



WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

- New Well Re-Entry Workover
- Oil WSW SWD 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
- Conv. to GSW
- Plug Back: _____ Plug Back Total Depth _____
- Commingled Permit #: _____
- Dual Completion Permit #: _____
- SWD Permit #: _____
- ENHR Permit #: _____
- GSW Permit #: _____

Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date
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API No. 15 - _____

Spot Description: _____

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

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

- NE NW SE SW

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite: _____

Operator Name: _____

Lease Name: _____ License #: _____

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

County: _____ Permit #: _____

AFFIDAVIT

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

Submitted Electronically

KCC Office Use ONLY

- Letter of Confidentiality Received
Date: _____
- Confidential Release Date: _____
- Wireline Log Received
- Geologist Report Received
- UIC Distribution
- ALT I II III Approved by: _____ Date: _____



1152640

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

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

INSTRUCTIONS: Show important tops and base 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. Attach complete copy of all Electric Wire-line Logs surveyed. Attach final geological well site report.

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Submitted Electronically <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(If no, Submit Copy)</i> List All E. Logs Run:	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
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CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
_____ Perforate _____ Protect Casing _____ Plug Back TD _____ Plug Off Zone				

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

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

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

Estimated Production Per 24 Hours	Oil Bbbs.	Gas Mcf	Water Bbbs.	Gas-Oil Ratio	Gravity
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DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____ <i>(Submit ACO-4)</i>	PRODUCTION INTERVAL: _____ _____
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Form	ACO1 - Well Completion
Operator	Bowles, C. W. dba CWB - Co.
Well Name	Sophie 1
Doc ID	1152640

Tops

Name	Top	Datum
Anhydrite	1257'	+816'
Topeka	3040'	-967'
Heebner	3297'	-1224'
Lansing/Kansas City	3343'	-1270'
Base Kansas City	3582'	-1509'
Marmaton	3614'	-1541'
Reworked Arbuckle	3659'	-1586'
Arbuckle	3668'	-1595'



DRILL STEM TEST REPORT

Prepared For: **Hertel Oil Company LLC**

704 E 12 Th
Hays KS 67601

ATTN: Dave Hertel

Sophie #1

27-14s-18w Ellis,KS

Start Date: 2013.02.26 @ 15:45:45

End Date: 2013.02.27 @ 01:00:45

Job Ticket #: 50396 DST #: 1

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

Printed: 2013.03.05 @ 08:40:04



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Hertel Oil Company LLC

27-14s-18w Ellis,KS

704 E 12 Th
Hays KS 67601

Sophie #1

Job Ticket: 50396

DST#: 1

ATTN: Dave Hertel

Test Start: 2013.02.26 @ 15:45:45

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:58:15

Time Test Ended: 01:00:45

Test Type: Conventional Straddle (Initial)

Tester: Jeff Brown

Unit No: 44

Interval: 3626.00 ft (KB) To 3678.00 ft (KB) (TVD)

Reference Elevations: 2073.00 ft (KB)

Total Depth: 3779.00 ft (KB) (TVD)

2065.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 8.00 ft

Serial #: 8679

Inside

Press @ Run Depth: 112.07 psig @ 3664.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.02.26

End Date:

2013.02.27

Last Calib.:

2013.02.27

Start Time: 15:45:46

End Time:

00:35:45

Time On Btm:

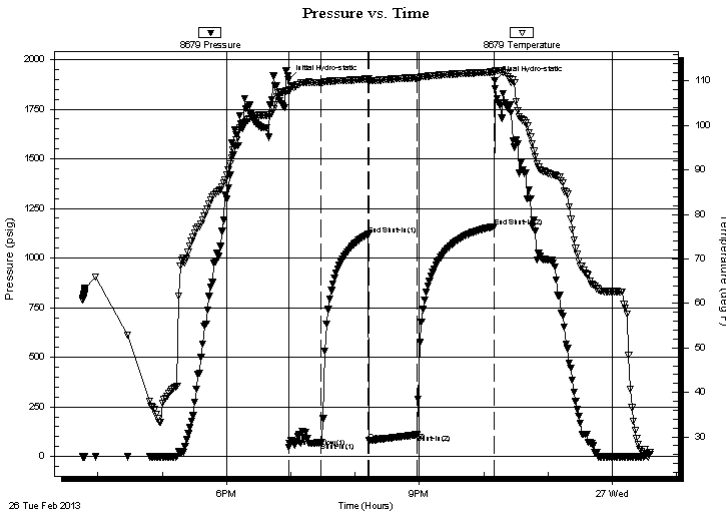
2013.02.26 @ 18:57:45

Time Off Btm:

2013.02.26 @ 22:10:15

TEST COMMENT: IFP=Fair blow built to 8 1/2"
ISI=Weak surface blow back died out in 15 min
FFP=Fair blow built to 8 1/2"
FSI=Dead no blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1899.64	107.90	Initial Hydro-static
1	46.46	107.50	Open To Flow (1)
31	71.63	109.59	Shut-In(1)
75	1119.39	110.44	End Shut-In(1)
75	78.93	110.10	Open To Flow (2)
120	112.07	110.64	Shut-In(2)
192	1157.08	112.02	End Shut-In(2)
193	1892.75	112.20	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
61.00	OCM 25%O 75%M	0.59
62.00	HOCWM 48%O 2%W 50%M	0.87
62.00	MCO 50%O 50%M	0.87

Gas Rates

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



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Hertel Oil Company LLC

704 E 12 Th
Hays KS 67601

ATTN: Dave Hertel

27-14s-18w Ellis, KS

Sophie #1

Job Ticket: 50396

DST#: 1

Test Start: 2013.02.26 @ 15:45:45

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:58:15

Time Test Ended: 01:00:45

Test Type: Conventional Straddle (Initial)

Tester: Jeff Brown

Unit No: 44

Interval: 3626.00 ft (KB) To 3678.00 ft (KB) (TVD)

Total Depth: 3779.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2073.00 ft (KB)

2065.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6625 Below (Straddle)

Press @ Run Depth: psig @ 3680.00 ft (KB)

Start Date: 2013.02.26

End Date:

2013.02.27

Capacity: 8000.00 psig

Last Calib.:

2013.02.27

Start Time: 15:45:31

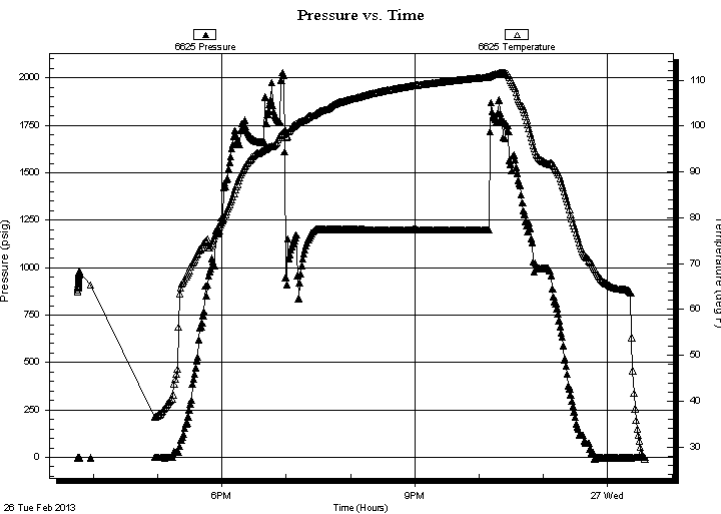
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Time On Btm:

Time Off Btm:

TEST COMMENT: IFP=Fair blow built to 8 1/2"
ISI=Weak surface blow back died out in 15 min
FFP=Fair blow built to 8 1/2"
FSI=Dead no blow back



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
61.00	OCM 25%O 75%M	0.59
62.00	HOCWM 48%O 2%W 50%M	0.87
62.00	MCO 50%O 50%M	0.87

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Hertel Oil Company LLC

27-14s-18w Ellis, KS

704 E 12 Th
Hays KS 67601

Sophie #1

Job Ticket: 50396

DST#: 1

ATTN: Dave Hertel

Test Start: 2013.02.26 @ 15:45:45

GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:58:15

Time Test Ended: 01:00:45

Test Type: Conventional Straddle (Initial)

Tester: Jeff Brown

Unit No: 44

Interval: 3626.00 ft (KB) To 3678.00 ft (KB) (TVD)

Reference Elevations: 2073.00 ft (KB)

Total Depth: 3779.00 ft (KB) (TVD)

2065.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 8.00 ft

Serial #: 8321 Outside

Press @ Run Depth: psig @ 3664.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2013.02.26

End Date:

2013.02.27

Last Calib.:

2013.02.27

Start Time: 15:45:20

End Time:

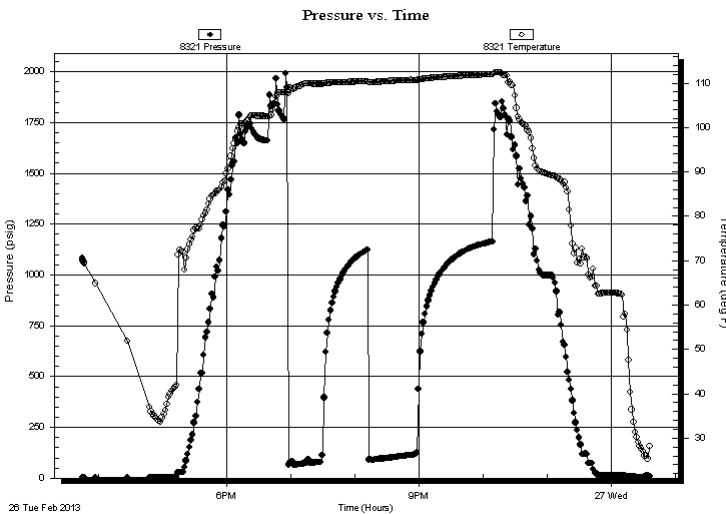
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Time On Btm:

Time Off Btm:

TEST COMMENT: IFP=Fair blow built to 8 1/2"
ISI=Weak surface blow back died out in 15 min
FFP=Fair blow built to 8 1/2"
FSI=Dead no blow back

PRESSURE SUMMARY



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

Recovery

Length (ft)	Description	Volume (bbl)
61.00	OCM 25%O 75%M	0.59
62.00	HOCWM 48%O 2%W 50%M	0.87
62.00	MCO 50%O 50%M	0.87

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Hertel Oil Company LLC

27-14s-18w Ellis,KS

704 E 12 Th
Hays KS 67601

Sophie #1

Job Ticket: 50396

DST#: 1

ATTN: Dave Hertel

Test Start: 2013.02.26 @ 15:45:45

Tool Information

Drill Pipe:	Length: 3609.00 ft	Diameter: 3.80 inches	Volume: 50.62 bbl	Tool Weight: 2200.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.70 inches	Volume: 0.00 bbl	Weight set on Packer: 22000.00 lb
Drill Collar:	Length: 29.00 ft	Diameter: 2.25 inches	Volume: 0.14 bbl	Weight to Pull Loose: 58000.00 lb
			Total Volume: 50.76 bbl	Tool Chased 0.00 ft
Drill Pipe Above KB:	32.00 ft			String Weight: Initial 41000.00 lb
Depth to Top Packer:	3626.00 ft			Final 44000.00 lb
Depth to Bottom Packer:	3678.00 ft			
Interval between Packers:	52.00 ft			
Tool Length:	173.00 ft			
Number of Packers:	3	Diameter:	6.75 inches	

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			3607.00	
Shut In Tool	5.00			3612.00	
Hydraulic tool	5.00			3617.00	
Packer	4.00			3621.00	20.00 Bottom Of Top Packer
Packer	5.00			3626.00	
Stubb	1.00			3627.00	
Perforations	4.00			3631.00	
Change Over Sub	1.00			3632.00	
Drill Pipe	31.00			3663.00	
Change Over Sub	1.00			3664.00	
Recorder	0.00	8679	Inside	3664.00	
Recorder	0.00	8321	Outside	3664.00	
Perforations	10.00			3674.00	
Blank Off Sub	1.00			3675.00	
Stubb	3.00			3678.00	52.00 Tool Interval
Packer	1.00			3679.00	
Stubb	1.00			3680.00	
Recorder	0.00	6625	Below	3680.00	
Change Over Sub	1.00			3681.00	
Drill Pipe	94.00			3775.00	
Change Over Sub	1.00			3776.00	
Bullnose	3.00			3779.00	101.00 Bottom Packers & Anchor

Total Tool Length: 173.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Hertel Oil Company LLC

27-14s-18w Ellis,KS

704 E 12 Th
Hays KS 67601

Sophie #1

Job Ticket: 50396

DST#: 1

ATTN: Dave Hertel

Test Start: 2013.02.26 @ 15:45:45

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: 60.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3900.00 ppm

Filter Cake: inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
61.00	OCM 25%O 75%M	0.591
62.00	HOCWM 48%O 2%W 50%M	0.870
62.00	MCO 50%O 50%M	0.870

Total Length: 185.00 ft

Total Volume: 2.331 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8679

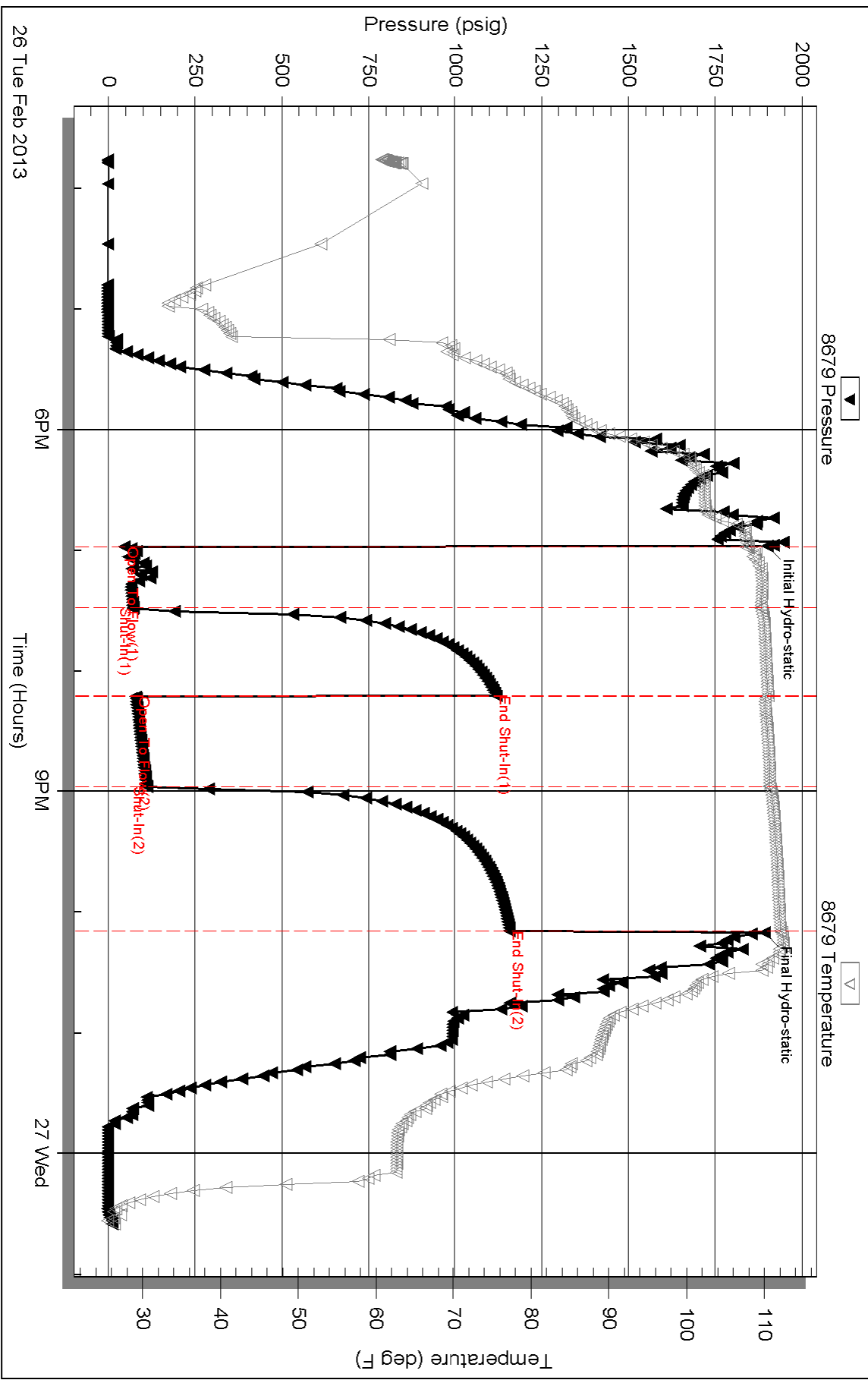
Inside

Hertel Oil Company LLC

Sophie #1

DST Test Number: 1

Pressure vs. Time



Triobite Testing, Inc

Ref. No: 50396

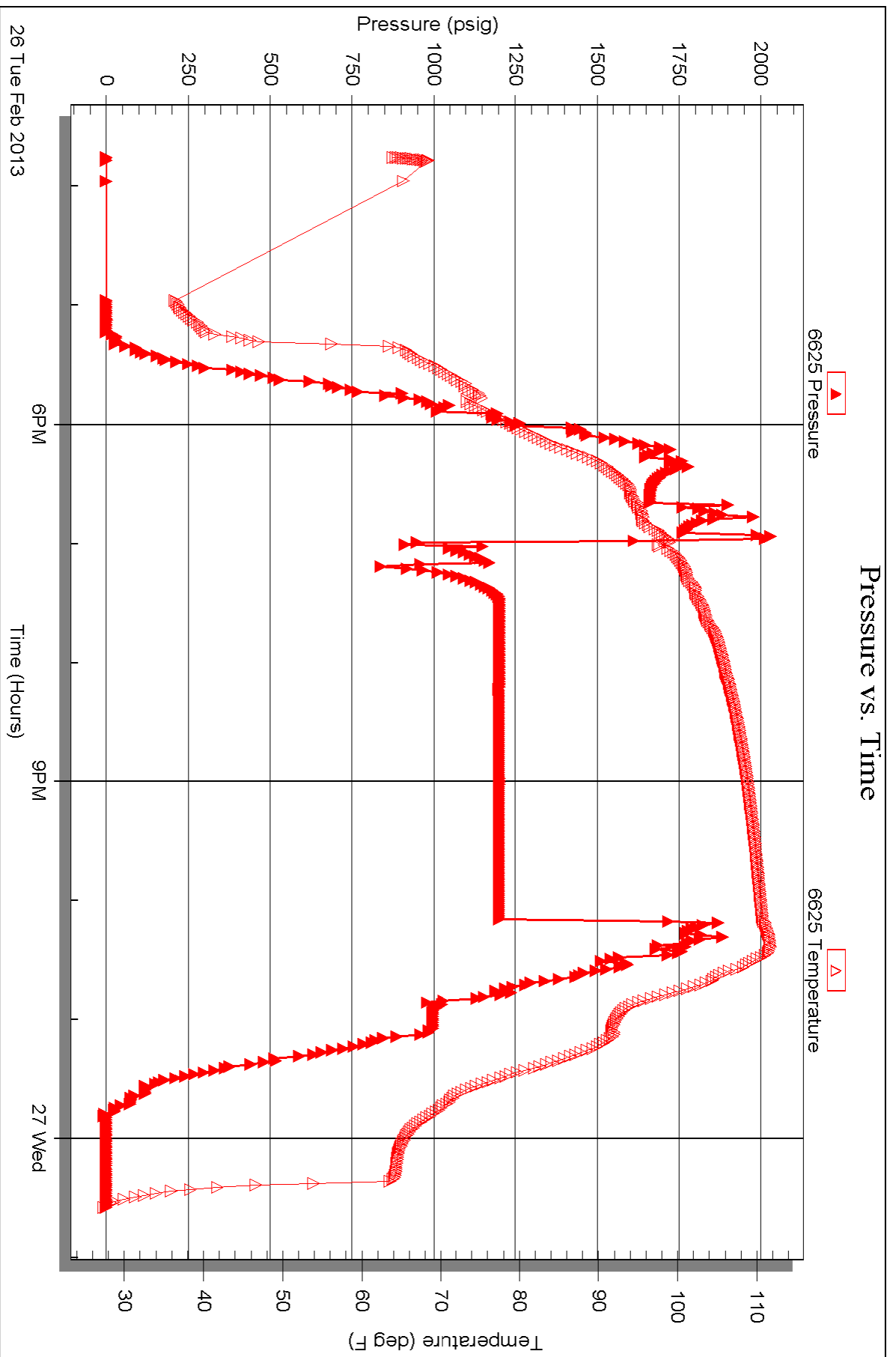
Printed: 2013.03.05 @ 08:40:07

Serial #: 6625

Below (Stratfield) Oil Company LLC

Sophie #1

DST Test Number: 1

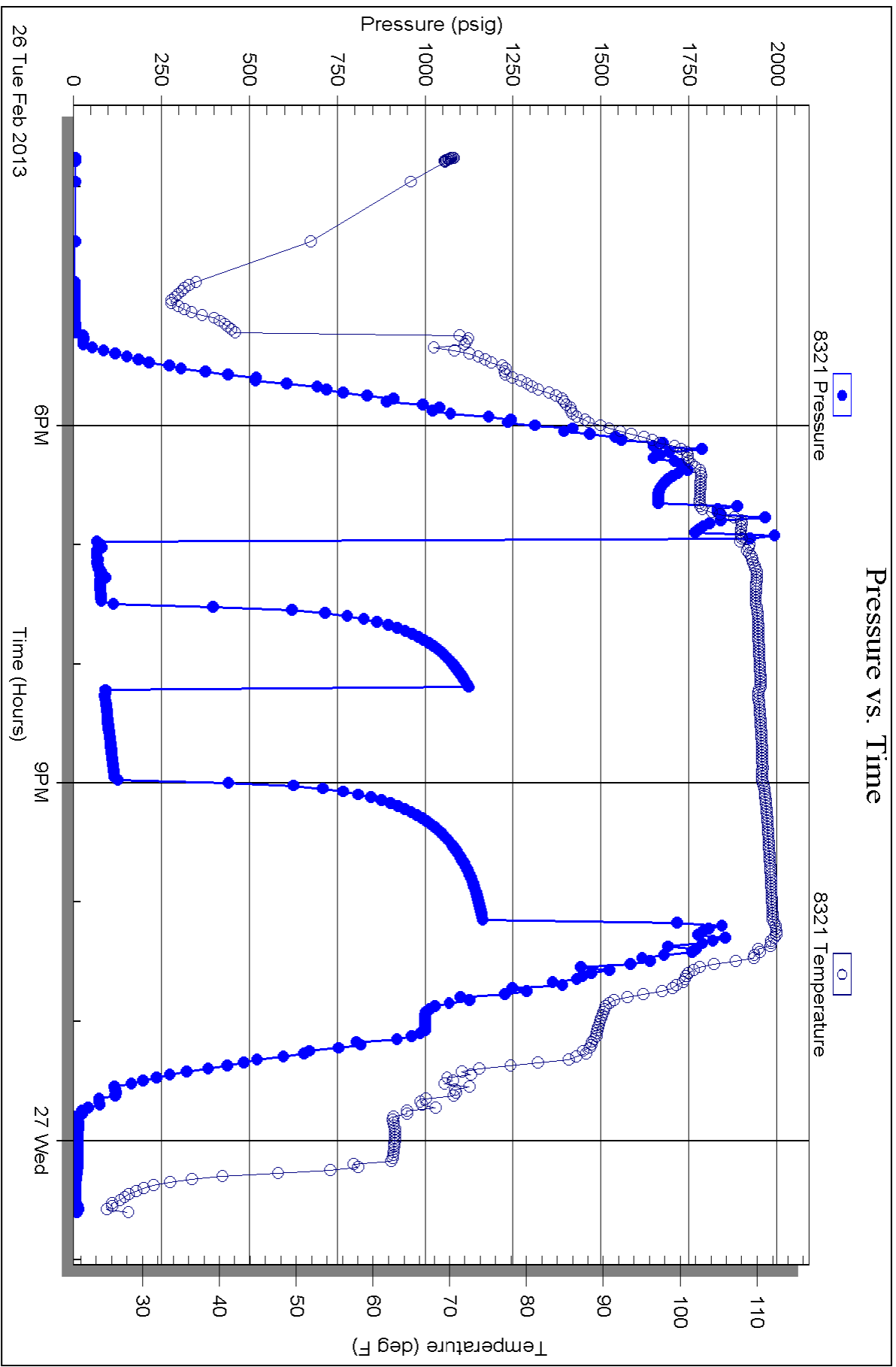


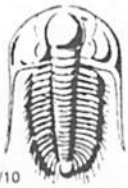
Serial #: 8321

Outside Hertel Oil Company LLC

Sophie #1

DST Test Number: 1





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 50396

Well Name & No. Sophie #1 Test No. 1 Date 2-26-13
 Company Hertel Oil Company LLC Elevation 2073 KB 2065 GL
 Address 704 E 12th St Hays KS 67601 + 3440
 Co. Rep / Geo. Herb Deines Rig Discovery #1
 Location: Sec. 27 Twp. 14S Rge. 18W Co. ELLIS State KS

Interval Tested 3626-3678 Zone Tested Ar Buckle
 Anchor Length 52' Air 101' Tail Drill Pipe Run 3609 Mud Wt. 8.9
 Top Packer Depth 3621 Drill Collars Run 29 Vis 60
 Bottom Packer Depth 3626 Wt. Pipe Run 0 WL 7.8
 Total Depth 3779 Chlorides 3900 ppm System LCM 2

Blow Description IFF-Fair Blow Built To 8 1/2 IN
ISI-Weak Surface Blow Back
FPF-Fair Blow Built To 8 1/2 IN
FSI-Dead NO Blow Back

Rec	Feet of	%gas	%oil	%water	%mud
<u>601</u>	<u>OCM</u>		<u>25</u>		<u>75</u>
<u>602</u>	<u>Hochwm</u>		<u>48</u>	<u>2</u>	<u>50</u>
<u>602</u>	<u>MCO</u>		<u>50</u>		<u>50</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 185 BHT 112 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 1900 Test 1150 T-On Location 14:53
 (B) First Initial Flow 46 Jars _____ T-Started 15:45
 (C) First Final Flow 72 Safety Joint _____ T-Open 18:58
 (D) Initial Shut-In 1119 Circ Sub _____ T-Pulled 21:58
 (E) Second Initial Flow 79 Hourly Standby _____ T-Out 1:00
 (F) Second Final Flow 112 Mileage 16 RT 24.80 Comments _____
 (G) Final Shut-In 1157 Sampler _____
 (H) Final Hydrostatic 1893 Straddle 600 Ruined Shale Packer _____

Initial Open 30 Shale Packer _____ Ruined Packer _____
 Initial Shut-In 45 Extra Packer _____ Extra Copies _____
 Final Flow 45 Extra Recorder _____ Sub Total 0
 Final Shut-In 60 Day Standby _____ Total 1774.80
 Accessibility _____ MP/DST Disc't _____
 Sub Total 1774.80

Approved By _____ Our Representative Jeff Brown

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.

OPERATOR

Company: HERTEL OIL COMPANY, LLC
 Address: 704 E 12TH STREET
 HAYS, KANSAS 67601

Contact Geologist: DAVE HERTEL
 Contact Phone Nbr: 785-628-2445
 Well Name: SOPHIE # 1
 Location: S2 SW NW SW Sec. 27-14s-18w API: 15-051-26,475-00-00
 Pool: INFIELD Field: ENGEL
 State: KANSAS Country: USA



Scale 1:240 Imperial

Well Name: SOPHIE # 1
 Surface Location: S2 SW NW SW Sec. 27-14s-18w
 Bottom Location:
 API: 15-051-26,475-00-00
 License Number: 33625
 Spud Date: 2/18/2013 Time: 1:50 PM
 Region: ELLIS COUNTY
 Drilling Completed: 2/26/2013 Time: 6:45 AM
 Surface Coordinates: 1325' FSL & 330' FWL
 Bottom Hole Coordinates:
 Ground Elevation: 2065.00ft
 K.B. Elevation: 2073.00ft
 Logged Interval: 2900.00ft To: 3780.00ft
 Total Depth: 3780.00ft
 Formation: ARBUCKLE
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

SURFACE CO-ORDINATES

Well Type: Vertical
 Longitude: Latitude:
 N/S Co-ord: 1325' FSL
 E/W Co-ord: 330' FWL

LOGGED BY

Company: SOLUTIONS CONSULTING, INC.
 Address: 108 W 35TH
 HAYS, KS 67601
 Phone Nbr: (785) 639-1337
 Logged By: Geologist Name: HERB DEINES

CONTRACTOR

Contractor: DISCOVERY DRILLING, INC.
 Rig #: 1
 Rig Type: MUD ROTARY
 Spud Date: 2/18/2013 Time: 1:50 PM
 TD Date: 2/26/2013 Time: 6:45 AM
 Rig Release: 2/27/2013 Time: 10:00 PM

ELEVATIONS

NOTES

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON FAVORABLE RESULTS OF DST # 1 IN THE ARBUCKLE, POSITIVE STRUCTURE AND LOG ANALYSIS OF LANSING-KANSAS CITY "I" ZONE WHICH LOOKED GOOD IN THE SAMPLES.

OPEN HOLE LOGGING: PIONEER ENERGY SERVICES DUAL INDUCTION LOG, DUAL COMPENSATED POROSITY LOG, MICRORESISTIVITY LOG.

DRILL STEM TESTING: TRILOBITE TESTING INC: ONE (1) CONVENTIONAL STRADDLE TEST

FORMATION TOPS SUMMARY AND CHRONOLOGY OF DAILY ACTIVITY

SOPHIE # 1

1325' FSL & 330' FWL, SW/4

Sec. 27-14s-18w

2065' GL 2073' KB

M. ENGEL # 1-V

SW SE SW

Sec. 27-14s-18w

Reference Well

<u>FORMATION</u>	<u>SAMPLE TOP</u>	<u>LOG TOP</u>	<u>LOG TOP</u>
Anhydrite	1261+ 812	1257+ 816	+ 815
B-Anhydrite	1297+ 776	1293+ 780	+ 781
Topeka	3031- 958	3040- 967	- 954
Heebner Shale	3299-1226	3297-1224	-1223
Toronto	3318-1245	3318-1245	-1246
LKC	3345-1272	3343-1270	-1273
BKC	3577-1504	3582-1509	-1503
Marmaton	3611-1538	3614-1541	-1535
Reworked Arbuckle		3659-1586	
Arbuckle	3666-1593	3668-1595	-1587
RTD	3780-1707		
LTD		3779-1706	-1590

SUMMARY OF DAILY ACTIVITY

- 2-18-13** RU, spud 1:50 pm, set 8 5/8" surface casing to 219.93' w/ 150 sxs common, 2%gel, 3%CC, plug down 6:30pm, slope ¼ degree,
- 2-19-13** 536', drilling
- 2-20-13** 2261', drilling, shut down at noon– weather delay
- 2-21-13** 2363', shut down – weather delay
- 2-22-13** 2363', weather delay, started drilling at 8:45 pm
- 2-23-13** 2663', drilling, displace at 2804'

- 2-24-13 3322', drilling, shut down at 5:00 pm – weather delay
- 2-25-13 3515', weather delay, started drilling at 6:00 pm
- 2-26-13 3780' RTD @ 6:45am, CCH, slope survey 1 degree, logs, DST # 1
straddle test 3626-78, Arbuckle
- 2-27-13 3780', LDDP, run casing and cement, RD

DST # 1 STRADDLE TEST ARBUCKLE

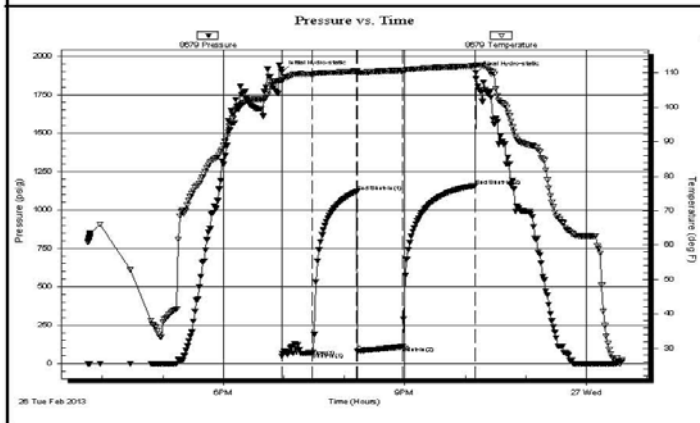
	DRILL STEM TEST REPORT	
	Hertel Oil Company LLC 704 E 12 Th Hays Ks 67601 ATTN: Dave Hertel	27-14s-18w Sophie #1 Job Ticket: 50396 DST#: 1 Test Start: 2013.02.26 @ 15:45:45

GENERAL INFORMATION:

Formation: Arbuckle	Test Type: Conventional Straddle (Initial)
Deviated: No Whipstock ft (KB)	Tester: Jeff Brown
Time Tool Opened: 18:58:15	Unit No: 44
Time Test Ended: 01:00:45	Reference Elevations: 2073.00 ft (KB)
Interval: 3626.00 ft (KB) To 3678.00 ft (KB) (TVD)	2065.00 ft (CF)
Total Depth: 3779.00 ft (KB) (TVD)	KB to GR/CF: 8.00 ft
Hole Diameter: 7.88 inches	Hole Condition: Good

Serial #: 8679 Inside	Capacity: 8000.00 psig
Press@RunDepth: 112.07 psig @ 3664.00 ft (KB)	Last Calib.: 2013.02.27
Start Date: 2013.02.26 End Date: 2013.02.27	Time On Btm: 2013.02.26 @ 18:57:45
Start Time: 15:45:46 End Time: 00:35:45	Time Off Btm: 2013.02.26 @ 22:10:15

TEST COMMENT: IFP=Fair blow built to 8 1/2 in
 IS=Weak surface blow back deid out in 15 min
 FFP=Fair blow built to 8 1/2 min
 FS=Dead no blow back



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1899.64	107.90	Initial Hydro-static
1	46.46	107.50	Open To Flow (1)
31	71.63	109.59	Shut-In(1)
75	1119.39	110.44	End Shut-In(1)
75	78.93	110.10	Open To Flow (2)
120	112.07	110.64	Shut-In(2)
192	1157.08	112.02	End Shut-In(2)
193	1892.75	112.20	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
61.00	OCM 25%O 75%M	0.59
62.00	HOCVM 48%O 2%VW 50% M	0.87
62.00	MCO 50%O 50%M	0.87

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

DST # 1 STRADDLE TEST - EXPANDED CHART OF TEST

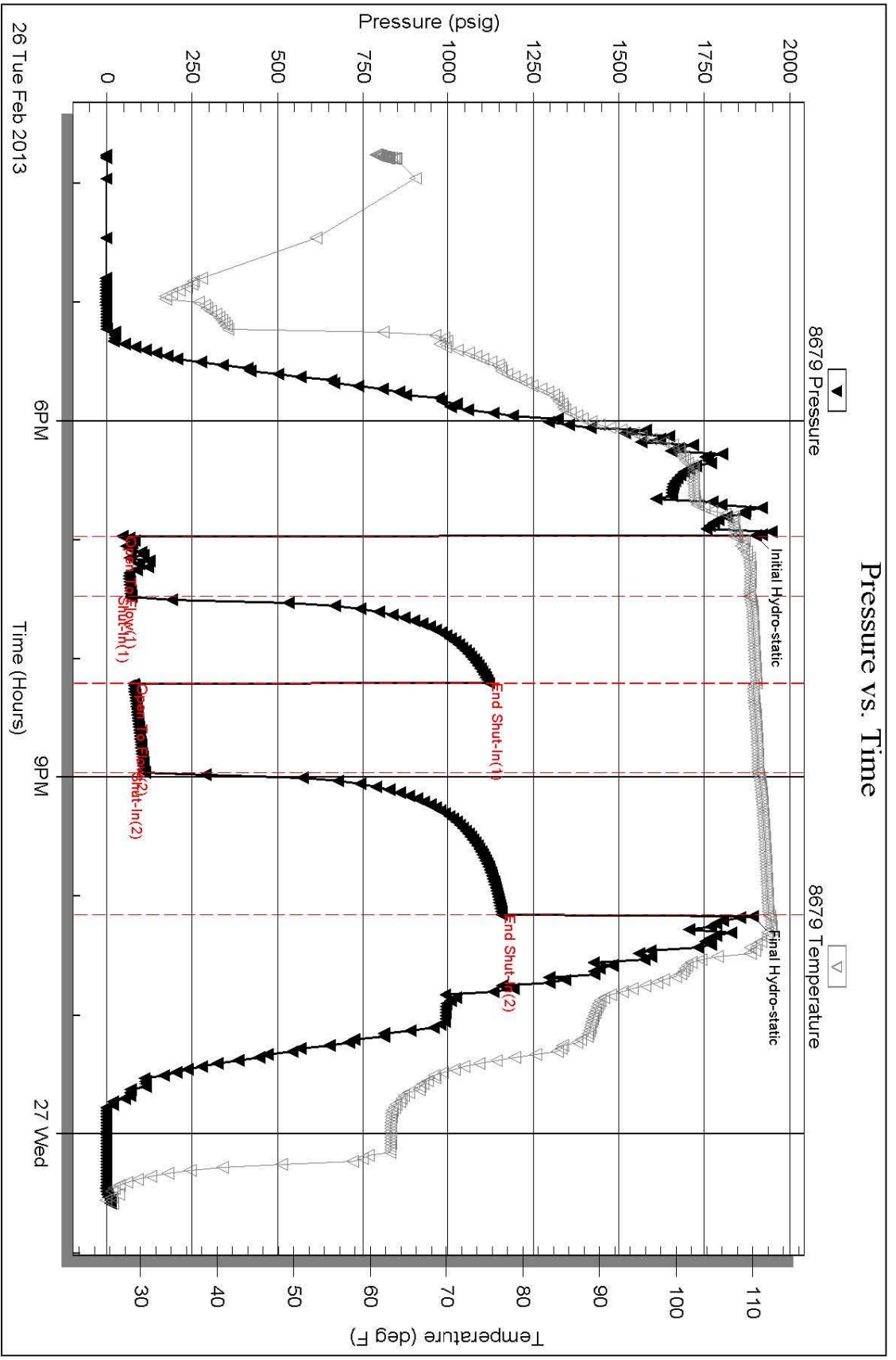
Serial #: 8679

Inside

Hertel Oil Company LLC

Sophie #1

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 50396

Printed: 2013.02.27 @ 07:48:51

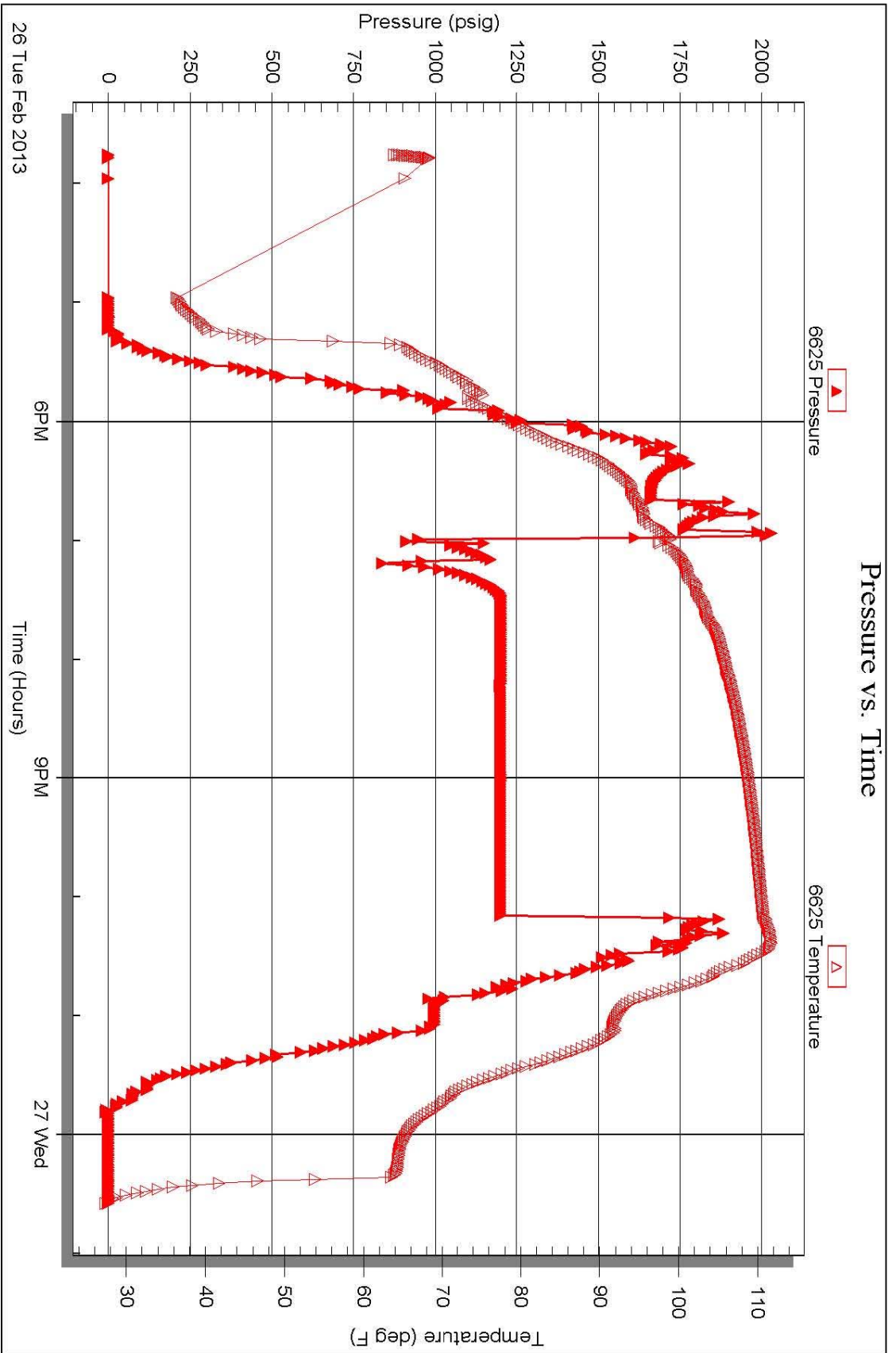
DST # 1 STRADDLE TEST - ARBUCKLE CHART FOR BOTTOM PACKER

Serial #: 6625

Below (Straddle) Oil Company LLC

Sophie #1

DST Test Number: 1

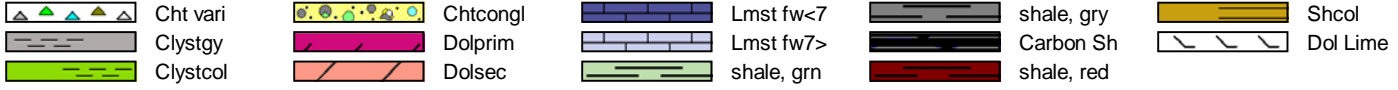


Tribble Testing, Inc

Ref. No: 50396

Printed: 2013.02.27 @ 07:48:51

ROCK TYPES



ACCESSORIES

MINERAL

- ∩ Glauconite
- P Pyrite
- Sandy
- ∴ Varicolored chert
- △ Chert White

FOSSIL

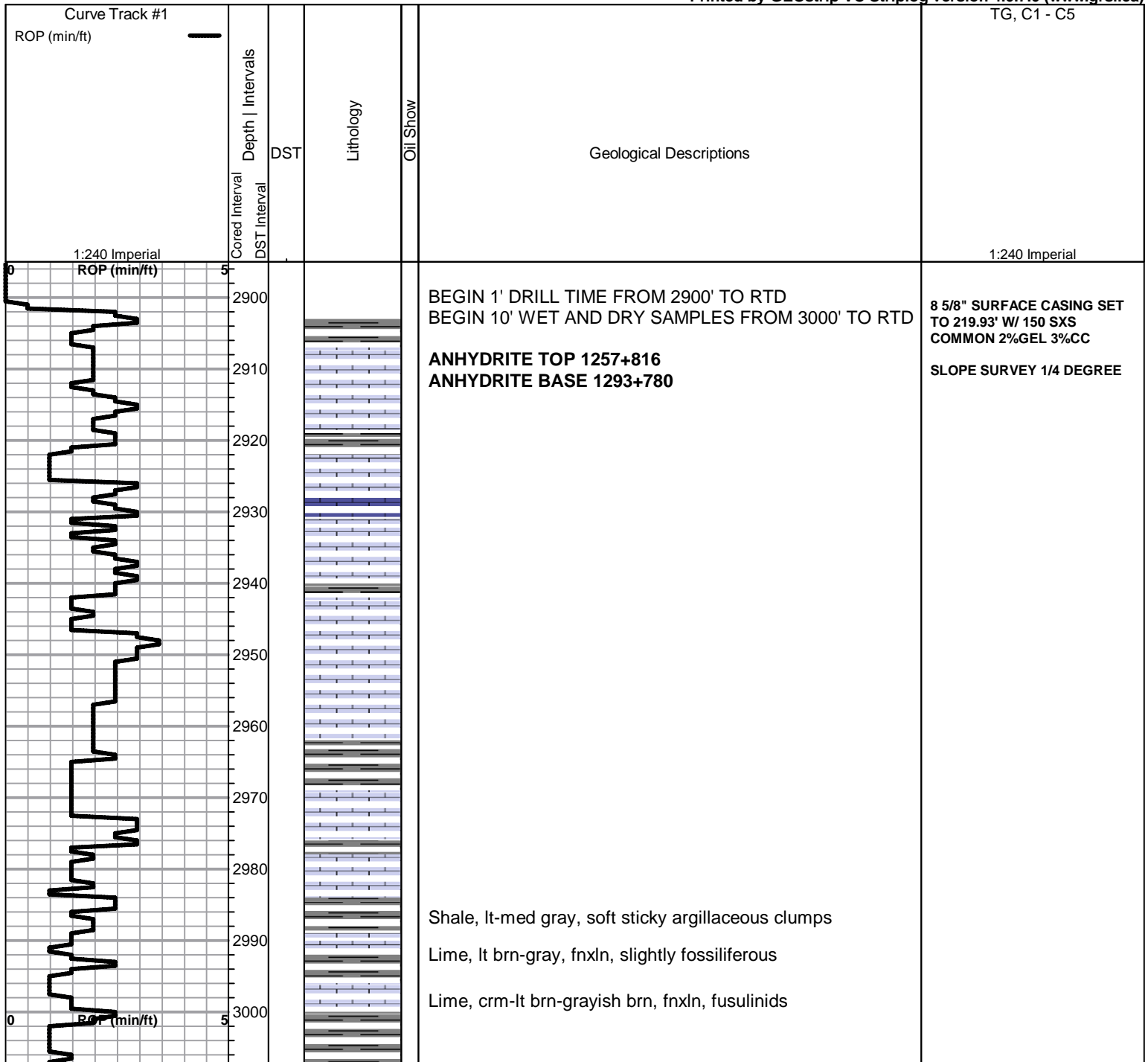
- F Fossils < 20%
- ⊖ Oolite
- ⊕ Oomoldic

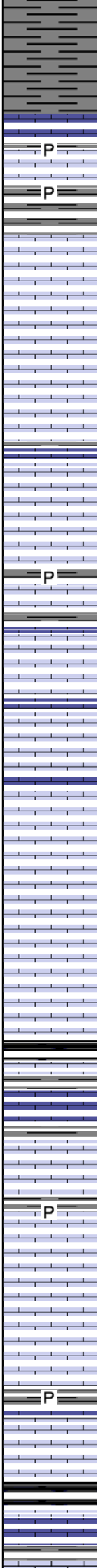
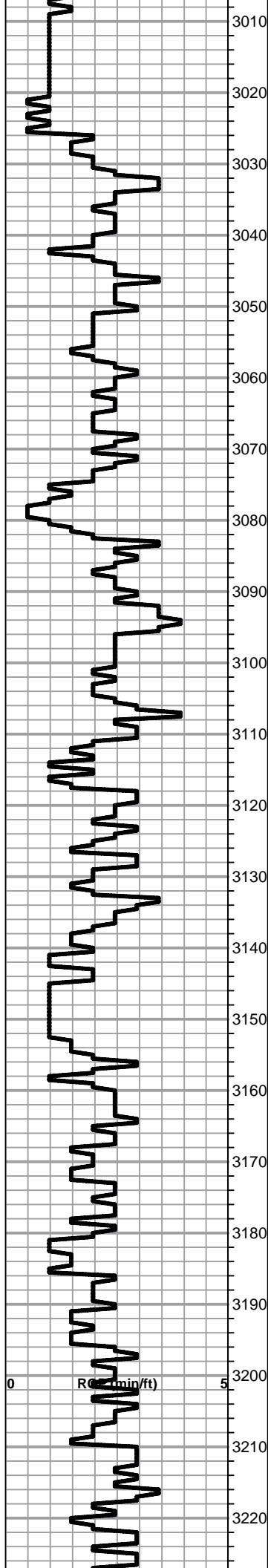
OTHER SYMBOLS

DST

- DST Int
- DST alt
- Core

Printed by GEOstrip VC Striplog version 4.0.7.0 (www.grsi.ca)





Shale, lt-med gray, soft sticky argillaceous to soft blocky

Lime, med brn, fnxln, fossiliferous

Lime, crm, fnxln-granular, slightly fossiliferous, sparry calcite backfill in part

TOPEKA 3040-967

Lime, lt-med brn, fnxln with fine granular chalky matrix in part

Lime, lt-med brn-grayish brn, fnxln, slightly fossiliferous

Lime, lt-med brn, fnxln, slight chalk in part, slightly fossiliferous

Lime, lt-med brn, mostly fnxln

Shale, med gray, calcareous, w/ fossil fragments

Lime, crm-lt brn, granular with spotty show of free oil on break, no odor

VERY THIN ZONE WHICH IS NONCOMMERCIAL IN AREA

Lime, lt-med brn-grayish brn, fnxln, slightly fossiliferous
Shale, dark gray, firm blocky, w/ pyrite clusters

Lime, lt-med brn-grayish brn, fnxln, fossiliferous in part

Lime, lt-med brn, fnxln grading into granular lime w/ chalk in part, slightly fossiliferous

Lime, lt-med brn-grayish brn, fn-vfxln, micritic in part, slight chalk

Lime, crm-med brn, fnxln-granular, slight chalk

Lime, lt-med brn, fnxln-granular, scattered fine oolitic lime

Lime, lt-med brn, mostly granular, slightly chalky

Shale, black carbonaceous, fissile, blocky

Lime, lt brn, fnxln, slightly fossiliferous

Lime, crm, fn-vfxln, slight chalk, NS

Lime, crm-lt brn, fn-vfxln

Lime, crm-lt brn, fnxln-granular, slight chalk in part, NS

Lime, crm-lt brn, fn-vfxln, slight bedded chalk in part

Lime, crm-lt brn, fnxln, slight chalk in part

Shale, gray-black carbonaceous
Lime, med brn-gray, fnxln
Shale, gray, calcareous w/ thin fossil beds

3230
3240
3250
3260
3270
3280
3290
3300
3310
3320
3330
3340
3350
3360
3370
3380
3390
3400
3410
3420
3430
3440

Lime, crm-med brn, fnxln, bedded chalk in part

Lime, lt-med brn-grayish brn, fnxln

Lime, lt-med brn-grayish brn, fnxln
Shale, med gray, firm, blocky, calcareous w/ fossil fragments

Lime, lt-med brn-grayish brn, fnxln w/ bedded chalk in part

* Lime, crm-lt brn, fnxln-granular, slightly fossiliferous
lt gassy odor with no staining, NFO

Lime, lt-med brn, fnxln

Lime, crm-lt brn, fnxln

HEEBNER SHALE 3297-1224
Shale, black carbonaceous, fissile, blocky
Lime, med brn, fnxln, hard on crush
Shale, lime green, soft sticky clumps - soft blocky

TORONTO 3318-1245
Lime, white-crm, fnxln-granular, slight chalk, NS, no wet cut

Lime, crm-lt brn, fnxln, chalk in part, NS

Shale, lt red wash, soft grading into lt gray, soft blocky

LKC 3343-1270
Lime, med brn, vfxln, hard on crush

Lime, brn-grayish brn, fnxln, slightly fossiliferous, NS
Shale, dove gray, soft, sticky argillaceous clumps
Lime, lt-med brn, fnxln, hard on crush
Shale, lt-med gray, soft, sticky argillaceous clumps

○ F ○ D
Lime, crm-lt brn, fnxln grading into oolitic-fossil fragment w/
gilsonite and trace of lt fresh oil staining in interoolitic
porosity

Lime, lt-dark brn, fn-vfxln
Shale, gray, soft blocky

○
Lime, crm-lt gray, fn-vfxln, hard on crush, few chips,
fossiliferous w. pinpt porosity, trace fresh oil stain, v lt odor

Lime, lt-med brn, mostly fnxln

Shale, gray-black carbonaceous, soft blocky
Lime, pale gray, fnxln, hard on crush

D ○
Lime, white-crm, oolitic in part, dead oil stain w trace of
fresh oil staining, NFO, No Odor

Lime, crm-lt brn, mostly fnxln, scattered cementic oolitic
material w. bedded chalk in part, NS

Lime, crm-lt brn, fn-vfxln, scattered bedded chalk

LOG INTERVAL FROM 3370-73
SHOULD BE PERFORATED
AND TESTED PRIOR TO
ABANDONMENT OF WELL

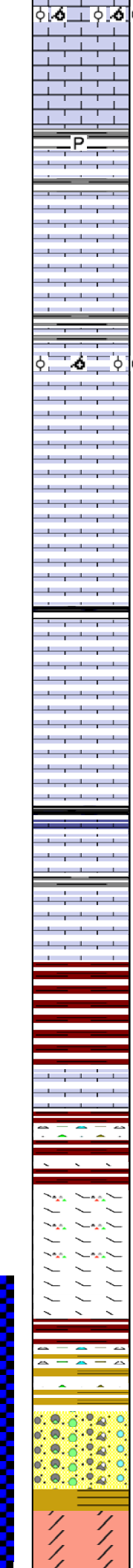
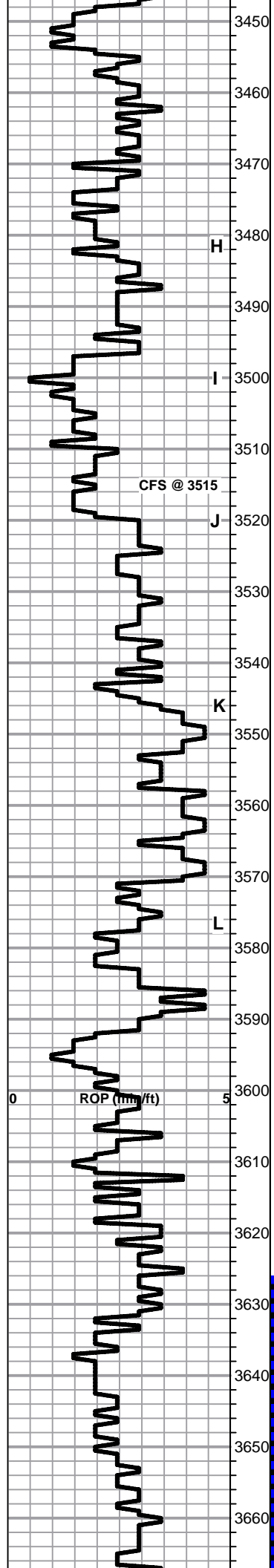
LOG INTERVAL 3386-90
SHOWS VERY THIN
DEVELOPMENT. MAY
CONSIDER TESTING DUE TO
FAVORABLE STRUCTURE

LOG INTERVAL 3415-18
APPEARS TO HAVE GOOD
PERMEABILITY ON LOG WITH
SLIGHT EVIDENCE OF
HYDROCARBON PRESENCE.
MAY CONSIDER TESTING DUE
TO FAVORABLE STRUCTURE

LOG INTERVAL 3445-52
MOSTLY EQUAL WITH

ROP (mm/ft)

A
B
C
D
E
F
G



Lime, tan-lt brn-offwhite, fnxln w/ increasing bedded chalk, 1-2 chips oolitic/oolomoldic with trace of lt stain, NFO, No Odor.

Lime, lt brn, fn-vfxln, slight chalk in part

Shale, gray-black

Lime, crm, fnxln, chalk, NS

Lime, lt brn, fn-micro xln

Lime, offwhite-lt brn, fn-vfxln

Lime, lt brn, oolitic/oolomoldic, interoolitic w/ pinpt porosity, V Lt Odor, MSFO from vugs as sample warmed, lt to sat stain

Lime, crm, fn-vfxln

Lime, crm-lt brn-lt gray, fn-vfxln, slightly chalk

Lime, crm-lt brn, fn-micro xln, slight bedded chalk

Lime, crm-lt brn, fn-vfxln

Lime, crm-lt brn, fn-vfxln, slight chalk

Lime, crm-lt brn, fn-vfxln, slight chalk

Shale, gray-black carbonaceous, soft blocky
Lime, crm-lt brn, fn-micro xln

Lime, crm-lt brn, fnxln, slight chalk

BKC 3582-1509

Shale, reddish brn-brn, soft blocky

Shale, reddish brn with clastic lime rubble in part

Lime, crm-lt brn, fnxln, bedded chalk, crumbly in part

Shale, brn, firm blocky-soft reddish brn, vari colored cherts

MARMATION 3614-1541

Lime, crm-lt brn, fnxln-granular, orange chert, fresh, sharp

Lime, crm-tan-lt gray, dolomitic, fn-vfxln, hard on crush, NS

Shale, lt red wash grading into vari colored shales and cherts

Shale, reds, brns, soft-firm, cherts vari colored, scattered cemented sandstone clusters, NS

REWORKED ARBUCKLE 3659-1586

Mix of dolomite, cherts, sand, lt brn, fnxln, V lt odor

MOSTLY CHALKY WITH TRACE OF STAIN. MAY CONSIDER PERFORATING AND TESTING PRIOR TO ABANDONMENT OF WELL BASED ON STRUCTURE OF WELL

LOG INTERVAL 3497-3500 SHOULD BE PERFORATED AND TESTED. MAY WANT TO PERFORATE 3510-16 PRIOR TO ABANDONMENT OF WELL

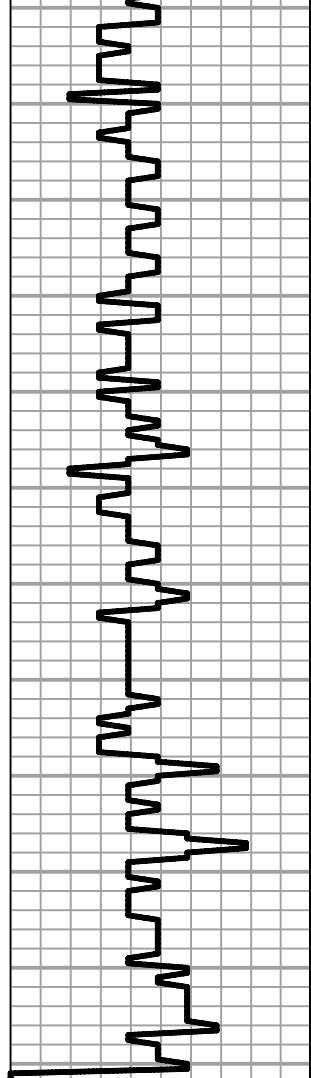
SHUT DOWN @ 3515' AND BANKED DRILL PIPE FOR BLIZZARD

DST # 1 STRADDLE TEST FROM 3626'-78. SEE HEADER FOR TEST SUMMARY

ARBUCKLE 3668-1595

**LOG INTERVAL 3668-78
APPEARS TO BE
PRODUCTIVE INTERVAL IN
ARBUCKLE**

3670
3680
3690
3700
3710
3720
3730
3740
3750
3760
3770
3780



Dolomite, ivory, fn-cxln, rhombic, gd visible interxln porosity, Lt Odor, saturated staining, gilsonitic.

Dolomite, ivory, fn-cxln, rhombic, gilsonitic, with SFO, lt odor, saturated staining

Dolomite, ivory, fn-cxln, decreasing odor and staining
Chert, beige, fresh, sharp

Dolomite, ivory-crm, fn-cxln, interxln porosity, mostly barren
Chert, crm-tan, fresh, sharp
Shale, lt green, soft blocky, waxy

Dolomite, ivory-crm, fn-cxln, scattered specks of glauconite

Dolomite, white-ivory-crm, fn-cxln, few chips white sucrosic dolomite

Dolomite, ivory-crm, fnxln, interxln porosity, hard on crush

Dolomite, ivory-crm, fn-cxln

Dolomite, ivory-crm, mostly fnxln, hard on crush

Dolomite, ivory-crm, fnxln, w/ scattered specks of glauconite

Dolomite, ivory-crm, fnxln w/ scattered quartz grain inclusions and fused quartz.

Dolomite, ivory-salmon, fnxln, increasing quartz content

RTD 3780-1707 LTD 3779-1706

**OIL/WATER CONTACT
APPEARS TO BE BELOW 3678'**

SLOPE SURVEY 1 DEGREE

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025
Cell 785-324-1041

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

No. 6417

Date	2-17-13	Sec.	27	Twp.	14	Range	18	County	ELLIS	State	KANSAS	On Location		Finish	6:30 pm
------	---------	------	----	------	----	-------	----	--------	-------	-------	--------	-------------	--	--------	---------

Location **HAYS - 4S - E / INTO**

Lease **SOPHIE** Well No. **#1** Owner **HERTEL OIL.**

Contractor **D.D #1** To Quality Oilwell Cementing, Inc.
You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.

Type Job **SURFACE**

Hole Size **12 1/4"** T.D. **220'** Charge To **HERTEL OIL.**

Csg. **8 7/8" - 23LB - NEW** Depth **220'** Street **704 E. 12TH ST.**

Tbg. Size _____ Depth _____ City **HAYS** State **KS, 67601**

Tool _____ Depth _____ The above was done to satisfaction and supervision of owner agent or contractor.

Cement Left in Csg. _____ Shoe Joint **15** Cement Amount Ordered **150com - 38cc - 2gel**

Meas Line _____ Displace **13BBLs**

EQUIPMENT Common **150**

Pumptrk #15	No.	Cementer		Poz. Mix
		Helper	NICK W.	

Bulktrk #14	No.	Driver		Gel. 3
		Driver	DAVID L.	

Bulktrk P/W	No.	Driver		Calcium 5
		Driver	CISCO A.	

JOB SERVICES & REMARKS Hulls _____

Remarks: _____ Salt _____

Rat Hole _____ Flowseal _____

Mouse Hole _____ Kol-Seal _____

Centralizers _____ Mud CLR 48 _____

Baskets _____ CFL-117 or CD110 CAF 38 _____

D/V or Port Collar _____ Sand _____

_____ Handling **158**

CEMENT DID NOT CIRCULATE! Mileage _____

_____ **FLOAT EQUIPMENT**

_____ Guide Shoe _____

_____ Centralizer _____

_____ Baskets _____

_____ AFU Inserts _____

_____ Float Shoe _____

_____ Latch Down _____

_____ Pumptrk Charge **Surface**

_____ Mileage **4**

_____ Tax _____

_____ Discount _____

_____ Total Charge _____

THANK YOU!

Signature **Cuff Mayfield**

JOB LOG

SWIFT Services, Inc.

DATE 2-27-13 PAGE NO.

CUSTOMER Herkel Oil WELL NO. 1 LEASE Sophie JOB TYPE 5 1/2 Two-Stage TICKET NO. 23931

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	0700							On location TO 3780 SS 21 TP 3779 Insert 3758 OV 1236 rpb3 5 1/2 x 14# Centralizers 1,3,5,7,9,11,13,62 Basket 6,12,63
	0930							Start Pipe
	1058							Drop Ball Break Circulation
	1140	5	12		✓		300	Start Mud Flush
		5	20		✓		300	Start KCL Flush
		5	36		✓		200	Start Cement EA-2
	1200							Drop Plug wash out Pump + Lines
	1202	6			✓			Displace
		6	61		✓			Start mud
		6	73		✓			Start KCL flush
	1215		91.7				1500	Land Plug Release Dry Drop opening Plug
	1220		7/4					Plug BH Zostys, MH 15 SKS
	1245				✓		500	Open OV
			86		✓			Start Cement SMO
	1315							Drop Closing Plug Displace
	1330		30.2		✓			Land Plug
	1330						1500	Close OV Release Dry Circulate 30 SKS to pit
	1400							wash up Back up Job Complete Thank You Josh, Brian, Rob