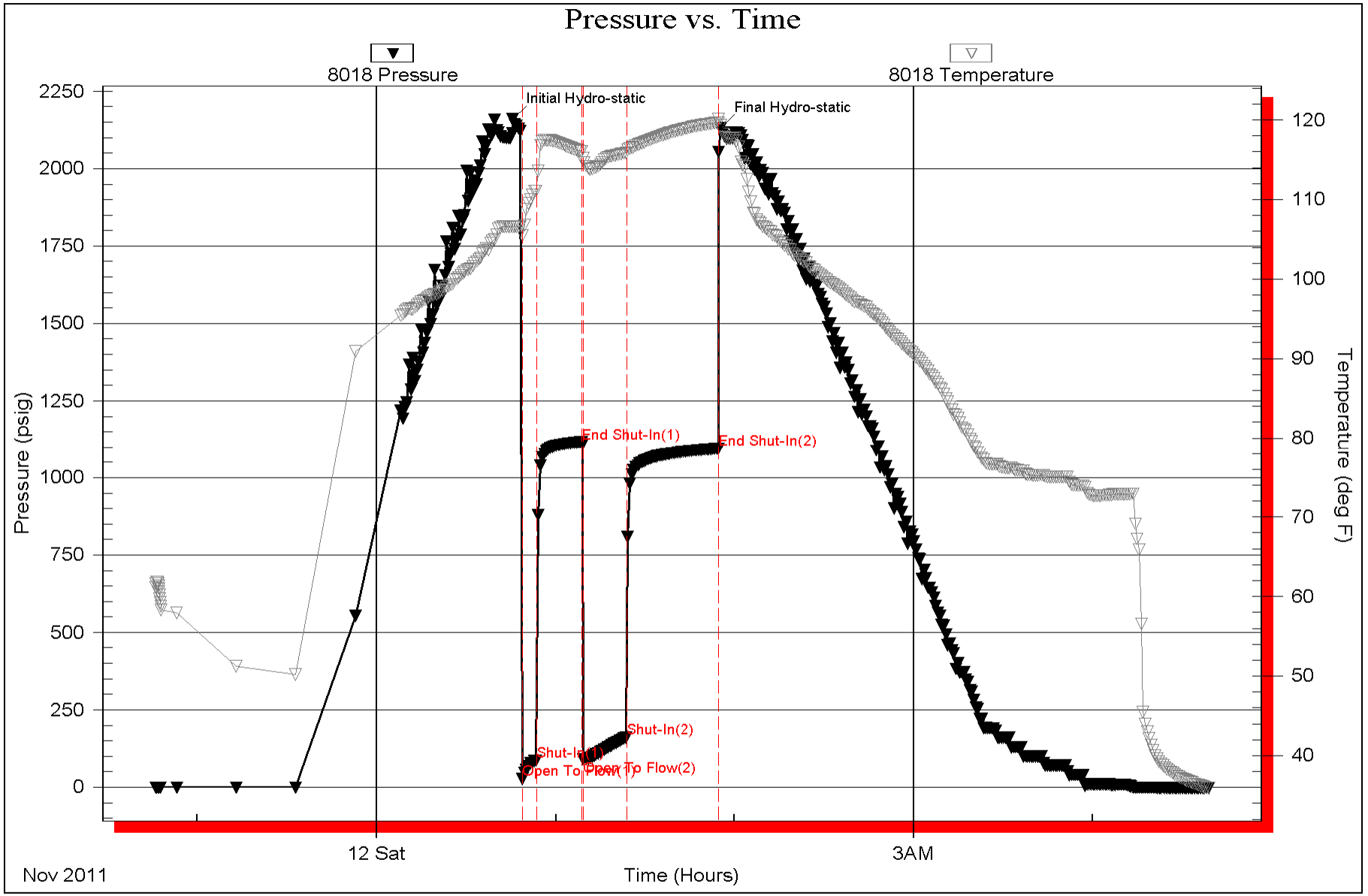
Total Length: 378.00 ft Total Volume: 3.936 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

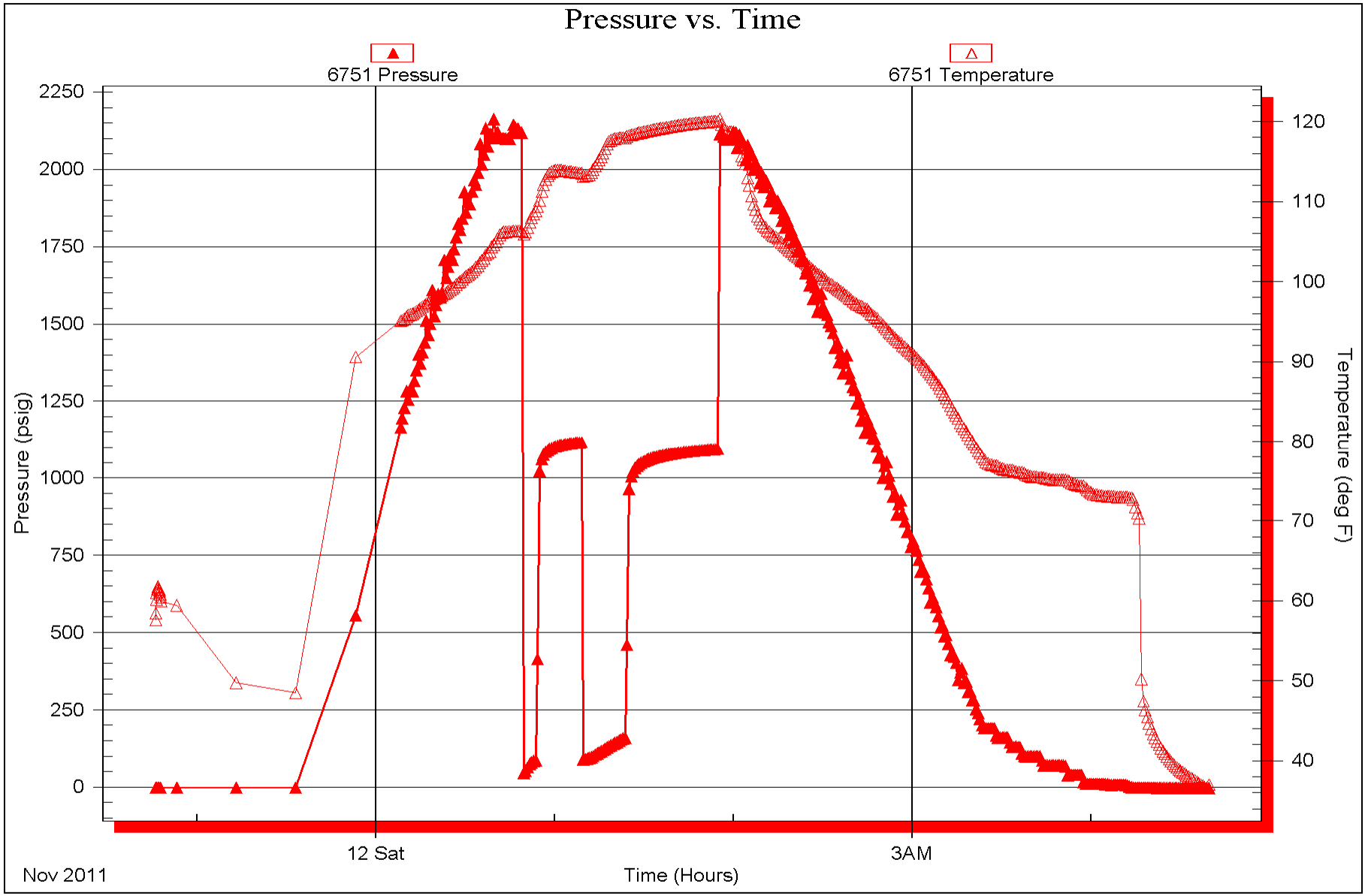
Recovery Comments: API: 31 @ 40 Degrees F = 33.

Serial #: 8018 **Inside** Larson Engineering Gail #1-21 DST Test Number: 5



Trilobite Testing, Inc Ref. No: 45476 Printed: 2011.11.12 @ 09:20:52

Serial #: 6751 **Outside** Larson Engineering Gail #1-21 DST Test Number: 5



Trilobite Testing, Inc Ref. No: 45476 Printed: 2011.11.12 @ 09:20:52

DRILL STEM TEST REPORT

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 45477 **DST#: 6**

Test Start: 2011.11.12 @ 15:31:00

GENERAL INFORMATION:

Formation: **Marmaton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 17:45:38
Time Test Ended: 21:05:48

Test Type: Conventional Bottom Hole (Reset)
Tester: Chuck Smith
Unit No: 37

Interval: 4393.00 ft (KB) To 4438.00 ft (KB) (TVD)
Total Depth: 4438.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

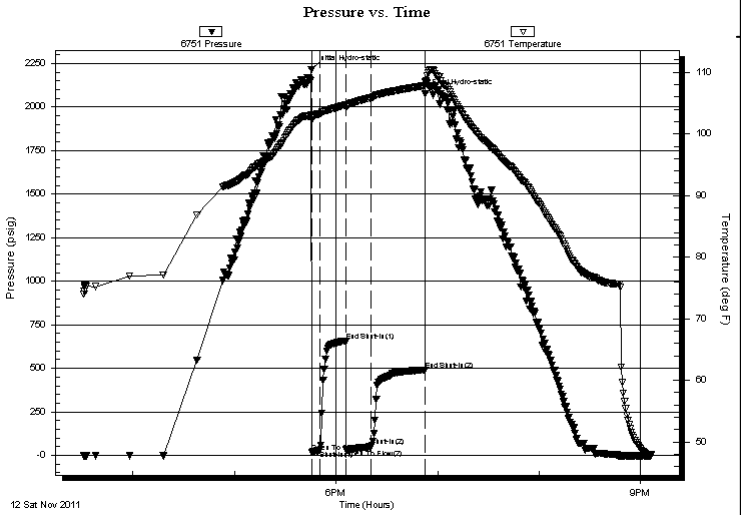
Reference Elevations: 2815.00 ft (KB)
2808.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 6751 **Outside**

Press@RunDepth: 50.18 psig @ 4394.00 ft (KB)
Start Date: 2011.11.12 End Date: 2011.11.12
Start Time: 15:31:00 End Time: 21:05:47

Capacity: 8000.00 psig
Last Calib.: 2011.11.12
Time On Btm: 2011.11.12 @ 17:45:28
Time Off Btm: 2011.11.12 @ 18:52:47

TEST COMMENT: 1" Blow .
No return.
1 1/2" Blow .
No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2216.05	103.10	Initial Hydro-static
1	17.42	102.26	Open To Flow (1)
6	29.69	103.29	Shut-In(1)
21	653.78	104.71	End Shut-In(1)
21	32.38	104.37	Open To Flow (2)
36	50.18	105.90	Shut-In(2)
67	491.03	107.84	End Shut-In(2)
68	2079.24	108.41	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	OCWM 2%o 3%w 95%m	0.30
70.00	OCM 3%o 97%m	0.34

* 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 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 45477 **DST#: 6**

Test Start: 2011.11.12 @ 15:31:00

GENERAL INFORMATION:

Formation: **Marmaton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 17:45:38
Time Test Ended: 21:05:48

Test Type: Conventional Bottom Hole (Reset)
Tester: Chuck Smith
Unit No: 37

Interval: 4393.00 ft (KB) To 4438.00 ft (KB) (TVD)
Total Depth: 4438.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

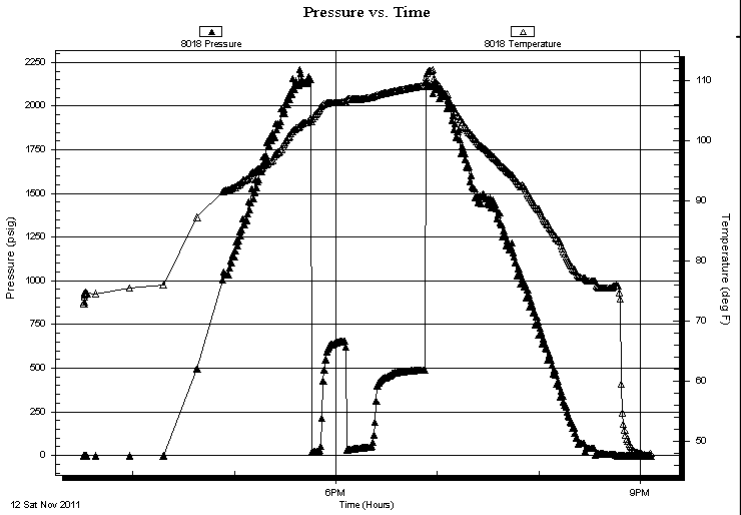
Reference Elevations: 2815.00 ft (KB)
2808.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8018 **Inside**

Press@RunDepth: psig @ 4394.00 ft (KB)
Start Date: 2011.11.12 End Date: 2011.11.12
Start Time: 15:31:02 End Time: 21:05:49

Capacity: 8000.00 psig
Last Calib.: 2011.11.12
Time On Btm:
Time Off Btm:

TEST COMMENT: 1" Blow .
No return.
1 1/2" Blow .
No return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
60.00	OCWM 2%o 3%w 95%m	0.30
70.00	OCM 3%o 97%m	0.34

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 45477 **DST#: 6**

Test Start: 2011.11.12 @ 15:31:00

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:	54.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.40 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2900.00 ppm				
Filter Cake:	2.00 inches				

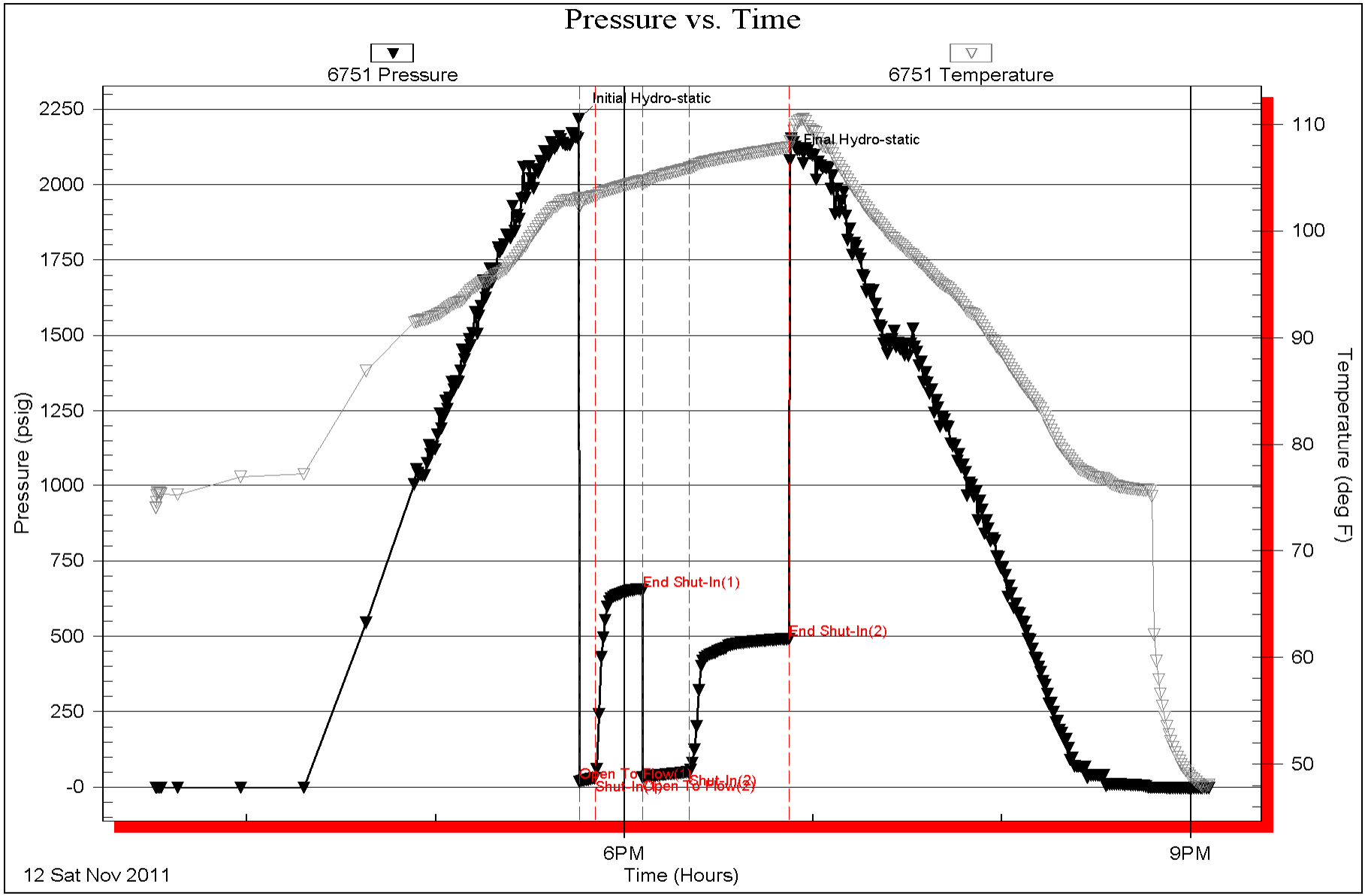
Recovery Information

Recovery Table

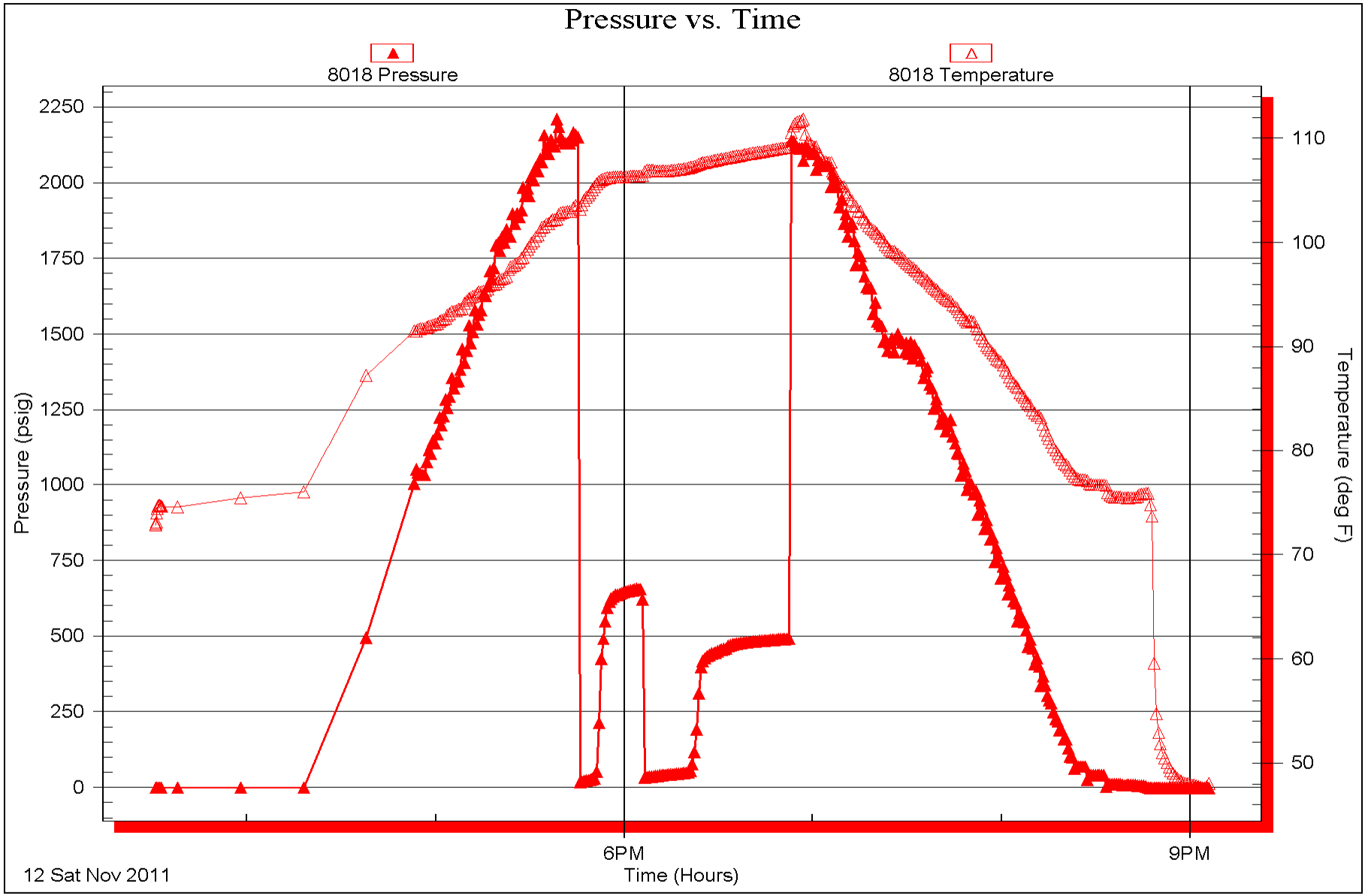
Length ft	Description	Volume bbl
60.00	OCWM 2%o 3%w 95%m	0.295
70.00	OCM 3%o 97%m	0.344

Total Length: 130.00 ft Total Volume: 0.639 bbl

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


Pressure vs. Time
6751 Pressure
6751 Temperature
Initial Hydro-static
Final Hydro-static
End Shut-In(1)
End Shut-In(2)
Pressure (psig)
Temperature (deg F)
2250
2000
1750
1500
1250
1000
750
500
250
-0
110
100
90
80
70
60
50
6PM
9PM
Time (Hours)
12 Sat Nov 2011

Serial #: 8018 **Inside** Larson Engineering Gail #1-21 DST Test Number: 6



Trilobite Testing, Inc Ref. No: 45477 Printed: 2011.11.13 @ 09:30:14

DRILL STEM TEST REPORT

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 45472 **DST#: 7**

Test Start: 2011.11.13 @ 18:40:00

GENERAL INFORMATION:

Formation: **Cherokee**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:51:28
Time Test Ended: 03:27:28

Test Type: Conventional Bottom Hole (Reset)
Tester: Will MacLean
Unit No: 37

Interval: 4494.00 ft (KB) To 4561.00 ft (KB) (TVD)
Total Depth: 4561.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

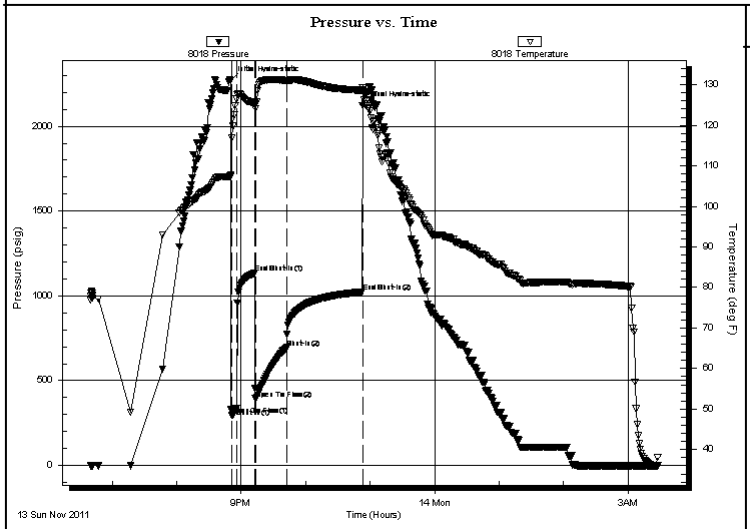
Reference Elevations: 2815.00 ft (KB)
2808.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8018 **Inside**

Press@RunDepth: 694.92 psig @ 4496.00 ft (KB)
Start Date: 2011.11.13 End Date: 2011.11.14
Start Time: 18:40:00 End Time: 03:27:28

Capacity: 8000.00 psig
Last Calib.: 2011.11.14
Time On Btm: 2011.11.13 @ 20:50:08
Time Off Btm: 2011.11.13 @ 22:52:58

TEST COMMENT: IF- BOB in 1min
ISI- Surface Blow Built to 3"
FF- BOB in 1min 10sec
FSI- Surface Blow Built to 5 1/4"



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2270.01	107.43	Initial Hydro-static
2	298.00	116.80	Open To Flow (1)
6	335.90	126.48	Shut-In(1)
23	1133.40	125.46	End Shut-In(1)
24	393.56	124.19	Open To Flow (2)
53	694.92	130.99	Shut-In(2)
123	1023.20	128.64	End Shut-In(2)
123	2123.17	129.23	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
62.00	GO 45%g 55%oil	0.30
181.00	MGCO 5%m 25%g 70%oil	1.74
1488.00	GO 25%G 75% oil	20.87
0.00	310' of GIP	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering

562 W. State Rd 4
Olmitz, KS 67564-8561

ATTN: Vern Schrag

S21-18s-29w Lane, KS

Gail #1-21

Job Ticket: 45472 **DST#: 7**

Test Start: 2011.11.13 @ 18:40:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	27 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	ppm
Viscosity:	54.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.80 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2500.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
62.00	GO 45%g 55%oil	0.305
181.00	MGCO 5%m 25%g 70%oil	1.737
1488.00	GO 25%G 75% oil	20.873
0.00	310' of GIP	0.000

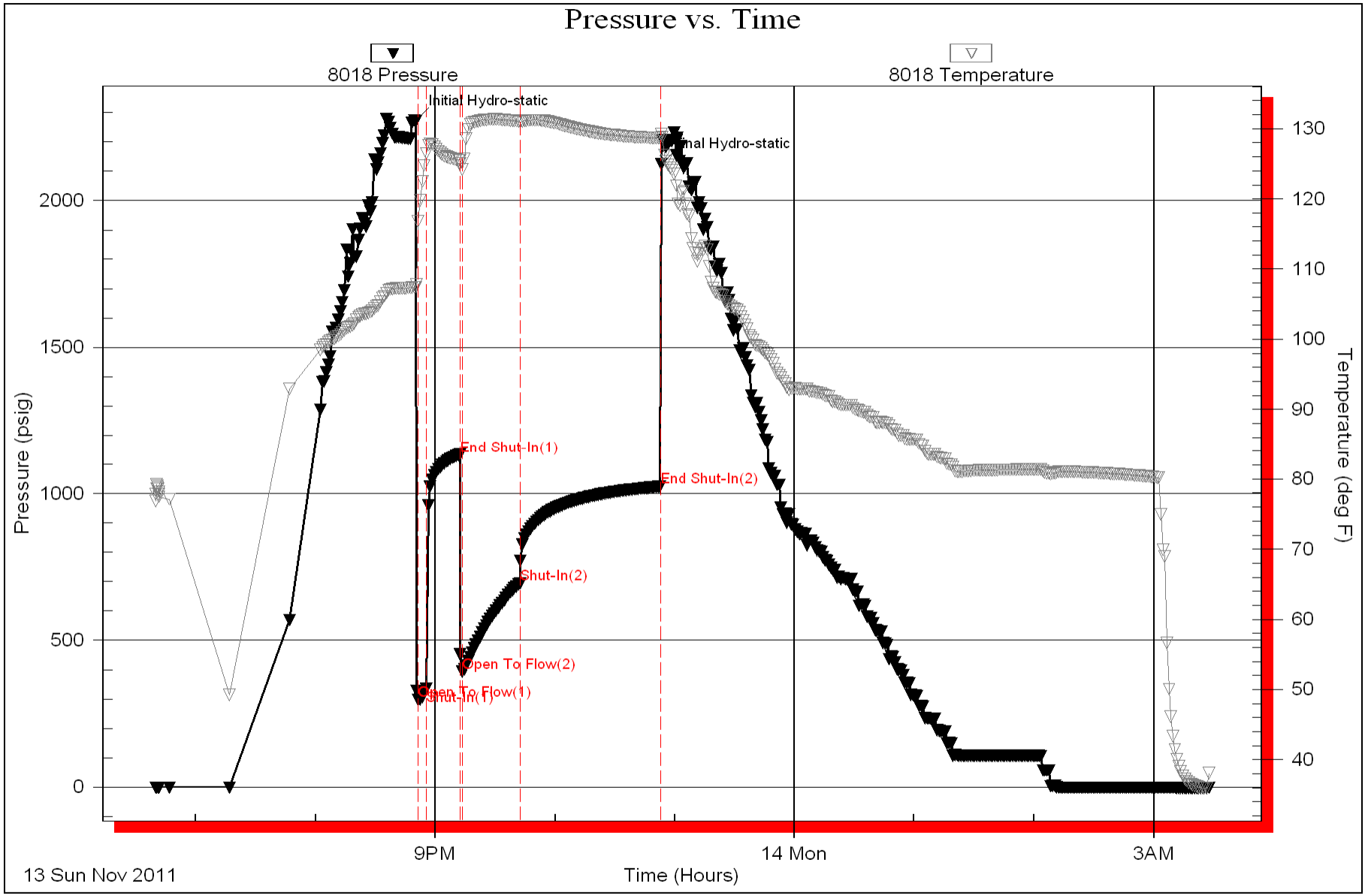
Total Length: 1731.00 ft Total Volume: 22.915 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

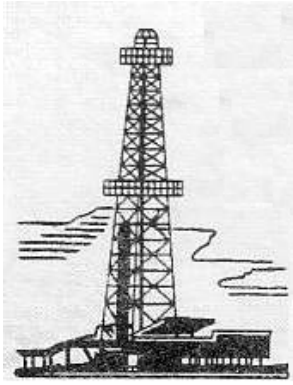
Laboratory Name: Laboratory Location:

Recovery Comments: API is 25 @ 40f =27

Serial #: 8018 **Inside** Larson Engineering Gail #1-21 DST Test Number: 7



Trilobite Testing, Inc Ref. No: 45472 Printed: 2011.11.14 @ 08:28:34



WELLSITE GEOLOGIST'S REPORT

VERNON C. SCHRAG
CONSULTANT GEOLOGIST

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

Well Name:	**GAIL #1-21**		
Location:	**SE SW NE NE Sec. 21-18s-29w**		
Licence Number:	**API: 15-101-22325**	**Region:**	**Lane Co., KS**
Spud Date:	**October 29, 2011**	**Drilling Completed:**	**November 14, 2011**
Surface Coordinates:	**1165' FNL & 950' FEL**		
Bottom Hole Coordinates:	**Vertical Hole**		
Ground Elevation (ft):	**2808'**	**K.B. Elevation (ft):**	**2815'**
Logged Interval (ft):	**3800' To: RTD**	**Total Depth (ft):**	**4655'**
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

DP 4.5" XH (16.6#); DC 6.25" x 2-1/4" (ave) x 574.02', Kelly + Bit 41.30', Tool Joint 5.5" ; Bit: JZ QX20, 7-7/8", jets 14-14-14; rpm 80, WOB 35k; Kelly Bushing 7' above ground level; LeWayne "Lew" Tresner (tool pusher).

SURFACE CASING:

8-5/8" (20#) casing at 258'

CIRCULATION SYSTEM:

Pump: EMSCO D-300, duplex, 6 x 14, 2" rod, 54-55 spm, SPP: 625 psi; Chemical, premix, start displacement 3617, Morgan Mud, Inc., McCook, Nebraska, David Lines, Cade Lines.

GAS DETECTION SYSTEM:

USB-1208LS-213 portable hot-wire, Delphian 3.0 volt catalytic bead detector.

DRILL STEM TEST #1:

Zone: Kans. City "K": Test Interval: 4231-4272' (41' anchor); Blow: 6" IFP, no RB, BOB 14 min FFP, no RB; Time Periods: 5-15-30-60; Recovery: 382' total fluid, no GIP; Grindout: 140' muddy water (25% mud, 75% water), 242' muddy water (15% mud, 85% water, Rw 0.245 at 45 deg F, chlorides 50k); Pressures: HP: 2100-2091; SIP: 789-784; FP: 25-76, 81-189; BHT: 122 deg F; dual packers, jars, joints, 150' collars; Trilobite Testing, Inc., Chuck Smith.

DRILL STEM TEST #2:

Zone: Kans. City 'Middle Creek': Test Interval: 4274-4284 (10' anchor); Blow: weak surf blow IFP, no RB, no blow FFP; Time Periods: 5-15-15-30; Recovery: 1' mud; Pressures: HP: 2121-2096; SIP: 906-909; FP: 14-15, 13-18; BHT: 106 F; dual packers, jars, joints, 150' collars; Trilobite Testing, Inc., Chuck Smith.

DRILL STEM TEST #3:

Zone: Kans. City 'L': Test Interval: 4284-4294 (10' anchor); Blow: BOB 4 min IFP, no RB, BOB 4.5 min FFP, no RB; Time Periods: 5-15-15-30; Recovery: 615' total fluid, no GIP; Grindouts: 62' oil spotted muddy water (30% mud, 70% water), 493' muddy water (5% mud, 95% water, Rw 0.156 at 57 F, chlorides 60k), 60' muddy water (20% mud, 80% water); Pressures: HP: 2122-2099, SIP: 832-756, FP: 43-128, 135-268; BHT: 127 F; dual packers, jars, joints, 150' collars; Trilobite Testing, Inc., Chuck Smith.

DRILL STEM TEST #4:

Zone: Pleasanton: Test Interval: 4316-4335 (19' anchor); Blow: BOB 4.5 min IFP, weak surf RB; BOB 8 min FFP, no RB; Time Periods: 5-15-15-30; Recovery: 460' total fluid: Grindouts: 3' CGO (5% gas, 95% oil, grav 31), 397 OSMW (10% mud, 90% water, Rw 0.206 at 45 F, chlorides 46k); 60' OSWM (40% water, 60% mud); Pressures: HP: 2135-2110, SIP: 280-280, FP: 58-118, 123-224; BHT: 124 F; dual packers, jars, joints, 150' collars; Trilobite Testing, Inc., Chuck Smith.

DRILL STEM TEST #5:

Zone: Marmaton: Test Interval: 4340-4396 (56' anchor); Blow: incr 9" IFP, 3/4" RB, BOB 7 min FFP, 5" RB; Time Periods: 5-15-15-30; Recovery: 248' GIP, 378' total fluid: Grindouts: 258' GMCO (20% gas, 30% mud, 50% oil, 33 grav), 60' GMCO (20% gas, 10% mud, 70% oil), 60' GOCM (10% gas, 20% oil, 70% mud); Pressures: HP: 2159-2131, SIP: 1116-1094, FP: 27-87, 90-161; BHT: 120 F; dual packers (w/shale packer), jars, joints, 150' collars; Trilobite Testing, Inc., Chuck Smith.

DRILL STEM TEST #6:

Zone: Marmaton: Test Interval: 4393-4438 (45' anchor); Blow: weak incr 1" IFP, no RB, weak incr 1.5" FFP, no RB; Time Periods: 5-15-15-30; Recovery: 130' total fluid; Grindouts: 70' slightly oil cut mud (3% oil, 97% mud), 60' slightly oil & water cut mud (2% oil, 3% water, 95% mud); Pressures: HP: 2216-2079, SIP: 653-491, FP: 17-29, 32-50; BHT: 111 F; dual packers (w/shale packer), jars, joints, 150' collars; Trilobite Testing, Inc., Chuck Smith, Will MacLean.

DRILL STEM TEST #7:

Zone: Cherokee (Johnson); Test Interval: 4494-4561 (67' anchor); Blow: BOB 1 min IFP, 3" RB, BOB 1 min FFP, 5" RB; Time Periods: 5-15-30-60; Recovery: 310' GIP, 1731 total fluid; Grindouts: 1488' GO (25% gas, 75% oil, Grav 27), 181' MGO (5% mud, 25% gas, 70% oil), 62' GO (45% gas, 55% oil); Pressures: HP: 2270-2123, SIP: 1133-1023; FP: 298-335, 393-694; BHT 124 F; dual packers, jars, joints, 150' collars; Trilobite Testing, Inc., Will MacLean.

OPEN HOLE LOGS:

DN (PE), DI (SP), ML: 5" detail LTD-3600; 2" DI to suface casing; No Sonic Log; LogTech-Pioneer Wireline, Hays, KS, Daylon Kerr, Craig McLaughlin, Log total depth (4659') was four feet low to rotary total depth

COMPLETION:

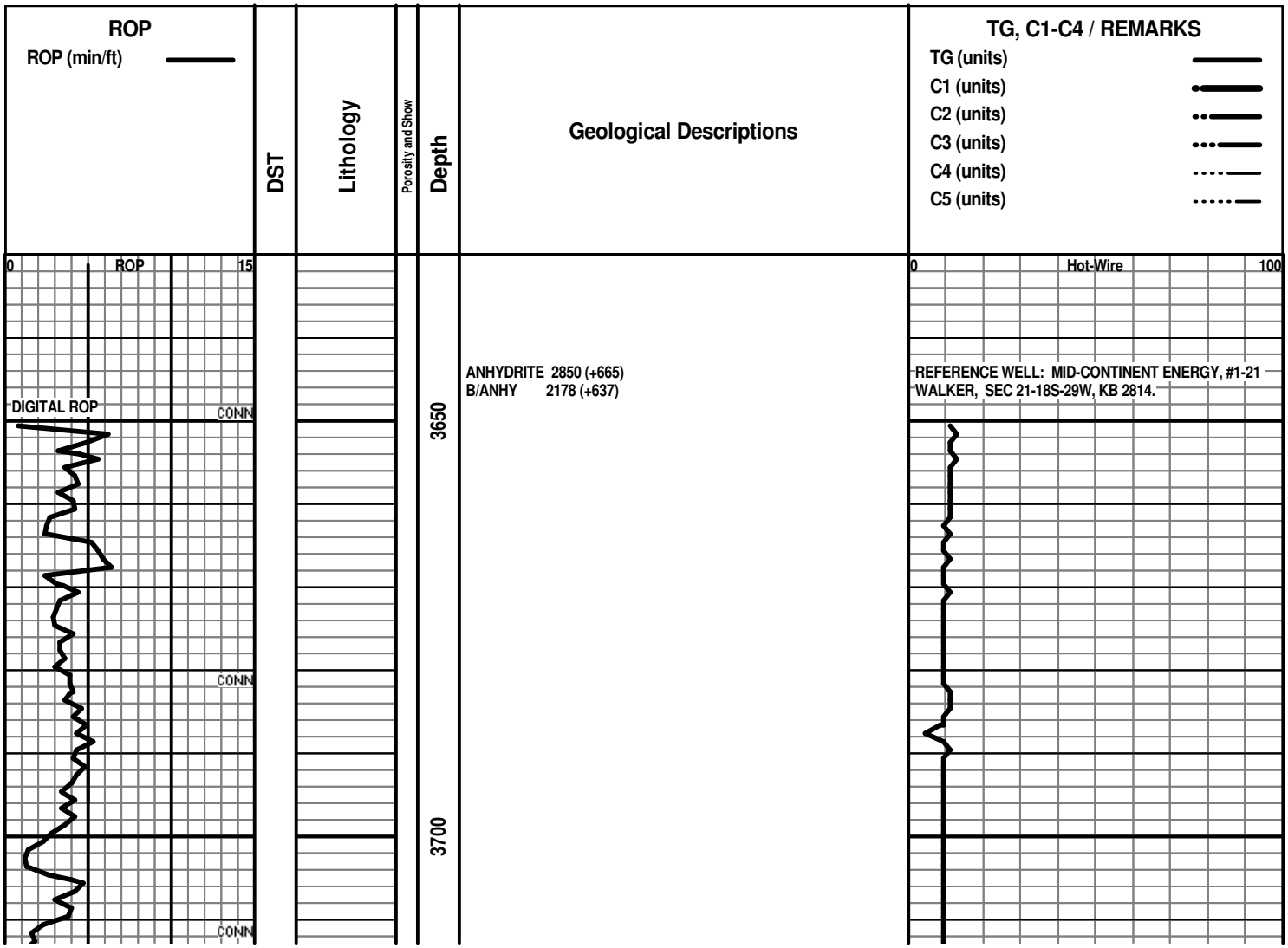
Oil Well.

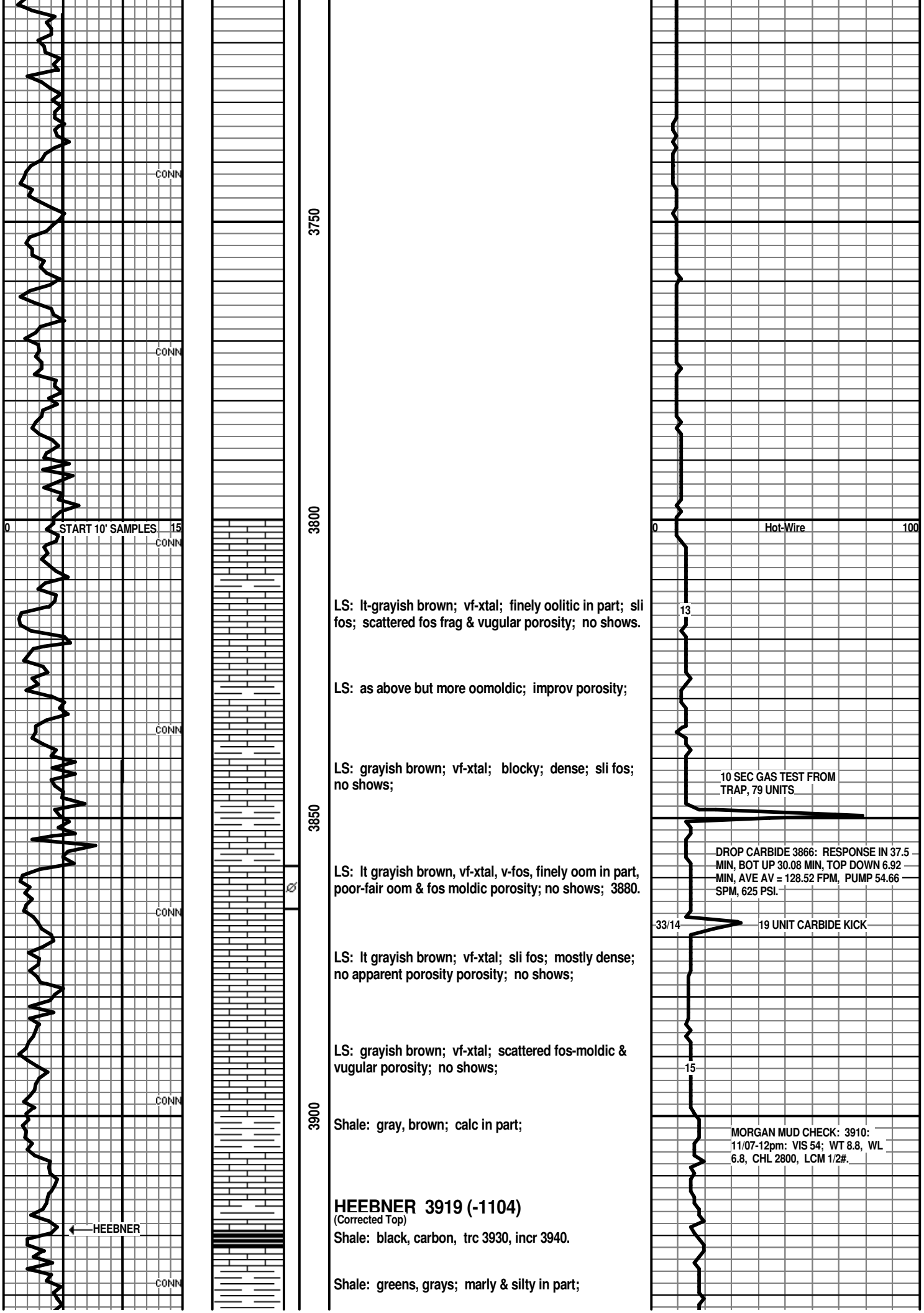
7AM DAILY ACTIVITY:

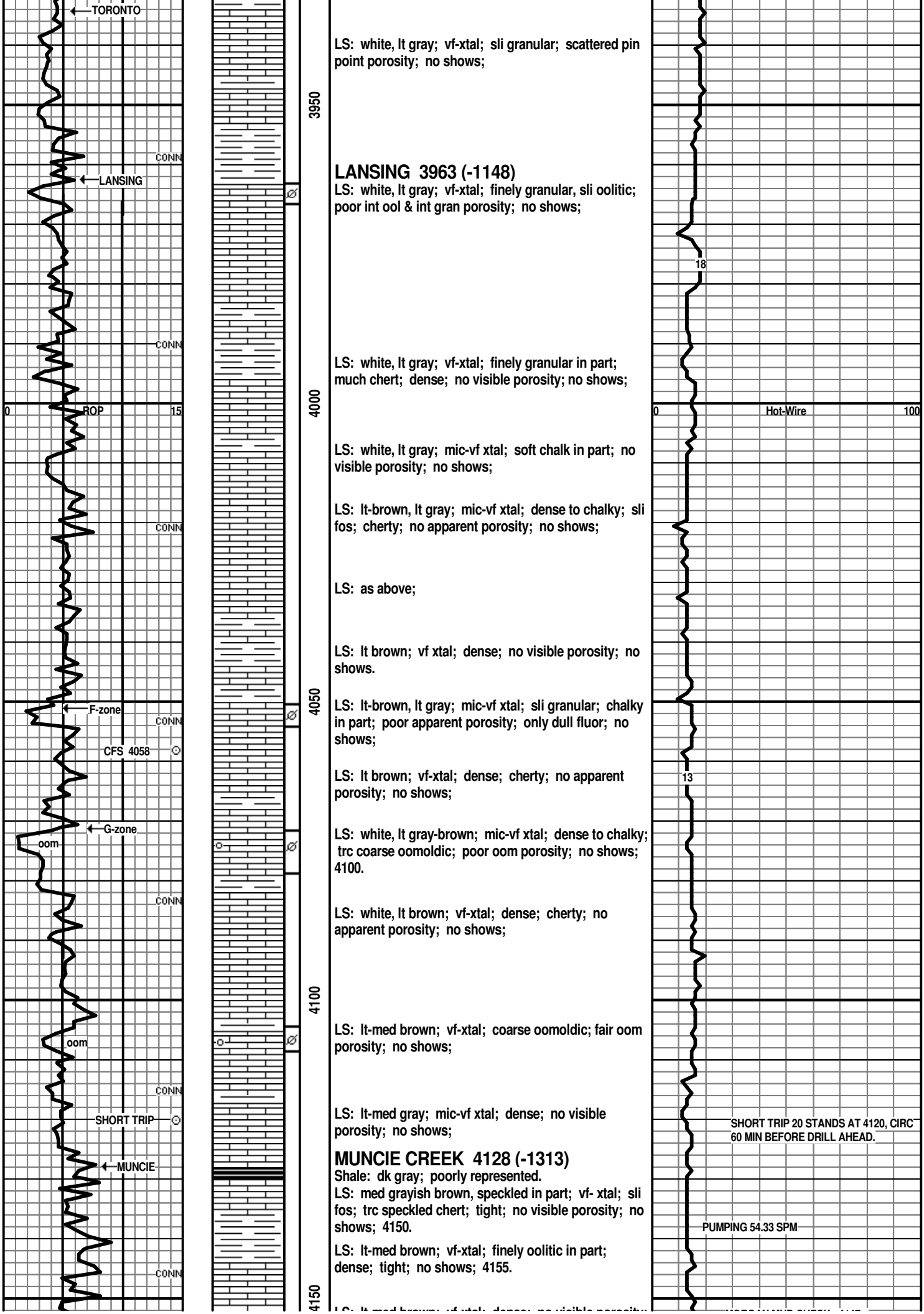
11/01:	**MIRT**
11/02:	**261' Drilling**
11/03:	**1479' Drilling**
11/04:	**2563' Drilling**
11/05:	**3115' Drilling**
11/06:	**3440' Drilling (Call 3398', 4:55 am)**
11/07:	**3831' Drilling**
11/08:	**4120' Drilling**
11/09:	**4272' DST #1**
11/10:	**4394' CFS**
11/11:	**4335' DST #4**
11/12:	**4396' DST #5**
11/13:	**4495' Drilling**
11/14:	**4561' DST #7, RTD 4655 4:35 pm**
11/15:	**Released 3:00 am**

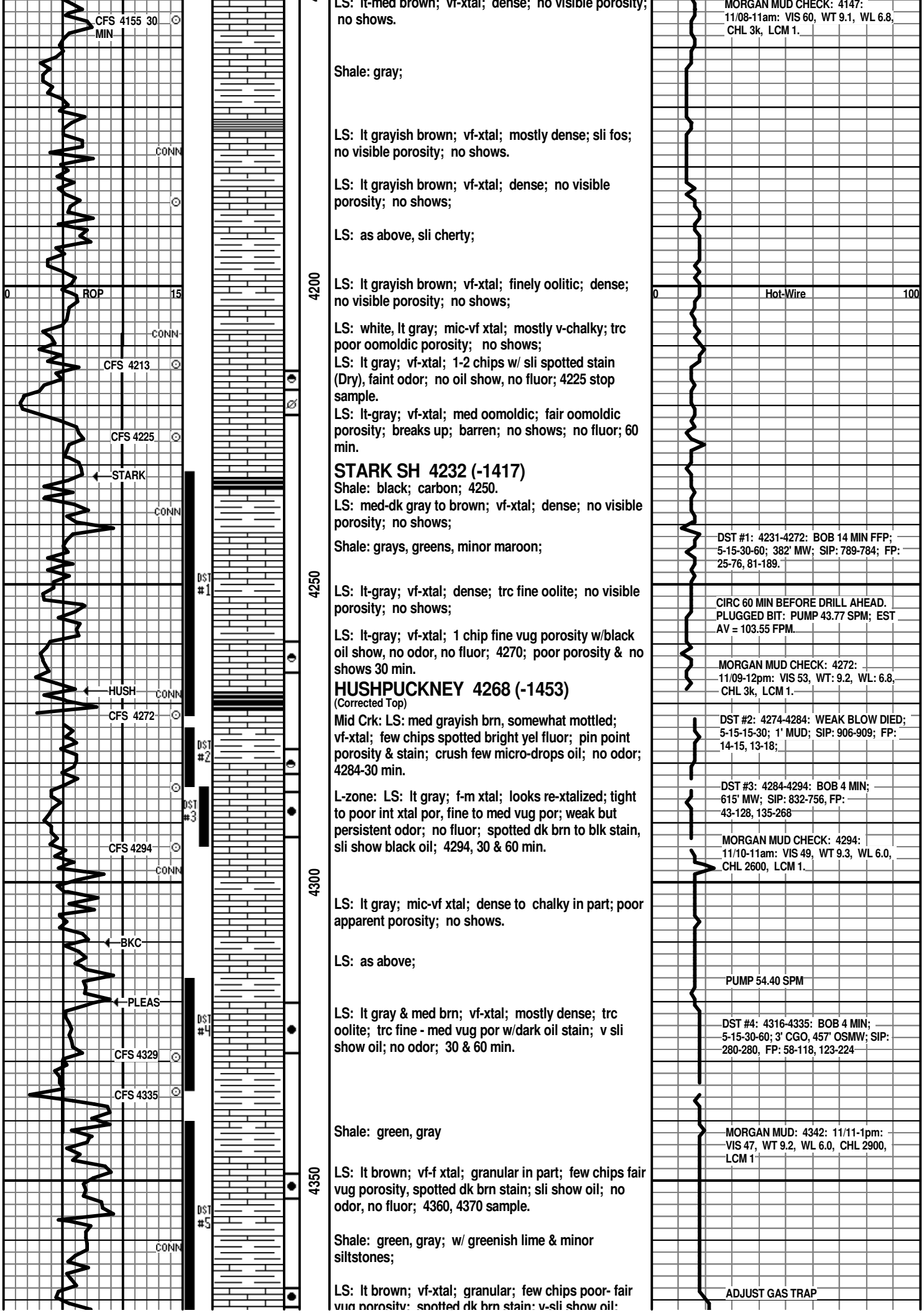
WELLSITE GEOLOGIST:

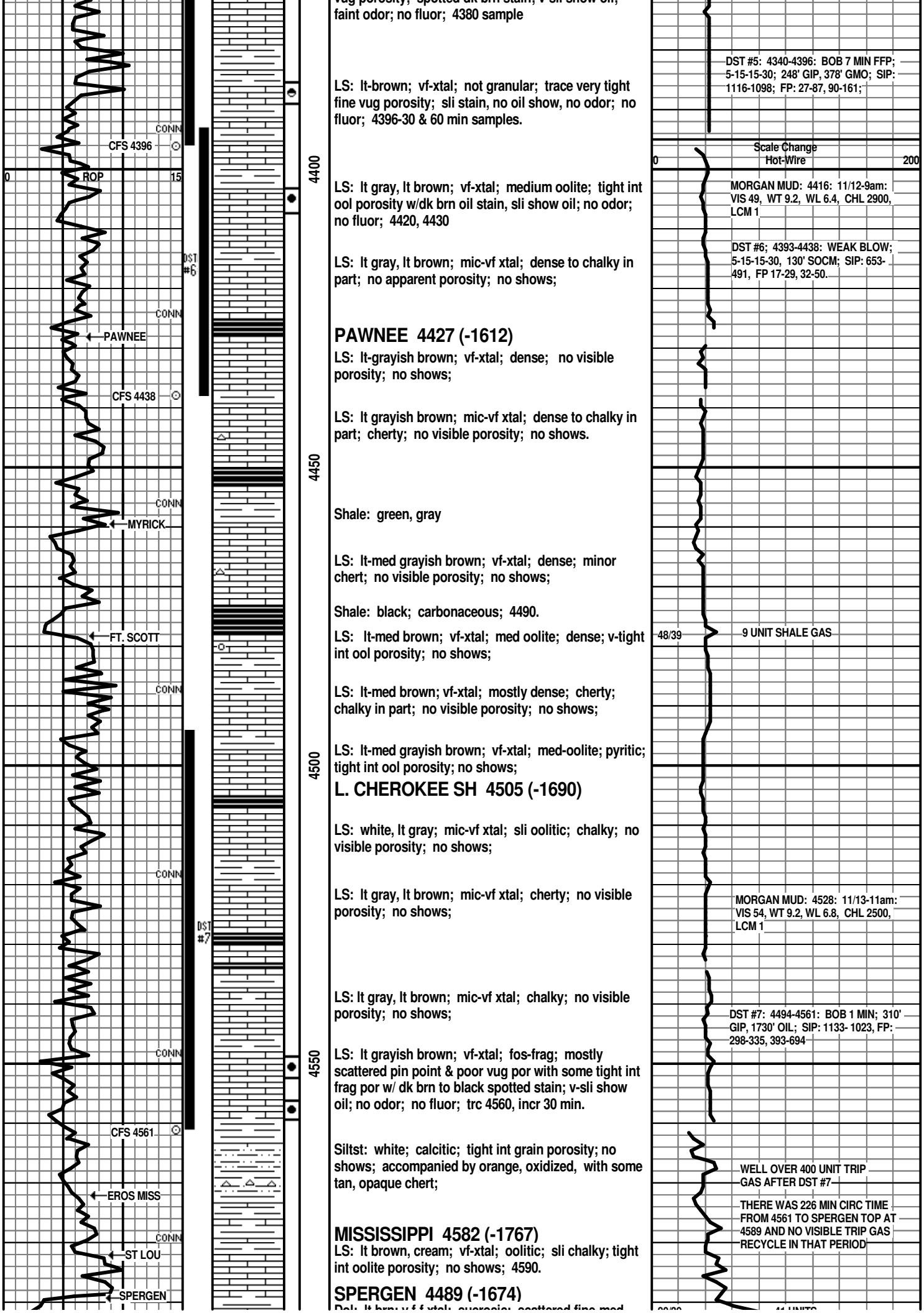
Vern Schrag




CONN
CONN
0
START 10' SAMPLES
15
CONN
CONN
CONN
CONN
HEEBNER
CONN
3750
3800
3850
3900
0
Hot-Wire
100
13
15
33/14
LS: lt-grayish brown; vf-xtal; finely oolitic in part; sli fos; scattered fos frag & vugular porosity; no shows.
LS: as above but more oomoldic; improv porosity;
LS: grayish brown; vf-xtal; blocky; dense; sli fos; no shows;
LS: lt grayish brown, vf-xtal, v-fos, finely oom in part, poor-fair oom & fos moldic porosity; no shows; 3880.
LS: lt grayish brown; vf-xtal; sli fos; mostly dense; no apparent porosity porosity; no shows;
LS: grayish brown; vf-xtal; scattered fos-moldic & vugular porosity; no shows;
Shale: gray, brown; calc in part;
HEEBNER 3919 (-1104)
(Corrected Top)
Shale: black, carbon, trc 3930, incr 3940.
Shale: greens, grays; marly & silty in part;
10 SEC GAS TEST FROM TRAP, 79 UNITS
DROP CARBIDE 3866: RESPONSE IN 37.5 MIN, BOT UP 30.08 MIN, TOP DOWN 6.92 MIN, AVE AV = 128.52 FPM, PUMP 54.66 SPM, 625 PSI.
19 UNIT CARBIDE KICK
MORGAN MUD CHECK: 3910: 11/07-12pm: VIS 54; WT 8.8, WL 6.8, CHL 2800, LCM 1/2#.


TORONTO
CONN
LANSING
CONN
0
ROP
15
CONN
F-zone
CONN
CFS 4058
G-zone
oom
CONN
oom
CONN
SHORT TRIP
MUNCIE
CONN
3950
4000
4050
4100
4150
0
Hot-Wire
100
18
13
LS: white, lt gray; vf-xtal; sli granular; scattered pin point porosity; no shows;
LANSING 3963 (-1148)
LS: white, lt gray; vf-xtal; finely granular, sli oolitic; poor int ool & int gran porosity; no shows;
LS: white, lt gray; vf-xtal; finely granular in part; much chert; dense; no visible porosity; no shows;
LS: white, lt gray; mic-vf xtal; soft chalk in part; no visible porosity; no shows;
LS: lt-brown, lt gray; mic-vf xtal; dense to chalky; sli fos; cherty; no apparent porosity; no shows;
LS: as above;
LS: lt brown; vf xtal; dense; no visible porosity; no shows.
LS: lt-brown, lt gray; mic-vf xtal; sli granular; chalky in part; poor apparent porosity; only dull fluor; no shows;
LS: lt brown; vf-xtal; dense; cherty; no apparent porosity; no shows;
LS: white, lt gray-brown; mic-vf xtal; dense to chalky; trc coarse oomoldic; poor oom porosity; no shows; 4100.
LS: white, lt brown; vf-xtal; dense; cherty; no apparent porosity; no shows;
LS: lt-med brown; vf-xtal; coarse oomoldic; fair oom porosity; no shows;
LS: lt-med gray; mic-vf xtal; dense; no visible porosity; no shows;
MUNCIE CREEK 4128 (-1313)
Shale: dk gray; poorly represented.
LS: med grayish brown, speckled in part; vf- xtal; sli fos; trc speckled chert; tight; no visible porosity; no shows; 4150.
LS: lt-med brown; vf-xtal; finely oolitic in part; dense; tight; no shows; 4155.
SHORT TRIP 20 STANDS AT 4120, CIRC 60 MIN BEFORE DRILL AHEAD.
PUMPING 54.33 SPM


CFS 4155 30 MIN
CONN
0 ROP 15
CONN
CFS 4213
CFS 4225
STARK
CONN
DST #1
HUSH
CONN
CFS 4272
DST #2
DST #3
CFS 4294
CONN
BKC
PLEAS
DST #4
CFS 4329
CFS 4335
DST #5
CONN
4200
4250
4300
4350
LS: lt-med brown; vf-xtal; dense; no visible porosity; no shows.
Shale: gray;
LS: lt grayish brown; vf-xtal; mostly dense; sli fos; no visible porosity; no shows.
LS: lt grayish brown; vf-xtal; dense; no visible porosity; no shows;
LS: as above, sli cherty;
LS: lt grayish brown; vf-xtal; finely oolitic; dense; no visible porosity; no shows;
LS: white, lt gray; mic-vf xtal; mostly v-chalky; trc poor oomoldic porosity; no shows;
LS: lt gray; vf-xtal; 1-2 chips w/ sli spotted stain (Dry), faint odor; no oil show, no fluor; 4225 stop sample.
LS: lt-gray; vf-xtal; med oomoldic; fair oomoldic porosity; breaks up; barren; no shows; no fluor; 60 min.
STARK SH 4232 (-1417)
Shale: black; carbon; 4250.
LS: med-dk gray to brown; vf-xtal; dense; no visible porosity; no shows;
Shale: grays, greens, minor maroon;
LS: lt-gray; vf-xtal; dense; trc fine oolite; no visible porosity; no shows;
LS: lt-gray; vf-xtal; 1 chip fine vug porosity w/black oil show, no odor, no fluor; 4270; poor porosity & no shows 30 min.
HUSHPUCKNEY 4268 (-1453)
(Corrected Top)
Mid Crk: LS: med grayish brn, somewhat mottled; vf-xtal; few chips spotted bright yel fluor; pin point porosity & stain; crush few micro-drops oil; no odor; 4284-30 min.
L-zone: LS: lt gray; f-m xtal; looks re-xtalized; tight to poor int xtal por, fine to med vug por; weak but persistent odor; no fluor; spotted dk brn to blk stain, sli show black oil; 4294, 30 & 60 min.
LS: lt gray; mic-vf xtal; dense to chalky in part; poor apparent porosity; no shows.
LS: as above;
LS: lt gray & med brn; vf-xtal; mostly dense; trc oolite; trc fine - med vug por w/dark oil stain; v sli show oil; no odor; 30 & 60 min.
Shale: green, gray
LS: lt brown; vf-f xtal; granular in part; few chips fair vug porosity, spotted dk brn stain; sli show oil; no odor, no fluor; 4360, 4370 sample.
Shale: green, gray; w/ greenish lime & minor siltstones;
LS: lt brown; vf-xtal; granular; few chips poor- fair
MORGAN MUD CHECK: 4147: 11/08-11am: VIS 60, WT 9.1, WL 6.8, CHL 3k, LCM 1.
0 Hot-Wire 100
DST #1: 4231-4272: BOB 14 MIN FFP; 5-15-30-60; 382' MW; SIP: 789-784; FP: 25-76, 81-189.
CIRC 60 MIN BEFORE DRILL AHEAD. PLUGGED BIT: PUMP 43.77 SPM; EST AV = 103.55 FPM.
MORGAN MUD CHECK: 4272: 11/09-12pm: VIS 53, WT: 9.2, WL: 6.8, CHL 3k, LCM 1.
DST #2: 4274-4284: WEAK BLOW DIED; 5-15-15-30; 1' MUD; SIP: 906-909; FP: 14-15, 13-18;
DST #3: 4284-4294: BOB 4 MIN; 615' MW; SIP: 832-756, FP: 43-128, 135-268
MORGAN MUD CHECK: 4294: 11/10-11am: VIS 49, WT 9.3, WL 6.0, CHL 2600, LCM 1.
PUMP 54.40 SPM
DST #4: 4316-4335: BOB 4 MIN; 5-15-30-60; 3' CGO, 457' OSMW; SIP: 280-280, FP: 58-118, 123-224
MORGAN MUD: 4342: 11/11-1pm: VIS 47, WT 9.2, WL 6.0, CHL 2900, LCM 1
ADJUST GAS TRAP



faint odor; no fluor; 4380 sample

LS: lt-brown; vf-xtal; not granular; trace very tight fine vug porosity; sli stain, no oil show, no odor; no fluor; 4396-30 & 60 min samples.

DST #5: 4340-4396: BOB 7 MIN FFP; 5-15-15-30; 248' GIP, 378' GMO; SIP: 1116-1098; FP: 27-87, 90-161;

Scale Change
0 Hot-Wire 200

LS: lt gray, lt brown; vf-xtal; medium oolite; tight int ool porosity w/dk brn oil stain, sli show oil; no odor; no fluor; 4420, 4430

MORGAN MUD: 4416: 11/12-9am: VIS 49, WT 9.2, WL 6.4, CHL 2900, LCM 1

LS: lt gray, lt brown; mic-vf xtal; dense to chalky in part; no apparent porosity; no shows;

DST #6; 4393-4438: WEAK BLOW; 5-15-15-30, 130' SOCM; SIP: 653-491, FP 17-29, 32-50.

PAWNEE 4427 (-1612)

LS: lt-grayish brown; vf-xtal; dense; no visible porosity; no shows;

LS: lt grayish brown; mic-vf xtal; dense to chalky in part; cherty; no visible porosity; no shows.

Shale: green, gray

LS: lt-med grayish brown; vf-xtal; dense; minor chert; no visible porosity; no shows;

Shale: black; carbonaceous; 4490.

48/39 9 UNIT SHALE GAS

LS: lt-med brown; vf-xtal; med oolite; dense; v-tight int ool porosity; no shows;

LS: lt-med brown; vf-xtal; mostly dense; cherty; chalky in part; no visible porosity; no shows;

LS: lt-med grayish brown; vf-xtal; med-oolite; pyritic; tight int ool porosity; no shows;

L. CHEROKEE SH 4505 (-1690)

LS: white, lt gray; mic-vf xtal; sli oolitic; chalky; no visible porosity; no shows;

LS: lt gray, lt brown; mic-vf xtal; cherty; no visible porosity; no shows;

MORGAN MUD: 4528: 11/13-11am: VIS 54, WT 9.2, WL 6.8, CHL 2500, LCM 1

LS: lt gray, lt brown; mic-vf xtal; chalky; no visible porosity; no shows;

DST #7: 4494-4561: BOB 1 MIN; 310' GIP, 1730' OIL; SIP: 1133- 1023, FP: 298-335, 393-694

LS: lt grayish brown; vf-xtal; fos-frag; mostly scattered pin point & poor vug por with some tight int frag por w/ dk brn to black spotted stain; v-sli show oil; no odor; no fluor; trc 4560, incr 30 min.

Siltst: white; calcitic; tight int grain porosity; no shows; accompanied by orange, oxidized, with some tan, opaque chert;

WELL OVER 400 UNIT TRIP GAS AFTER DST #7-

THERE WAS 226 MIN CIRC TIME FROM 4561 TO SPERGEN TOP AT 4589 AND NO VISIBLE TRIP GAS RECYCLE IN THAT PERIOD

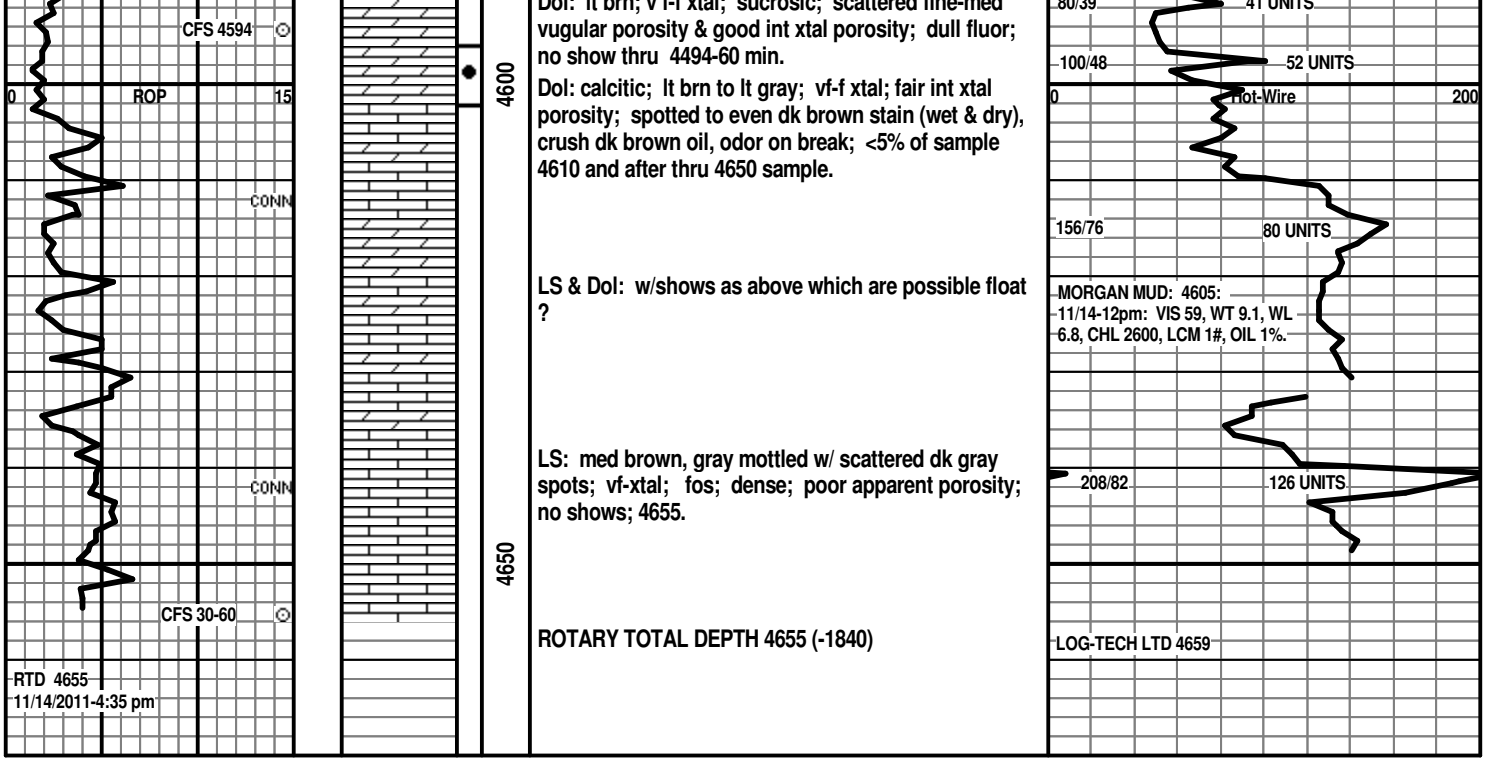
MISSISSIPPI 4582 (-1767)

LS: lt brown, cream; vf-xtal; oolitic; sli chalky; tight int oolite porosity; no shows; 4590.

SPERGEN 4489 (-1674)

Dol: lt brn; v f-f xtal; sucrosic; scattered fine-med

90/90 41 UNITS


CFS 4594
0
ROP
15
CONN
CONN
CFS 30-60
RTD 4655
11/14/2011-4:35 pm
4600
4650
Dol: lt brn; v f-f xtal; sucrosic; scattered fine-med vugular porosity & good int xtal porosity; dull fluor; no show thru 4494-60 min.
Dol: calcitic; lt brn to lt gray; vf-f xtal; fair int xtal porosity; spotted to even dk brown stain (wet & dry), crush dk brown oil, odor on break; <5% of sample 4610 and after thru 4650 sample.
LS & Dol: w/shows as above which are possible float ?
LS: med brown, gray mottled w/ scattered dk gray spots; vf-xtal; fos; dense; poor apparent porosity; no shows; 4655.
ROTARY TOTAL DEPTH 4655 (-1840)
80/39
41 UNITS
100/48
52 UNITS
0
Hot-Wire
200
156/76
80 UNITS
MORGAN MUD: 4605:
11/14-12pm: VIS 59, WT 9.1, WL 6.8, CHL 2600, LCM 1#, OIL 1%.
208/82
126 UNITS
LOG-TECH LTD 4659

Conservation Division
Finney State Office Building
130 S. Market, Rm. 2078
Wichita, KS 67202-3802

Kansas
Corporation Commission

Phone: 316-337-6200
Fax: 316-337-6211
http://kcc.ks.gov/

February 28, 2012

Thomas Larson
Larson Engineering, Inc. dba Larson Operating Company
562 W STATE RD 4
OLMITZ, KS 67564-8561

Re: ACO1
API 15-101-22325-00-00
Gail 1-21
NE/4 Sec.21-18S-29W
Lane County, Kansas

Dear Production Department:

We are herewith requesting that the Well Completion Form ACO-1 and attached information for the subject well be held confidential for a period of two years.

Should you have any questions or need additional information regarding subject well, please contact our office.

Respectfully,
Thomas Larson