

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 # _____

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

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 #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

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

GPS Location: Lat: _____, Long: _____
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical 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

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

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

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

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 <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 Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No 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
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone				

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:	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____			
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio Gravity

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) (Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-1071
Cell 785-324-1041

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

No. 1000

Date	Sec.	Twp.	Range	County	State	On Location	Finish
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Location

Lease Well No. Owner

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

Hole Size T.D. Charge To

Csg. Depth Street

Tbg. Size Depth City State

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

Cement Left in Csg. Shoe Joint Cement Amount Ordered

Meas Line Displace

EQUIPMENT

Pumptrk No.	Cementor Helper	Common
Bulktrk No.	Driver	Poz. Mix
Bulktrk No.	Driver	Gel.
Bulktrk No.	Driver	Calcium

JOB SERVICES & REMARKS

Remarks:	Hulls
Rat Hole	Salt
Mouse Hole	Flowseal
Centralizers	Kol-Seal
Baskets	Mud CLR 48
D/V or Port Collar	CFL-117 or CD110 CAF 38
	Sand
	Handling
	Mileage

FLOAT EQUIPMENT

	Guide Shoe
	Centralizer
	Baskets
	AFU Inserts
	Float Shoe
	Latch Down

Pumptrk Charge Mileage

Signature	Tax
	Discount
	Total Charge

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. 1341

2-12-19

Date	7-11-19	Sec.	7	Twp.	8	Range	14	County	OSBORNE	State	Kansas	On Location		Finish	3:30 AM
								Location	ALTON SS.						

Lease	THORN BURG		Well No. #1	Owner		
Contractor	MURFIN DRLG		Rig #8	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	CEMENT		SURFACE	Charge To	BRUCE OIL COMPANY	
Hole Size	12 1/4	T.D.	212'	Street		
Csg.	8 5/8	Depth	210'	City		
Tbg. Size		Depth		State		
Tool		Depth		The above was done to satisfaction and supervision of owner agent or contractor.		
Cement Left in Csg.	15'	Shoe Joint		Cement Amount Ordered	150 SX 60/40 4#2	
Meas Line		Displace	12 1/2 BBL			

EQUIPMENT

Pumptrk #17	No.	Cement		Common	90
		Helper	TONY	Poz. Mix	60
Bulktrk #14	No.	Driver	MICHAEL	Gel.	3
		Driver	(GRAN)	Calcium	7
Bulktrk	No.	Driver			
		Driver			

JOB SERVICES & REMARKS

Remarks:	Hulls
Rat Hole	Salt
Mouse Hole	Flowseal
Centralizers	Kol-Seal
Baskets	Mud CLR 48
D/V or Port Collar	CFL-117 or CD110 CAF 38
Set 8 5/8 @ 210'	Sand
Received Circ.	Handling 160
Cement w/ 150 SX 60/40 4#cc 2% gel	Mileage
Displaced 12 1/2 BBL H2O	
SHUT IN @ 300#	
Cement DID CIRCULATE	

FLOAT EQUIPMENT

Guide Shoe	
Centralizer	
Baskets	
AFU Inserts	
Float Shoe	
Latch Down	
Pumptrk Charge	SURFACE
Mileage	45

THANKS

X Signature *John Doherty*

Tax	
Discount	
Total Charge	

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-1071
Cell 785-324-1041

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

No. 1557

Date	7-23-19	Sec.	7	Twp.	8	Range	14W	County	Osborne	State	KS	On Location		Finish	
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Location *Natoma N to 388 Co rd West to*

Lease *Thornburg* Well No. *#1* Owner *230 Ave N to Farm House*

Contractor *Chris's Well Service*
Type Job *Top Stage Port Collar*
To Quality Oilwell Cementing, Inc.
You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.

Hole Size _____ T.D. *2200'* Charge To *Bruce Oil*

Csg. *5 1/2 #14* Depth *1086'* Street _____

Tbg. Size *2 3/8* Depth _____ City _____ State _____

Tool *Port Collar* Depth *1086'* The above was done to satisfaction and supervision of owner agent or contractor.

Cement Left in Csg. _____ Shoe Joint _____ Cement Amount Ordered *200SK Com - QMBC 1/4 Flo*

Meas Line _____ Displace _____

EQUIPMENT			Common
Pumptrk <i>#8</i>	No.	Cementer <i>Tony</i>	<i>used 165</i>
		Helper	
Bulktrk	No.	Driver <i>Dave</i>	Poz. Mix
		Driver	Gel.
Bulktrk <i>#3</i>	No.	Driver <i>Glenn</i>	Calcium
		Driver	

JOB SERVICES & REMARKS Hulls _____

Remarks: *USED: 165SK QMBC* Salt _____

Rat Hole *#1/4 Flo seal* Flowseal *50#*

Mouse Hole _____ Kol-Seal _____

Centralizers _____ Mud CLR 48 _____

Baskets _____ CFL-117 or CD110 CAF 38 _____

D/V or Port Collar _____ Sand _____

** Test 5 1/2 to #1000 psi* Handling _____

** Open Tool Circulated* Mileage _____

** Mix Cement @ 165SK QMBC* **FLOAT EQUIPMENT**

** Close Tool* Guide Shoe _____

** Pressured to #1000 psi* Centralizer _____

** Run 5 jts Tbg & wash clean* Baskets _____

AFU Inserts _____

Float Shoe _____

Latch Down _____

Pumptrk Charge *port collar*

Mileage *36*

Signature *Lee Kohn Dave Frank* Tax _____

Discount _____

Total Charge _____

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-1071

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

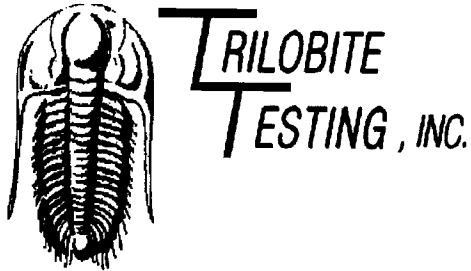
No. 1551

Cell 785-324-1041

Date	Sec.	Twp.	Range	County	State	On Location	Finish
7-16-19	7	18	14				
Location				Osborne 388 cord W to 2300E			
Lease Thornburg			Well No. #1	Owner D info.			
Contractor MacFin Drllg			To Quality Oilwell Cementing, Inc.				
Type Job Port Collar			You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.				
Hole Size 7 7/8		T.D. 2819'		Charge To Bruce Oil Company			
Csg. 5 1/2 #14		Depth 2812'		Street			
Tbg. Size		Depth		City State			
Tool Port Collar		Depth 1080'		The above was done to satisfaction and supervision of owner agent or contractor.			
Cement Left in Csg. 7'		Shoe Joint 7'		Cement Amount Ordered 150sc com. + 10% salt			
Meas Line		Displace 68 1/2 5 1/2 #14		500gal mudfl. flush			
EQUIPMENT				Common			
Pumptrk #18	No.	Cementer	Helper	Poz. Mix			
Bulktrk	No.	Driver	Driver	Gel. 2'			
Bulktrk #3	No.	Driver	Driver	Calcium			
JOB SERVICES & REMARKS				Hulls			
Remarks:				Salt			
Rat Hole 303C				Flowseal			
Mouse Hole 45-153K				Kol-Seal X			
Centralizers 14x5				Mud CLR 48			
Baskets 2, 4, 6				CFL-117 or CD110 CAF 38			
D/V or Port Collar set @ 1080'				Sand			
				Handling			
* Set 5 1/2 @ 2812 - circled HR				Mileage			
* Pump 500gal mudfl. flush				FLOAT EQUIPMENT			
* Plug Rat Hole @ 303C				Guide Shoe			
* mix 105cr + 10% salt clean line				Centralizer 4x5 1/2			
* Displace 5 1/2 latch down				Baskets 4x5 1/2			
@ 68 1/2 5 1/2 #14 @ 1500 psi.				AFU Inserts			
* Release back dry				Float Shoe 1x5 1/2			
* WASH clean				Latch Down 1x5 1/2			
				1x5 1/2 port collar			
				Pumptrk Charge			
				Mileage			
				Tax			
				Discount			
				Total Charge			
Signature <i>Lenhart</i>							

Thanks

X Signature



DRILL STEM TEST REPORT

Prepared For: **Bruce Oil Company LLC**

1704 Limestone RD
McPherson KS 67460+6500

ATTN: Bob Peterson

Thornburg #1

7-8s-14w Osborne,KS

Start Date: 2019.07.15 @ 12:10:00

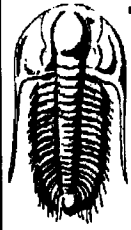
End Date: 2019.07.15 @ 17:45:39

Job Ticket #: 65799 DST #: 1

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

Printed: 2019.07.16 @ 16:36:59

Bruce Oil Company LLC
7-8s-14w Osborne,KS
Thornburg #1
DST # 1
Topoka
2019.07.15



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Bruce Oil Company LLC
1704 Limestone RD
McPherson KS 67460+6500
ATTN: Bob Peterson

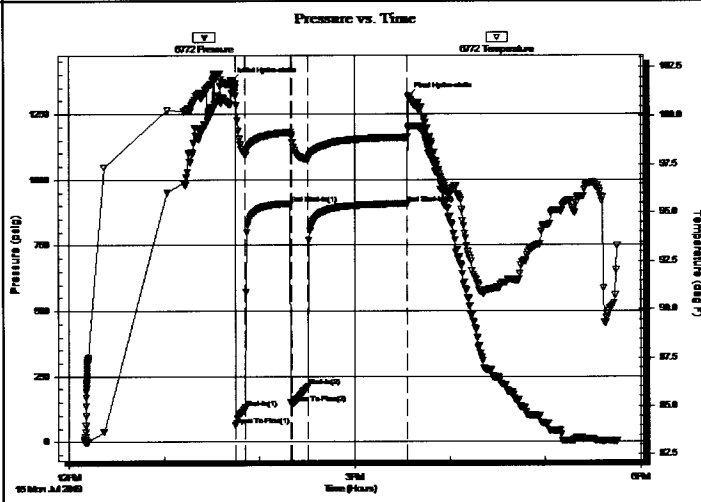
7-8s-14w Osborne,KS
Thornburg #1
Job Ticket: 65799 **DST#: 1**
Test Start: 2019.07.15 @ 12:10:00

GENERAL INFORMATION:

Formation: **Topeka**
Deviated: **No** Whipstock: ft (KB)
Time Tool Opened: 13:44:50
Time Test Ended: 17:45:39
Interval: **2758.00 ft (KB) To 2778.00 ft (KB) (TVD)**
Total Depth: 2778.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Test Type: Conventional Bottom Hole (Initial)
Tester: Benny Mulligan
Unit No: 66
Reference Elevations: 1799.00 ft (KB)
1794.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 6772 **Inside**
Press@RunDepth: 213.24 psig @ 2759.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2019.07.15 End Date: 2019.07.15 Last Calib.: 2019.07.15
Start Time: 12:10:01 End Time: 17:45:40 Time On Btm: 2019.07.15 @ 13:42:00
Time Off Btm: 2019.07.15 @ 15:33:50

TEST COMMENT: IF-5-BOB 1min 50 secs total build of 40"
ISI-30- 7" blow back
FF-10- BOB 2 mins 5 secs total build of 49"
FSI-60- 13" blow back



PRESSURE SUMMARY

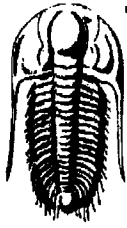
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1375.69	101.66	Initial Hydro-static
3	61.87	101.05	Open To Flow (1)
9	129.89	97.96	Shut-In(1)
38	909.01	99.17	End Shut-In(1)
38	147.95	98.92	Open To Flow (2)
49	213.24	97.74	Shut-In(2)
111	908.54	98.89	End Shut-In(2)
112	1315.71	99.36	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
180.00	GMCO 10%G 5%M 85%O	0.89
380.00	GO 10%O 90%O	5.28
0.00	GIP 60'	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Bruce Oil Company LLC

7-8s-14w Osborne, KS

1704 Limestone RD
McPherson KS 67460+6500

Thornburg #1

Job Ticket: 65799

DST#: 1

ATTN: Bob Peterson

Test Start: 2019.07.15 @ 12:10:00

GENERAL INFORMATION:

Formation: **Topeka**

Deviated: **No** Whipstock: **ft (KB)**

Time Tool Opened: 13:44:50

Time Test Ended: 17:45:39

Test Type: **Conventional Bottom Hole (Initial)**

Tester: **Benny Mulligan**

Unit No: **66**

Interval: **2758.00 ft (KB) To 2778.00 ft (KB) (TVD)**

Reference Elevations: **1799.00 ft (KB)**

Total Depth: **2778.00 ft (KB) (TVD)**

1794.00 ft (CF)

Hole Diameter: **7.88 inches** Hole Condition: **Fair**

KB to GR/CF: **5.00 ft**

Serial #: 6769

Outside

Press@RunDepth: **psig @ 2759.00 ft (KB)**

Capacity: **8000.00 psig**

Start Date: **2019.07.15**

End Date:

2019.07.15

Last Calib.:

2019.07.15

Start Time: **12:10:01**

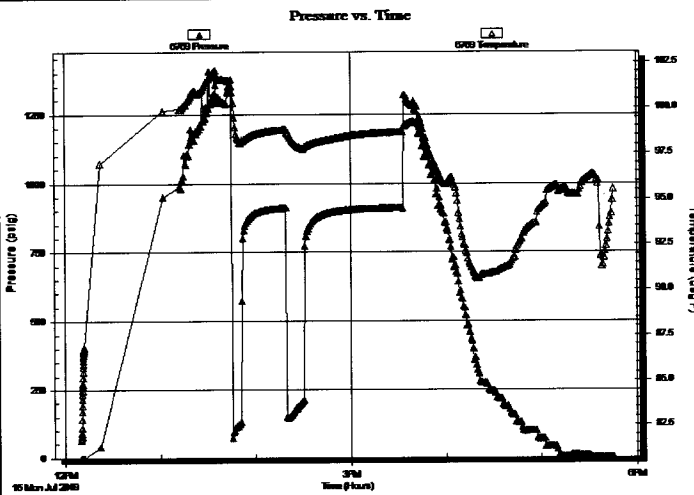
End Time:

17:45:40

Time On Btm:

Time Off Btm:

TEST COMMENT: IF-5-BOB 1min 50 secs total build of 40"
IS-30- 7" blow back
FF-10- BOB 2 mins 5 secs total build of 49"
FS-60- 13" blow back



PRESSURE SUMMARY

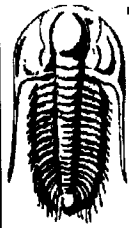
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
180.00	GMCO 10%G 5%M 85%O	0.89
380.00	GO 10%O 90%O	5.28
0.00	GIP 60'	0.00

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Bruce Oil Company LLC
1704 Limestone RD
McPherson KS 67460+6500
ATTN: Bob Peterson

7-8s-14w Osborne,KS
Thornburg #1
Job Ticket: 65799 **DST#: 1**
Test Start: 2019.07.15 @ 12:10:00

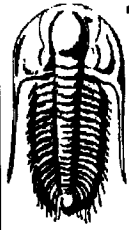
Tool Information

Drill Pipe:	Length: 2554.00 ft	Diameter: 3.80 inches	Volume: 35.83 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 185.00 ft	Diameter: 2.25 inches	Volume: 0.91 bbl	Weight to Pull Loose: 40000.00 lb
		Total Volume: 36.74 bbl		Tool Chased 0.00 ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial 36000.00 lb
Depth to Top Packer:	2758.00 ft			Final 37000.00 lb
Depth to Bottom Packer:	ft			
Interval betw een Packers:	20.00 ft			
Tool Length:	47.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			2732.00	
Shut In Tool	5.00			2737.00	
Hydraulic tool	5.00			2742.00	
Jars	5.00			2747.00	
Safety Joint	2.00			2749.00	
Packer	5.00			2754.00	27.00 Bottom Of Top Packer
Packer	4.00			2758.00	
Stubb	1.00			2759.00	
Recorder	0.00	6772	Inside	2759.00	
Recorder	0.00	6769	Outside	2759.00	
Perforations	16.00			2775.00	
Bullnose	3.00			2778.00	20.00 Bottom Packers & Anchor

Total Tool Length: 47.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Bruce Oil Company LLC

7-8s-14w Osborne,KS

1704 Limestone RD
McPherson KS 67460+6500

Thornburg #1

Job Ticket: 65799

DST#: 1

ATTN: Bob Peterson

Test Start: 2019.07.15 @ 12:10:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

30 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.19 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4300.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
180.00	GMCO 10%G 5%M 85%O	0.885
380.00	GO 10%O 90%O	5.285
0.00	GIP 60'	0.000

Total Length: 560.00 ft

Total Volume: 6.170 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 6772

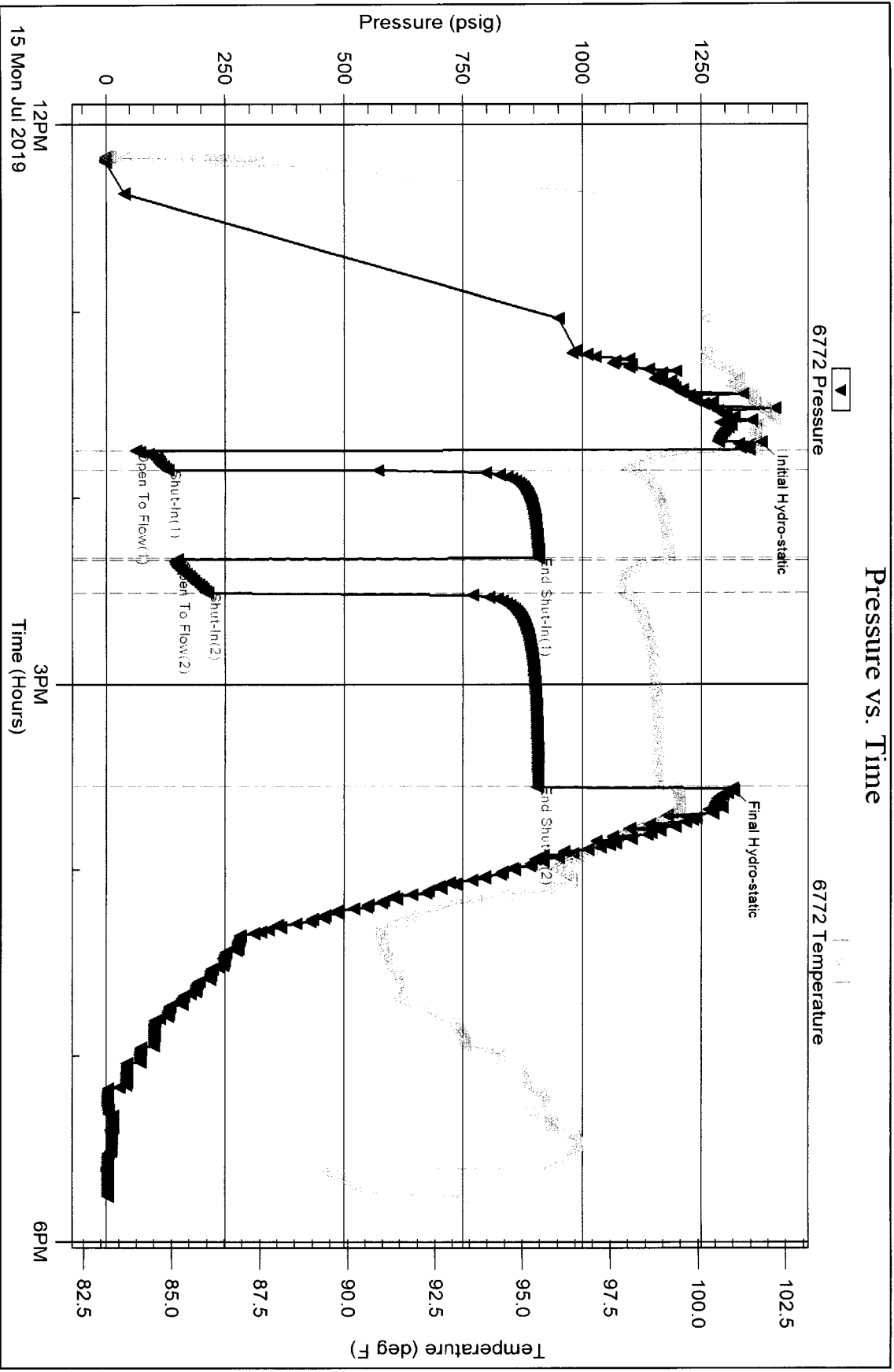
Inside

Bruce Oil Company LLC

Thornburg #1

DST Test Number: 1

Pressure vs. Time



Trilobite Testing, Inc

Ref. No: 65799

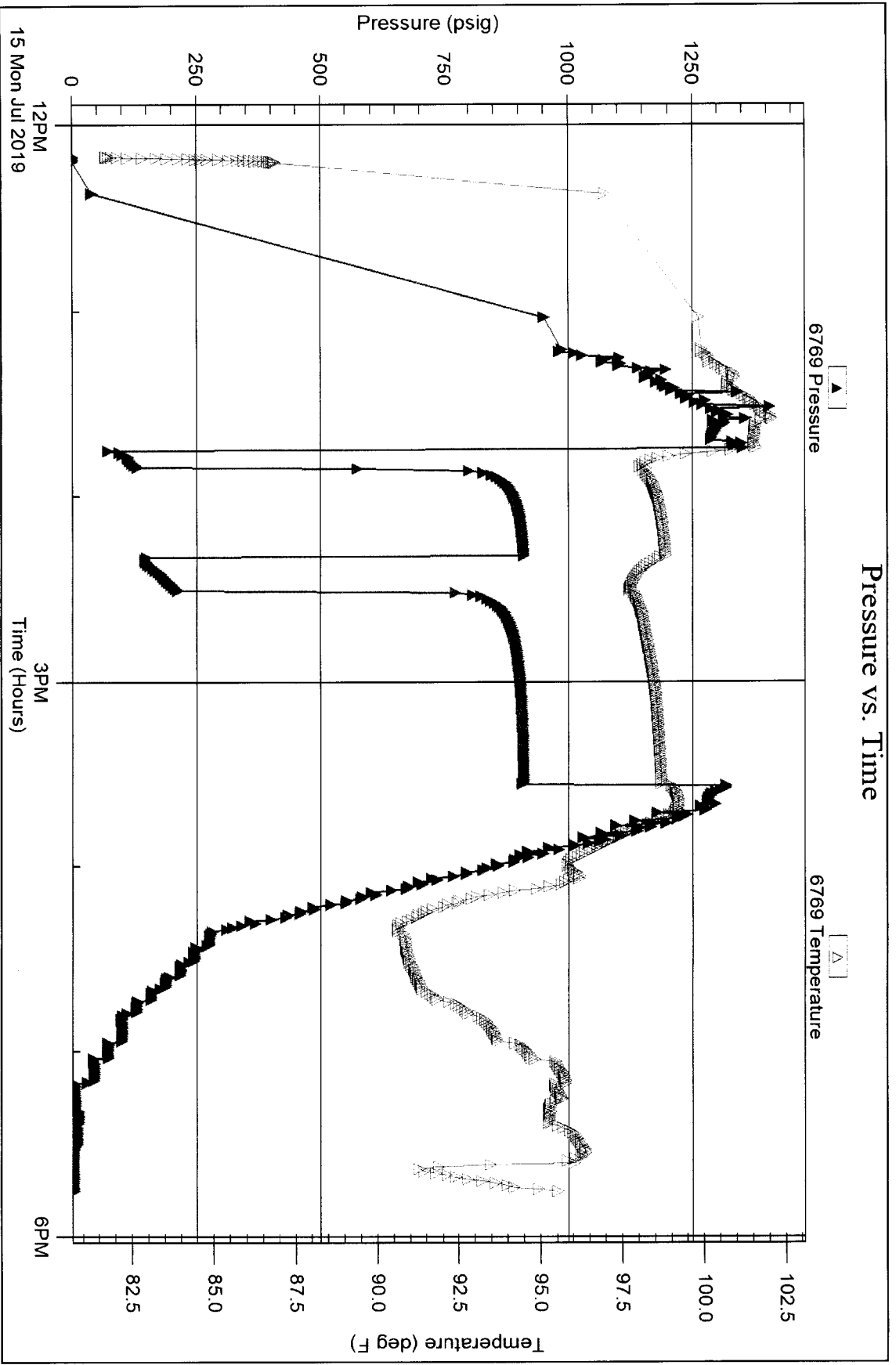
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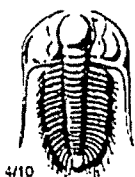
Serial #: 6769

Outside Bruce Oil Company LLC

Thorburg #1

DST Test Number: 1





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket 85762

NO.

Well Name & No. Thornburg #1 Test No. DST 1 Date 7/15/2019
 Company Bruce Oil Company LLC Elevation 1799 KB 1794 GL
 Address 1704 Limestone RD Mphersen KS 67460+6500
 Co. Rep / Geo. Bob Peterson Rig Murphy 8
 Location: Sec. 7 Twp 85 Rge. 14w Co. Oshone State KS

Interval Tested 2758~2778 Zone Tested Tapeka A
 Anchor Length 20' Drill Pipe Run 2554 Mud Wt. ~~8~~ 9.0
 Top Packer Depth 2753 Drill Collars Run 185 Vls 58
 Bottom Packer Depth 2778 Wt. Pipe Run _____ WL 7.2
 Total Depth 2778 Chlorides 4300 ppm System LCM 2#

Blow Description IF-BOB 1min 50secs total build of 40"
FST- 7" blow back
FF-BOB 2mins 5secs total build of 49"
FST- 13" blow back

Rec	Feet of	%gas	%oil	%water	%mud
<u>380'</u>	<u>G.O.</u>	<u>10</u>	<u>90</u>		
<u>180'</u>	<u>G.M.C.O.</u>	<u>10</u>	<u>85</u>		<u>5</u>
<u>0</u>	<u>GIF 60'</u>				

Rec Total 560' BHT 99 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 1375 Test 1200 T-On Location 1020 AM
 (B) First Initial Flow 61 Jars 250 T-Started 1210 AM
 (C) First Final Flow 129 Safety Joint 75 T-Open 1:45
 (D) Initial Shut-In 909 Circ Sub _____ T-Pulled 3:30
 (E) Second Initial Flow 147 Hourly Standby _____ T-Out 5:46
 (F) Second Final Flow 213 Mileage 122 RT 122 Comments looked for 1 after DST 1
 (G) Final Shut-In 908 Sampler _____
 (H) Final Hydrostatic 1315 Straddle _____ EM Tool _____

Initial Open 5 Shale Packer _____ Ruined Shale Packer _____
 Initial Shut-In 30 Extra Packer _____ Ruined Packer _____
 Final Flow ~~10~~ Extra Recorder _____ Extra Copies _____
 Final Shut-In 60 Day Standby _____ Sub Total 0
 Sub Total 1647 Accessibility _____ Total 1647
 MP/DST Disc't _____

Approved By _____ Our Representative Benny Kulligan

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.

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

BRUCE OIL CO., LLC

**THORNBURG #1
SEC. 7- 8S-14W
NE NW SE NE
1600 FNL & 900 FEL
OSBORNE COUNTY, KANSAS
API: 15-141-20485-00-00**

**DRILLING CONTR.: MURFIN RIG #8
SPUD: 07-11-2019 COMP: 07-15-2019
MUD UP: 2200' TYPE MUD: CHEM.
DRILL TIME: 2200' to RTD
RTD: 2820' LTD: 2819'
SAMPLES SAVED: 2300' to RTD
GEOLOGIST: ROBERT J. PETERSEN**

ELEVATION

**KB: 1785'
GL: 1780'
LOG MEASURED
FROM: KB**

SURFACE CASING

8 5/8" SET @210' W/150SX

PRODUCTION CASING

**5 1/2" SET @2820' W/150SX
PORT COLLAR SET @1080'**

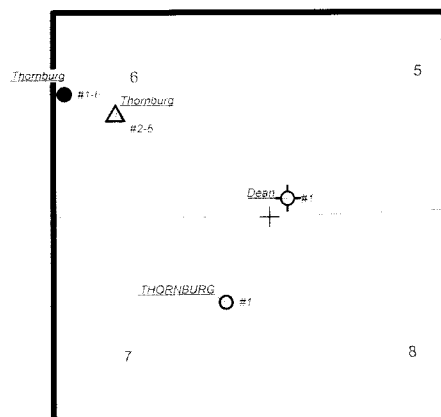
WELL LOG SURVEYS

**ELI LOGGING
DUAL INDUCTION
COMPENSATED DENSITY/NEUTRON**

ELECTRIC LOG TOPS

<u>FORMATION</u>	<u>DEPTH</u>	<u>DATUM</u>	<u>POS A</u>	<u>POS B</u>
ANHYDRITE	1070	+715	-17	-22
BASE ANHY	1103	+682	-13	-23
FORAKER	2261	-476	-28	-21
STOTLER	2533	-748	-33	-21
TARKIO LS	2584	-799	-33	-22
TOPEKA	2738	-953	-34	-19

LOCATION MAP



REFERENCE WELLS

**REF WELL A:
THORNBURG #1
2310' FSL & 1000' FWL
6-8-14W**

**REF WELL B:
DEAN #1
SW SW SW
5-8-14W**

DAILY REPORT @7:00 A.M.

**7-11-19 MIRU
7-12-19 212' WOC
7-13-19 2297' DRILLING
7-14-19 2764' CFS
7-15-19 2820' LAYING DOWN DRILL PIPE**

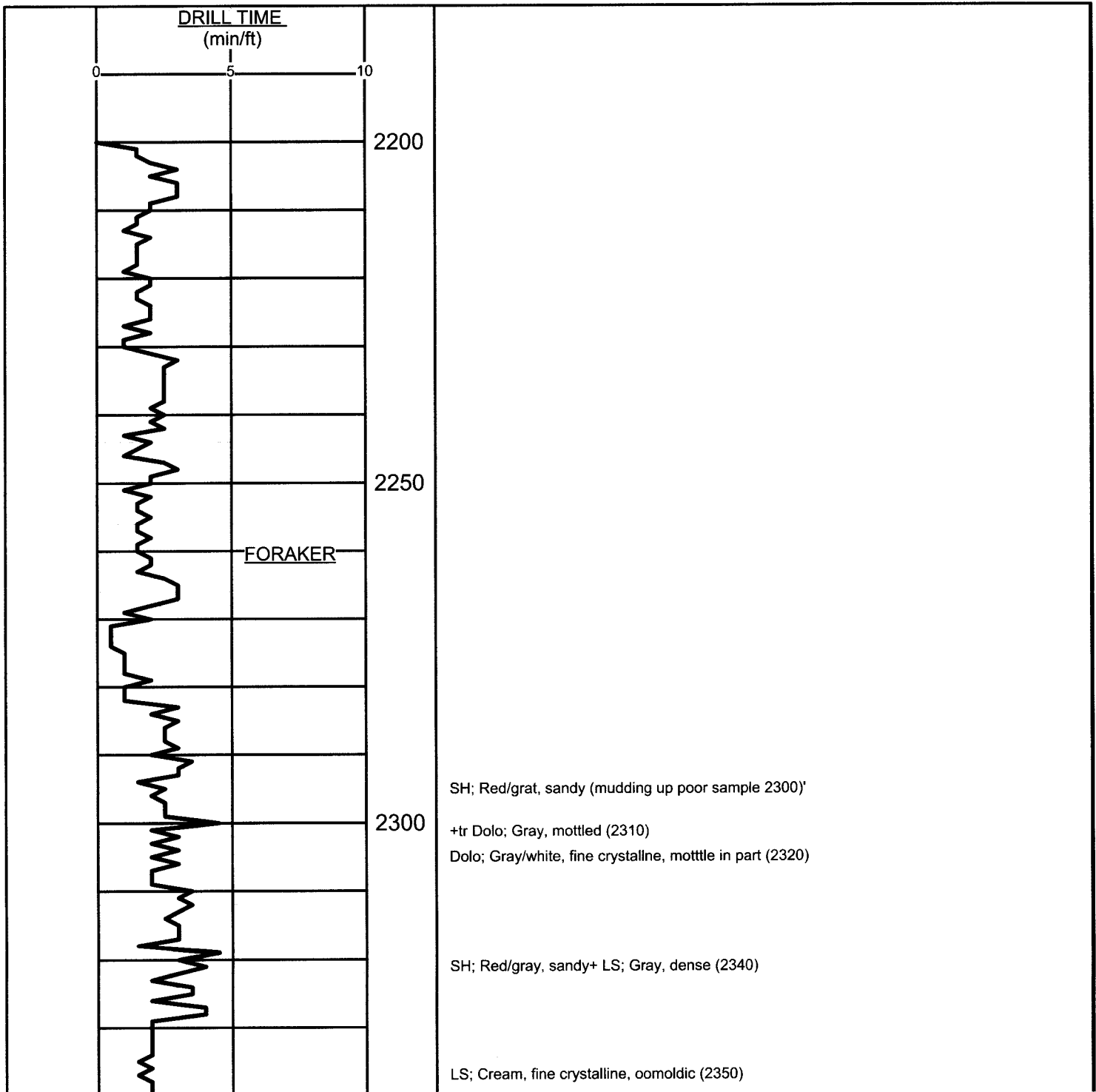
2310' FSL & 1000' FWL
6-8-14W

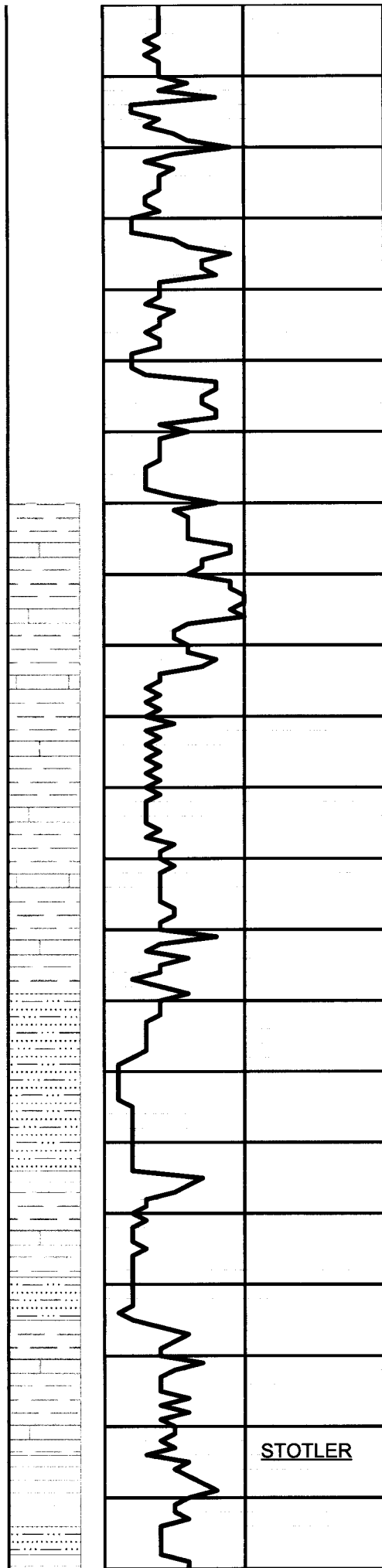
SW SW SW
5-8-14W

7-11-19 MRO
7-12-19 212' WOC
7-13-19 2297' DRILLING
7-14-19 2764' CFS
7-15-19 2820' LAYING DOWN DRILL PIPE

REMARKS

PRODUCTION PIPE WAS SET TO FURTHER TEST
THIS WELL FOR COMMERCIAL PRODUCTION





2350

2400

2450

2500

2550

LS; Cream, fine crystalline, oomoldic (2350)

SH; Red/gray, sandy + LS: Cream, dense, + Dolo; Gray, dense (2360-2370)

SH; Red/gray, sandy + SS; White, fine grained, angular + LS; White, dense, tr dead stain (2380)

LS; Cream/gray, mottled, dense, (2390)

LS; Cream/gray, very fine crystalline, foss, subchalky (2400)

SH; Gray/lt gray + LS; Gray, dense (2410)

LS; Gray, fine crystalline, dolo, chalky (2420)

LS; Gray fine crystalline, foss + SH; Gray (2440)

SH; Red/gray, sandy + LS; Tan, dense, arg + SD; Clear, fine grained, angular, friable (2450)

LS; Cream, fine crystalline, sl foss, dolo, + SH; Red/gray, sandy (2460)

LS; Cream/gray, dense, foss, chalky + SH; Gray/dark gray, sandy (2470)

SH; Gray, sandy, m mic + SD; Gray, fg, mic (2480)

LS; Tan/gray, fine crystalline to dense, foss, sl mottled, chalky (2490)

LS; Gray, fine crystalline, foss, mottled (2500)

SH; Gray, silty-sandy (2500)

LS; Gray, fine crystalline to dense, foss (2510)

SH; Gray, sandy + SD; Gray, fine to med, ang (2510)

SH; Gray, sandy + LS; Gray, dense, arg + SD; Gray, friable, mic (2520)

LS; Cream/gray, dense, arg, foss + SH; Gray, sandy + SH; Black (2530)

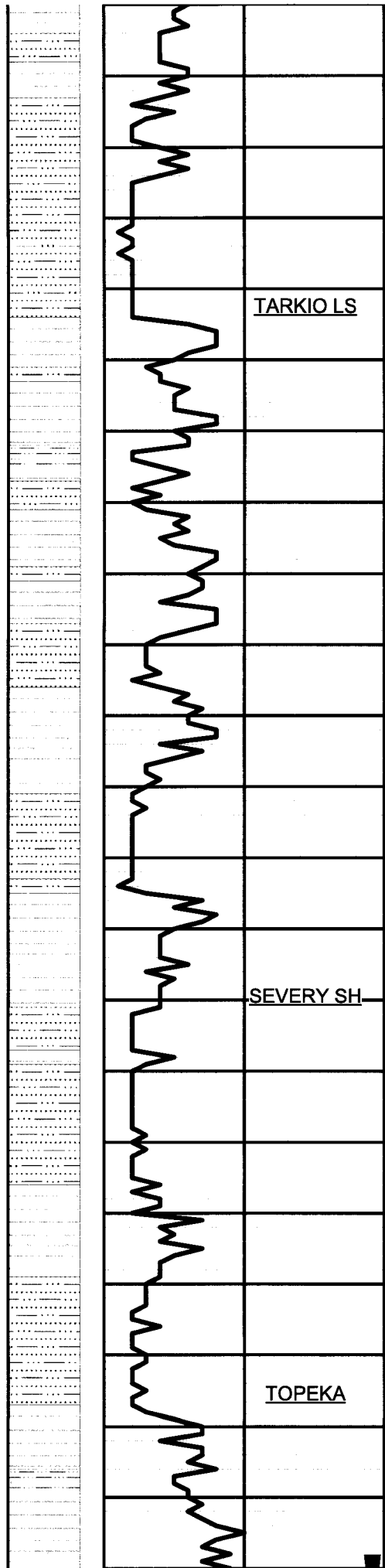
SH; Gray, sandy + SD; Gray, fine grained, friable w/dead oil flakes + LS; Tan, dense, foss, chalky (2540)

LS; Cream/tan, fine crystalline, foss, sl dolo, tr poor moldic por, tr dead stain (2550)

LS; Gray, fine crystalline, sl foss + SH; Gray, sandy (2560)

2323' BIT TRIP
STRAP 1.23 SHORT

STOTLER



2550 LS; Gray, fine crystalline, sl foss + SH; Gray, sandy (2560)

LS; Gray, very fine crystalline to dense, foss + SH; Gray, sandy + Tr SD; Clear, med, glauc (2570)

LS: Cream/white, fine crystalline, sl foss (2580)

LS; Cream/gray mottled, dense, foss, cherty (2590)

SH; Gray, silty-sandy + SD; Gray/dark gray, ang, tr paraffin (2590-2600)

TARKIO LS

LS: Gray, dense, blocky (2600)

2600 LS; Lt gray, fine crystalline, sl mottled, sl dolo, chalky + LS; Med graym dense, foss (2610)

LS; Cream/gray, very fine crystalline to dense, foss, tr edge stain, nsfo, dull fl (2620)

LS; Cream/tan/gray, dense, foss, subchalky, tr ppt moldic por, spot dead stain (2630)

SH; Gray, silty (2640)

LS; Gray/cream/tan, dense, very foss, brec in part, blocky, subchalky (2650)

LS; Tan/gray, very fine crystalline, foss, subchalky, sl glauc (2660)

2650 SH; Gray, sandy + SD; Gray, fine grained, subang, mic, tr paraffin, nso (2670-2680)

LS: Cream/gray, very fine crystalline, foss, tr ppt por, tr dead stain (2680)

LS; Gray, dense, arg (2690)

SEVERY SH

SD; Gray, fine grained + LS; Gray, dense, foss (2700-2710)

2700 SH; Gray/cream, sandy + SD; Gray, angular, mic + LS; Tan/gray, dense, foss (2720)

LS; Cream/tan, very fine crystalline to dense, foss (2730)

LS; Gray, dense (2740)

SD; Gray, fine grained, ang, mic + SH; Gray (2740)

TOPEKA

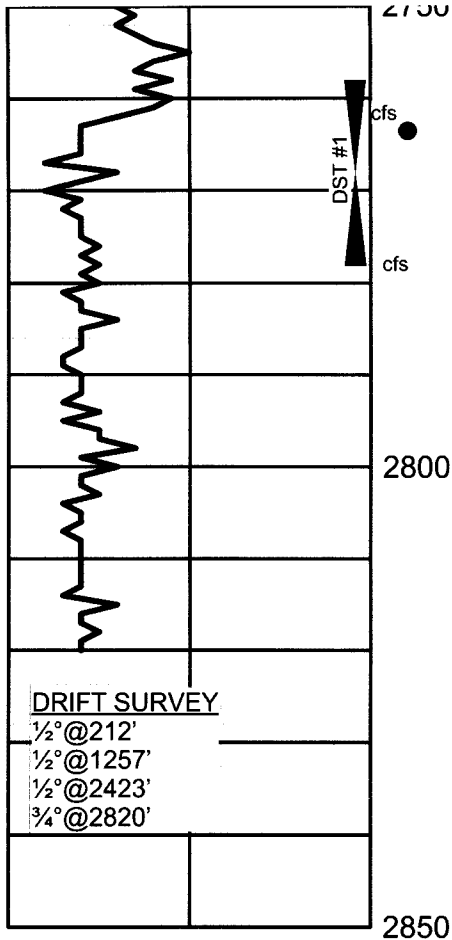
LS; Gray, dense, peletal, mottled, arg (2750)

2750 SH; Gray/dark gray (2760)

LS; Cream/gray, very fine crystalline, chalky, sl glauc, tr chert, spot stain (2760)

LS; Cream, very fine crystalline, foss, sl dolo, tr chert, poor moldic por, vssfo, faint odor, light stain on drv sample (2762/15")

2762' SHORT TRIP 9 STANDS



LS; Cream/gray, very fine crystalline, chalky, sl glauc, tr chert, spot stain (2760)

LS; Cream, very fine crystalline, foss, sl dolo./tr chert, poor moldic por, vssfo, faint odor, light stain on dry sample (2762/15")

SH; Gray, silty (2762/15")

LS; Tan/gray, fine crystalline, sl dol, tan/gray mott chert, tr ppt intercrystalline/ moldic por, sfo, good odor, light to med stain on dry (2772)

LS; Tan/gray, fine crystalline to dense, foss, arg in part, chert (white) lt stain, odor (2778)

LS; Tan/gray, very fine crystalline to dense, foss, chalky, cherty (black/tan mottle, tr stain (2778/15") LS; Gray, dense, arg (2778/30")

SH; Gray, sandy (2778/30-45")

MORGAN MUD CHECK @2778'
 VIS 58/WL 9.0/WL 7.2/LCM 2#
 CHLORIDES: 4.300

LS; Cream/tan, very fine crystalline, sl cherty, tr stain, nsfo (2800)

LS; Gray/cream, very fine crystalline, mottled, sl dolo, tr dead oil flake (2810)

LS; Cream/tan, fine crystalline, foss, tr stain, vssfo (2820)

LS; Cream, very fine crystalline to dense, chalky, mealy, cherty (2820/15")

LS; Cream, fine crystalline to dense, chalky + SH; Gray (2820 /30-45")

DST #1
 2758-2778'
 5-30-10-60 min
 IF: 50"
 ISI: 7" BLOWBACK
 FF: 49"
 FSI: 13" BLOWBACK
 RECOVERED:
 60' GIP
 380' GO (10%G/90%O)
 180' GMCO (10%G/85%O/5%M)
 SIP: 909-908"
 FP: 61-129/147-213#
 HP: 1375-1315#
 BHT: 99F