

1265009



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)</i> <i>(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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OPERATOR

Company: TDI, INC.
 Address: 1310 BISON ROAD
 HAYS, KANSAS 67601

Contact Geologist: TOM DENNING
 Contact Phone Nbr: 785-628-2593
 Well Name: CHARLIE # 1
 Location: W2 NW NE NW SEC. 29-T8S-R19W
 API: 15-163-24,296-00-00
 Pool: INFIELD
 State: KANSAS
 Field: BRAY
 Country: USA



Scale 1:240 Imperial

Well Name: CHARLIE # 1
 Surface Location: W2 NW NE NW SEC. 29-T8S-R19W
 Bottom Location:
 API: 15-163-24,296-00-00
 License Number: 4787
 Spud Date: 7/13/2015 Time: 5:00 PM
 Region: ROOKS COUNTY
 Drilling Completed: 7/19/2015 Time: 2:00 AM
 Surface Coordinates: 330' FNL & 1475' FWL
 Bottom Hole Coordinates:
 Ground Elevation: 2005.00ft
 K.B. Elevation: 2015.00ft
 Logged Interval: 2400.00ft To: 3550.00ft
 Total Depth: 3550.00ft
 Formation: ARBUCKLE
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

SURFACE CO-ORDINATES

Well Type: Vertical
 Longitude: -99.4688852
 Latitude: 39.3351323
 N/S Co-ord: 330' FNL
 E/W Co-ord: 1475' 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: SOUTHWIND DRILLING, INC.
 Rig #: 1
 Rig Type: MUD ROTARY
 Spud Date: 7/13/2015 Time: 5:00 PM
 TD Date: 7/19/2015 Time: 2:00 AM

ELEVATIONS

K.B. Elevation: 2015.00ft
K.B. to Ground: 10.00ft

Ground Elevation: 2005.00ft

NOTES

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON POSITIVE RESULTS OF DST # 3

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

DRILL STEM TESTING BY TRILOBITE TESTING INC: ONE FAILED TEST, TWO (2) CONVENTIONAL TESTS

CHARLIE # 1	LOWRY B-3	DON # 1
W2 NW NE NW	S2 NE NW	E2 SE SW SW
SEC.29-8S-19W	SEC.29-8-19W	SEC.20-8-19W
2005'GL 2015'KB	KB 2012'	KB 2013'

<u>FORMATION</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>
Anhydrite	1458 +557	+ 554	+ 553
B-Anhydrite	1490 +525	+ 520	+ 521
Topeka	2968 - 953	- 952	- 950
Heebner Sh.	3170-1155	-1157	-1153
Toronto	3191-1176	-1178	-1174
LKC	3207-1192	-1194	-1191
BKC	3426-1411	-1412	-1411
Arbuckle	3462-1447	-1447	-1449
RTD	3550-1535	-1483	

SUMMARY OF DAILY ACTIVITY

7-13-15 Spud 4:00 PM, set 8 5/8" surface casing to 229.76' w/150 sxs
Common 2%Gel 3%CC, , slope 1 degree

7-14-15 231', plug down 12:30 AM, WOC, drill plug 8:30AM

7-15-15 1920', drilling

7-16-15 2670', drilling, start 1' drill time and samples @ 2400'

7-17-15 3265', drilling, CFS 3225', short trip, CFS 3285', DST #1 Misrun,
recondition hole, DST # 2 3225'-3285' "C" and "D" LKC

7-18-15 3405', CFS 3466', CFS 3468', DST # 3 3410' to 3468' Arbuckle

7-19-15 3550', RTD 3550' @2:20 AM, CCH, TOWB, logs, TIWB, LDDP, run
production casing and cement, rain overnight



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

TDI
1310 Bison Rd.
Hays, KS 67601
ATTN: Herb Deines

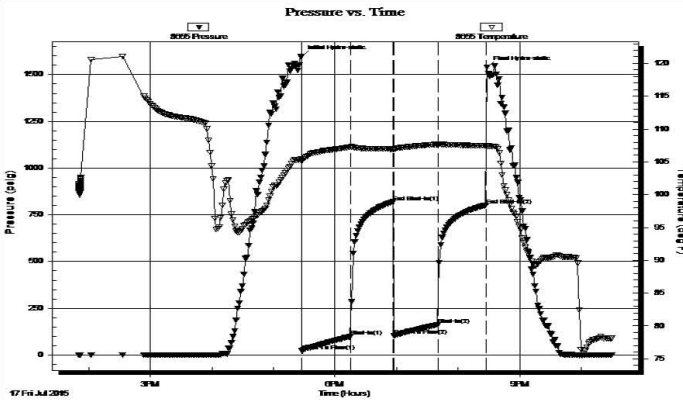
29-8S-19W Rooks, KS
Charlie #1
Job Ticket: 34531 **DST#: 2**
Test Start: 2015.07.17 @ 13:50:13

GENERAL INFORMATION:

Formation: **LKC "C&D"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 17:27:43
Time Test Ended: 22:29:43
Interval: **3225.00 ft (KB) To 3285.00 ft (KB) (TVD)**
Total Depth: 3285.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair
Reference Elevations: 2015.00 ft (KB)
2007.00 ft (CF)
KB to GR/CF: 8.00 ft

Serial #: 8655 Outside
Press@RunDepth: 161.94 psig @ 3249.00 ft (KB)
Start Date: 2015.07.17 End Date: 2015.07.17 Capacity: 8000.00 psig
Start Time: 13:50:14 End Time: 22:29:43 Last Calib.: 2015.07.17
Time On Btm: 2015.07.17 @ 17:27:13
Time Off Btm: 2015.07.17 @ 20:28:13

TEST COMMENT: 45- IF- BOB 23mins
45- IS- No blow
45- FF- BOB 39mins
45- FS- No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1597.75	105.46	Initial Hydro-static
1	21.99	105.11	Open To Flow (1)
48	98.60	107.22	Shut-In(1)
90	819.07	106.95	End Shut-In(1)
91	104.17	106.88	Open To Flow (2)
133	161.94	107.66	Shut-In(2)
180	801.76	107.43	End Shut-In(2)
181	1540.64	107.48	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
315.00	WM, 45%W 55%M	4.47
1.00	∞	0.01

* Recovery from multiple tests

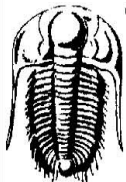
Gas Rates

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

Trilobite Testing, Inc

Ref. No: 34531

Printed: 2015.07.17 @ 23:21:39



TRILOBITE TESTING, INC.

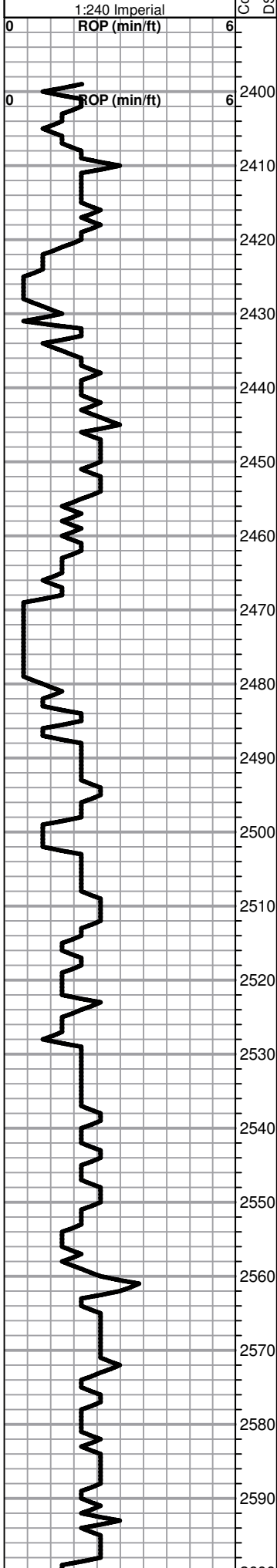
DRILL STEM TEST REPORT

TDI
1310 Bison Rd.
Hays, KS 67601
ATTN: Herb Deines

29-8S-19W Rooks, KS
Charlie #1
Job Ticket: 34532 **DST#: 3**
Test Start: 2015.07.18 @ 13:55:09

GENERAL INFORMATION:

Formation: **Arbuckle**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 15:43:09
Test Type: Conventional Bottom Hole (Reset)
Tester: Brannan Lonsdale



BEGIN 1' DRILL TIME FROM 2400' TO RTD
 BEGIN 10' WET AND DRY SAMPLES FROM 2400' TO RTD

ANHYDRITE TOP 1458+557
ANHYDRITE BASE 1490+525

1:240 Imperial

8 5/8" SURFACE CASING SET TO 229.76' W/ 150 SXS
 COMMON 2%GEL 3%CC

SLOPE 1 DEGREE @ 232'

Lime, white, med-coarse grained granular, slight fossil fragment content, no wet cut, NS

Shale, red wash, soft sticky clumps

Shale, reddish brn, soft sticky clumping with lt red wash

Lime, lt brn, oolitic/oomoldic, honeycomb appearance, NS, no wet cut

Lime, white-lt brn, fnxln with oomoldic/fossil fragment chips, NS

Shale, reddish brn, soft sticky clumping

Lime, white-frm-lt brn, fnxln-oomoldic in part, NS

Lime, lt brn, fnxln-oomoldic in part, NS

Shale, med-dark brn, slightly waxy, med-firm blocky

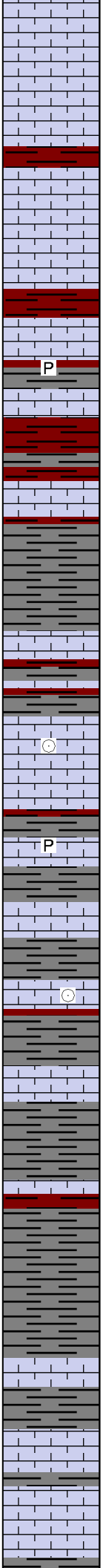
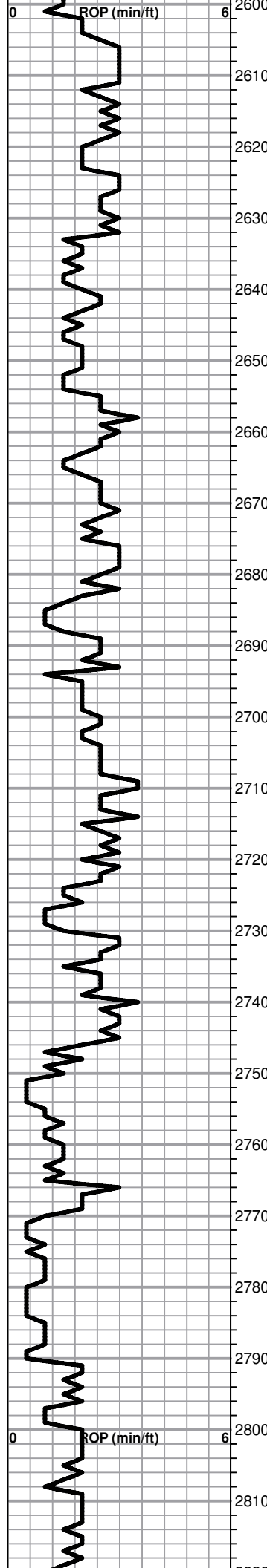
Shale, red-reddish brn-med gray, soft-firm blocky

Lime, offwhite, soft granular, NS

Shale, reddish brn, soft sticky

Lime, frm-lt brn-lt gray, fnxln, lt green shades in part

Lime, frm, fnxln-granular, soft on crush



Lime, white-crm, soft granular with chalk, NS

Lime, crm, fnxln-granular

Lime, crm, fnxln

Lime, lt brn, slightly oomoldic, NS

Shale, gray, pyritic clusters

Lime, white-lt brn, fnxln

Shale, reddish brn, firm blocky

Lime,crm-lt brn, fnxln

Shale, lt-med gray, soft sticky clumps-soft blocky

Lime, lt brn, fnxln

Shale, decreasing reds and browns, increasing grays

Lime, crm, fnxln, thin beds of micro fossils well cemented

Lime, crm-lt brn, fnxln, thin fossil beds near shale boundaries

Lime, offwhite-lt brn-lt gray, fnxln, xln pyrite

Lime, offwhite-lt gray-lt grayish brn, fnxln

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

Few sandstone clusters, fnxln grained, poorly sorted, NS

Lime, lt-med gray, soft

Shale, lt-med gray, soft blocky

Lime, lt brn, fnxln

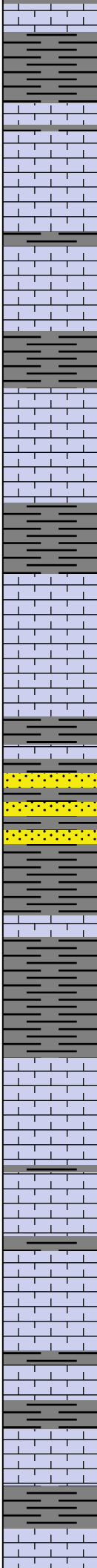
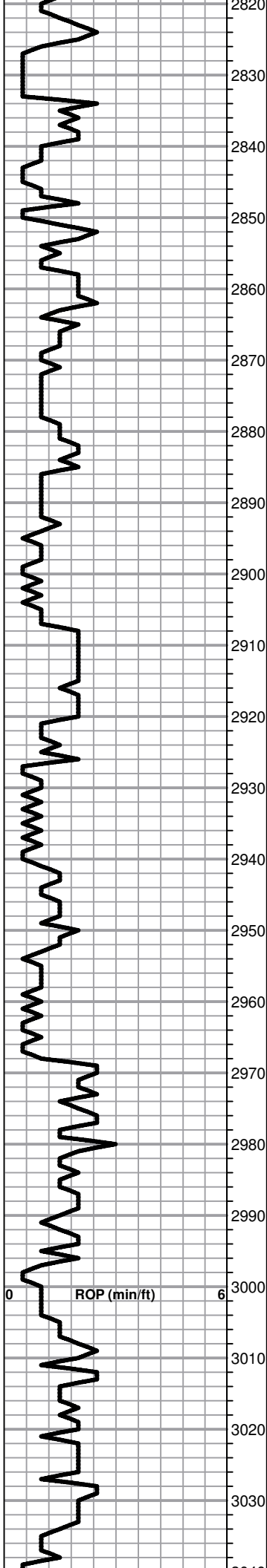
Shale, lt gray, soft blocky

Shale, lt-med gray, soft blocky

Lime, crm-lt grayish brn, fnxln

Lime, lt brn, fnxln, slightly fossiliferous

Lime, lt brn-lt grayish brn, fnxln



Lime, lt brn-lt grayish brn, fnxln

Lime, crm-tan, fnxln-granular, fossil fragments, NS

Lime, crm-tan-med gray near shale boundaries, fnxln-granular, slightly fossiliferous

Lime, lt brn, fnxln

Shale, lt-med gray, soft

Lime, gray on boundary, fnxln, slightly fossiliferous

Lime, lt brn-lt gray, fnxln

Lime, lt brn, fnxln, fossiliferous

Shale, lt-med gray, soft blocky

Lime, lt-med brn-med grayish brn, fnxln-granular, gray mottling near shale boundary

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

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

Shale, med gray, soft sticky clumps
Sandstone, fine grained, poorly sorted, micaceous, NS

Shale, lt gray, soft mud

Shale, lt-med gray, soft mud-soft blocky

TOPEKA ELog 2968-953

Lime, lt brn-lt gray, fnxln

Lime, lt brn, fn-vfxln

Lime, crm-lt brn, fnxln

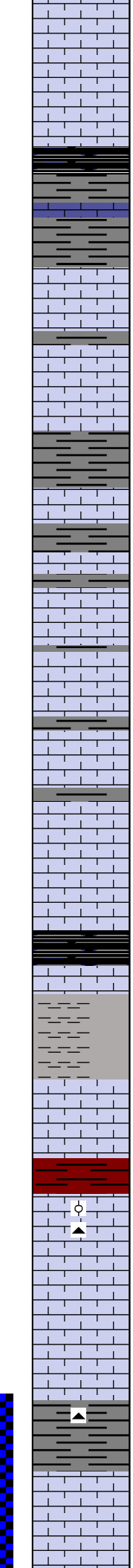
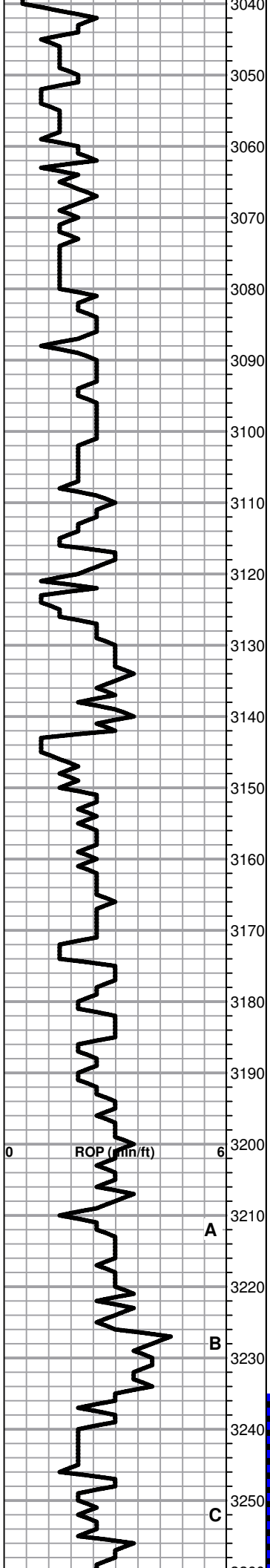
Lime, lt brn-lt grayish brn, fine granular, shaley in part, NS

Lime, lt brn-lt grayish brn, fnxln, soft on crush

Lime, lt brn, fnxln, slightly granular in part

Lime, lt-med brn, fn-vfxln, thin cemented fossil beds

Lime, crm-lt brn, fnxln-granular with sticky chalk clumps



Lime, crm-lt brn, fnxln-granular, some sticky chalk clumps

Shale, black carbonaceous

Lime, med brn, fn-vfxln

Lime, crm-lt gray, fnxln, sub lithographic

Lime, crm-tan, fn-vfxln

Lime, crm-lt brn, fnxln

Shale, red-gray, soft sticky

Lime, lt-med gray, fnxln, gray mottling in part

Shale, gray-black, soft blocky

Lime,lt brn, fnxln-granular in part

Lime, lt brn-lt gray, fn-vfxln

Lime, lt brn, fn-vfxln

● Lime, crm-tan, fine oolitic with fossil fragments, dark stain in interoolitic porosity, scattered to saturated staining,lt odor, NFO

Lime, lt brn, fnxln

Lime, crm-tan, fnxln, slight bedded chalk

HEEBNER SHALE ELog 3170-1155

Shale, black carbonaceous, fissile, blocky

Lime, lt brn, vfxln

Shale, dove gray, soft sticky

TORONTO ELog 3191-1176

Lime, crm-tan, fn-vfxln, NS

Lime, crm-lt brn, fn-vfxln

LKC ELog 3207-1192

○ ▲ Lime, crm-tan, mostly fn-vfxln, thin oolitic zone with scattered pin point vugs, spotty stain, very lt odor, NFO, not well developed

Lime, crm, fn-micro xln

Lime, crm, fn-micro xln, tint of lt gray near shale boundary

▲ Shale, med-dark gray, soft blocky , black chert, fresh, sharp

○ Lime, white-crm, mostly fnxln with slightly oolitic/granular with spotty lt staining, NFO, poorly developed

Shale, red gray, soft blocky

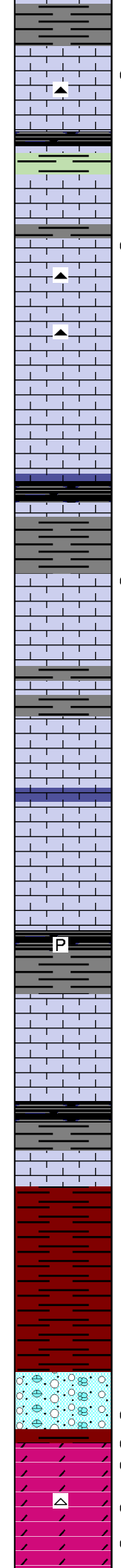
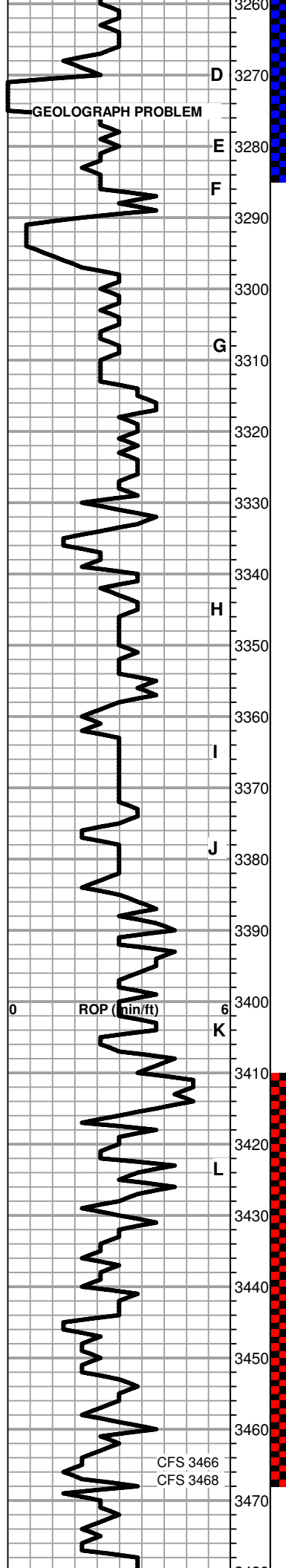
A

B

C

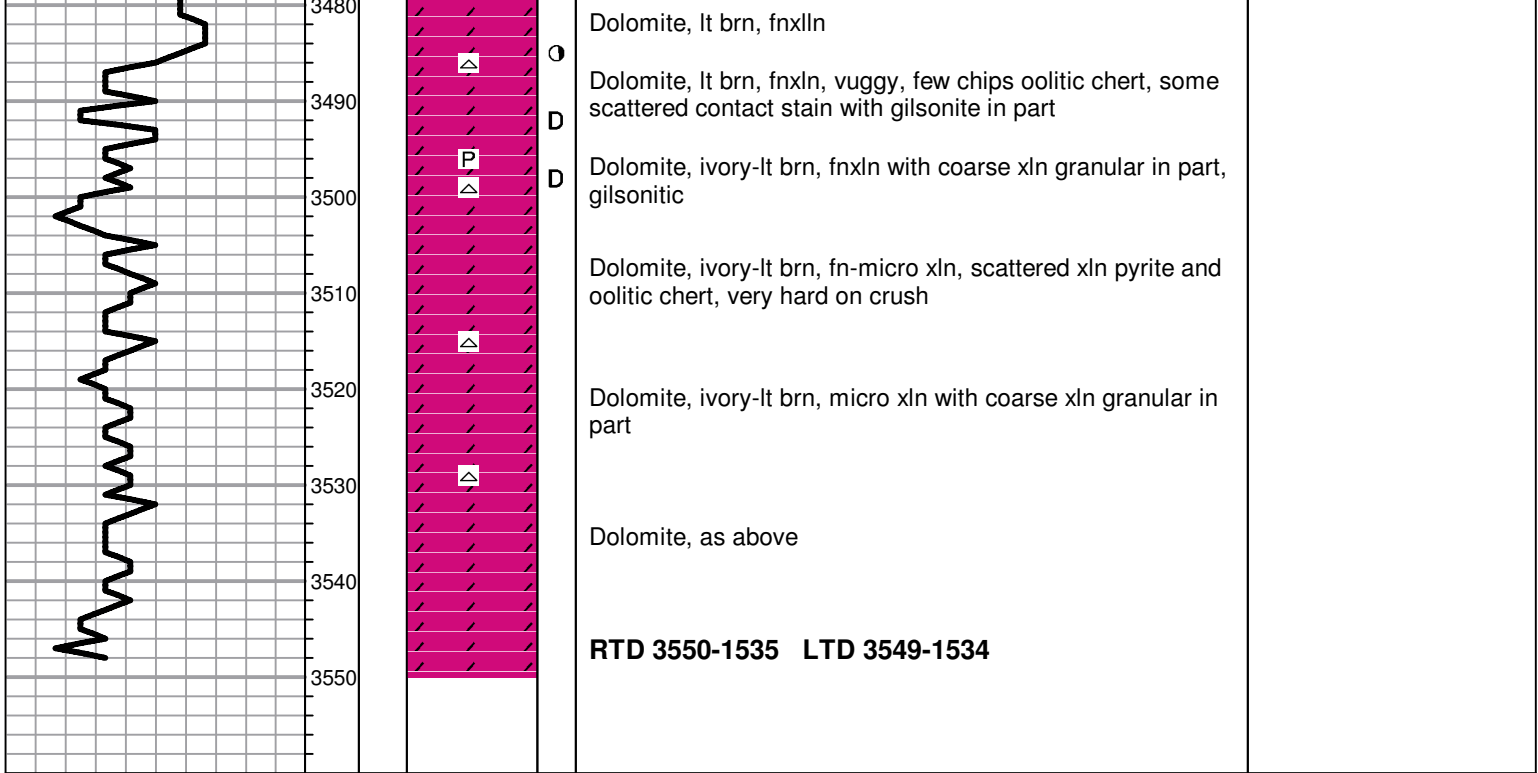
DST # 1 3225' TO 3285' HIT SAND BRIDGE IN CEDAR HILL SAND. PULLED TOOL, RECONDITIONED HOLE AND RAN DST # 2 OVER SAME INTERVAL

DST # 2 3225' TO 3285' SEE HEADER FOR TEST



- Shale, red-gray, soft blocky
- D 3270 ○ Lime, white-cream, mostly fine-grained, thin zone of oolitic/omoldic with scattered light staining, No Odor
- E 3280 Shale, gray-black carbonaceous
Lime, light gray, fine-grained
- F 3290 Lime, cream, fine-to-very-fine-grained
- Lime, cream, oolitic/omoldic, spotty stain, No Odor, No Odor
- 3300 Lime, cream-tan, fine-grained, bedded chalk
Chert, tan-light gray, fresh, sharp
- G 3310 Lime, white-cream, fine-grained-micro crystalline, lithographic
- 3320 Lime, cream, fine-grained-micro crystalline, bedded chalk
- 3330 Lime, cream-medium grayish brown, mottled
Shale, gray-black carbonaceous, slightly fossiliferous
- 3340 Shale, light gray, soft sticky clumps
- Lime, cream-tan, mostly fine-grained, trace of spotty stain in poorly developed fine grained section with inter crystalline porosity
- H 3350 Lime, offwhite-cream, fine-grained-micro crystalline
- 3360 Lime, cream-light brown, fine-grained-micro crystalline
- I 3370 Lime, cream-light brown, fine-to-very-fine-grained
- J 3380 Lime, light brown, fine-grained-micro crystalline, slight bedded chalk
- 3390 Lime, light gray, fine-grained-micro crystalline, pyrite inclusions
Shale, black carbonaceous, pyritic
- 3400 Lime, cream-micro crystalline
- K 3410 Lime, white-cream, fine-grained-micro crystalline
- 3420 Shale, gray-black carbonaceous
- L 3430 Lime, cream-light brown, fine-grained-coarse granular, cemented, NS
BKC ELog 3426-1411
- 3440 Shale, red, soft with red wash, weathered chert residue in part
- 3450 Shale, red, soft-firm grainy with clastic mix of cherts
- Lime, white, fine-grained with mix of clastic material including dolomite, light scattered staining and bleeding chips
ARBUCKLE ELog 3462-1447
- Dolomite, fine-grained, spotty stain, improving with depth to crystalline with vuggy porosity, stain becoming dark indicating low gravity oil, very light odor
- Dolomite, tan-light brown, fine-grained with vuggy development, dark contact staining, very light odor

DST # 3 3410' TO 3468' SEE HEADER FOR TEST SUMMARY



JOB LOG

SWIFT Services, Inc.

DATE 7-19-15 PAGE NO. 1

CUSTOMER TDI WELL NO. #1 LEASE CHARITE JOB TYPE 5 1/2" STAGE LONGSTRING TICKET NO. 28423

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	1500							ON LOCATION
	1615							START 5 1/2" CASING IN WELL
								TD-3549 SET c 3548
								TP-3550 5 1/2" # 14
								ST-44'
								CENTRALIZERS - 1, 3, 4, 6, 8, 10, 12, 48, 63
								CMT BSPTS - 2, 13, 49, 64
								DV TOOL - 1424 TOP JT # 49
	1800							DROP BALL - CIRCULATE ROTATE
	1903	6	12		✓	400		PUMP 500 GAL MUD FLUSH
	1905	6	20		✓	400		PUMP 20 BBLs KCL - FLUSH
	1908	4	36		✓	200		MIX CEMENT - 150 SKS EA-2 e 15.4 PPG
	1920							WASH OUT PUMP - LINES
	1920							RELEASE 1ST STAGE LATCH DOWN PLUG
	1925	6 1/2	0		✓			DISPLACE PLUG
	1940	6	85.5			1500		PLUG DOWN - PSE UP LATCH IN PLUG
	1942					OK		RELEASE PSE - HELD
	1945							DROP DV OPENING PLUG
	1955				✓	1300		OPEN DV TOOL - CIRCULATE
	2000	6	20		✓	250		PUMP 20 BBLs KCL - FLUSH
	2005		7-5					PLUG RH (30 SKS) MH (20 SKS)
	2010	6	83		✓	150		MIX CEMENT - 150 SKS SMD e 11.2 PPG
	2025							WASH OUT PUMP - LINES
	2025							RELEASE DV CLOSING PLUG
	2028	6	0		✓			DISPLACE PLUG
	2035	5	34.7			1500		PLUG DOWN - PSE UP CLOSE D.V. TOOL
	2040					OK		RELEASE PSE - HELD
								CIRCULATED 25 SKS CEMENT TO PRT
								WASH TRUCK
	2130							JOB COMPLETE

THANK YOU
WAYNE, COLE, ROB



DRILL STEM TEST REPORT

Prepared For: **TDI**

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

Charlie #1

29-8s-19w Rooks,KS

Start Date: 2015.07.17 @ 10:21:27

End Date: 2015.07.17 @ 13:35:57

Job Ticket #: 34530 DST #: 1

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

Printed: 2015.07.20 @ 08:37:00

TDI
29-8s-19w Rooks,KS
Charlie #1
DST # 1
LKC "C&D"
2015.07.17



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI
1310 Bison Rd.
Hays, KS 67601
ATTN: Herb Deines

29-8s-19w Rooks,KS
Charlie #1
Job Ticket: 34530 **DST#: 1**
Test Start: 2015.07.17 @ 10:21:27

Tool Information

Drill Pipe:	Length: 3230.00 ft	Diameter: 3.82 inches	Volume: 45.79 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: inches	Volume: - bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	lb
			<u>Total Volume: - bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	25.00 ft			String Weight: Initial	lb
Depth to Top Packer:	3225.00 ft			Final	lb
Depth to Bottom Packer:	ft				
Interval between Packers:	60.00 ft				
Tool Length:	80.00 ft				
Number of Packers:	2	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			3206.00	
Shut In Tool	5.00			3211.00	
Hydraulic tool	5.00			3216.00	
Packer	5.00			3221.00	20.00 Bottom Of Top Packer
Packer	4.00			3225.00	
Stubb	1.00			3226.00	
Perforations	22.00			3248.00	
Change Over Sub	1.00			3249.00	
Recorder	0.00	8651	Inside	3249.00	
Recorder	0.00	8655	Outside	3249.00	
Drill Pipe	32.00			3281.00	
Change Over Sub	1.00			3282.00	
Bullnose	3.00			3285.00	60.00 Bottom Packers & Anchor

Total Tool Length: 80.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI **29-8s-19w Rooks,KS**
 1310 Bison Rd. **Charlie #1**
 Hays, KS 67601 Job Ticket: 34530 **DST#: 1**
 ATTN: Herb Deines Test Start: 2015.07.17 @ 10:21:27

Mud and Cushion Information

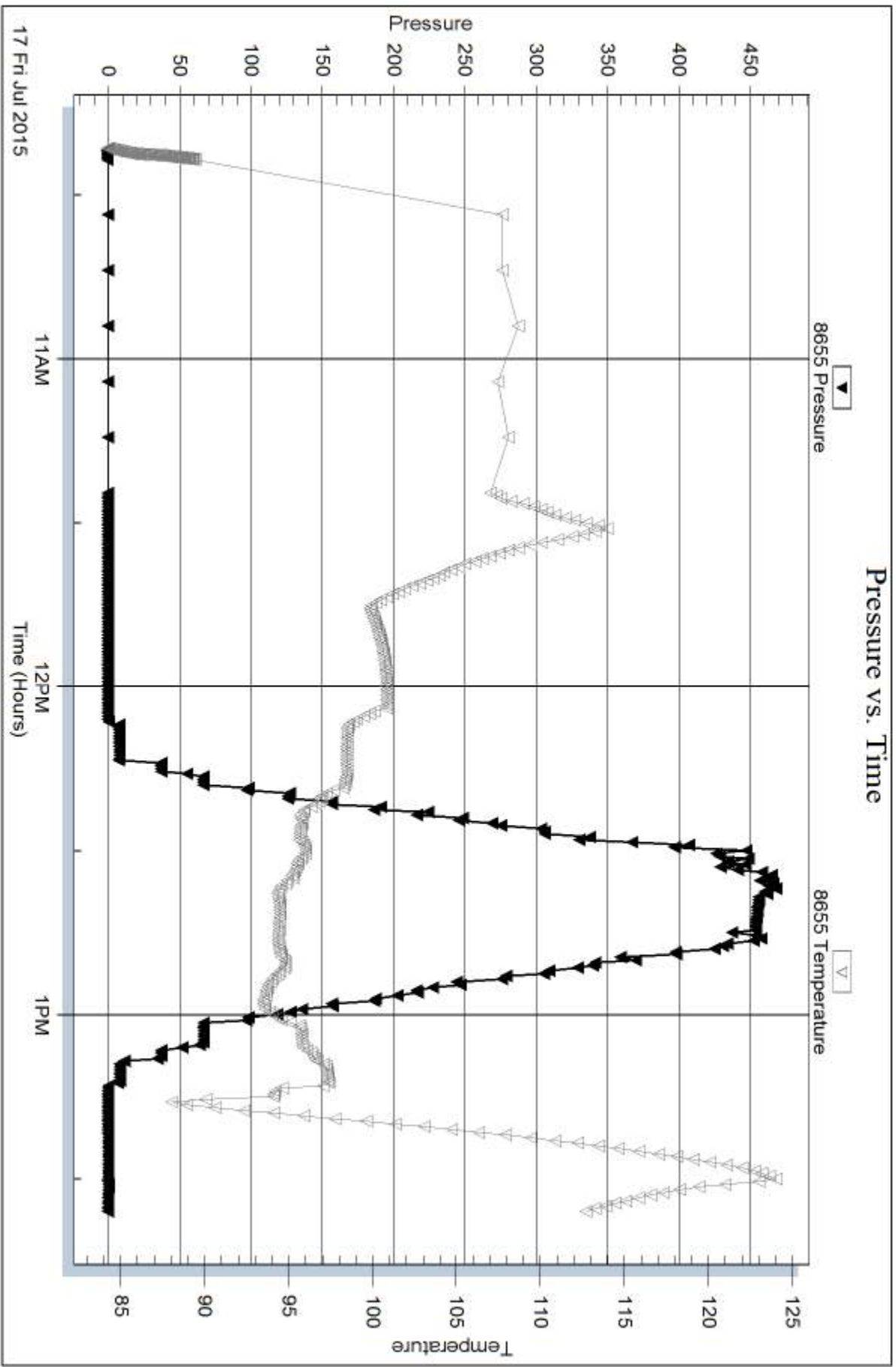
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 52.00 sec/qt	Cushion Volume: bbl		
Water Loss: 8.78 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 3900.00 ppm			
Filter Cake: inches			

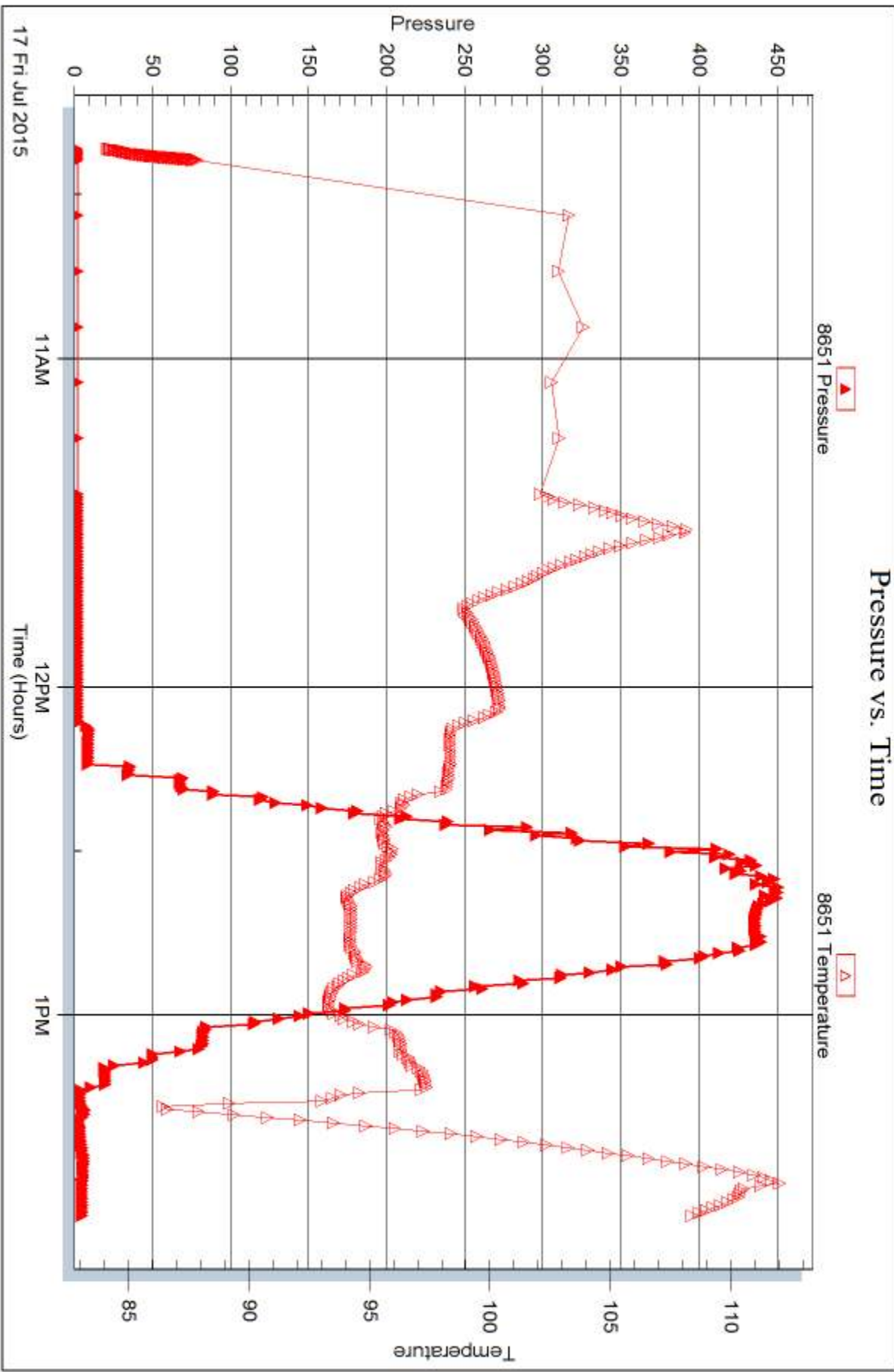
Recovery Information

Recovery Table

Length ft	Description	Volume bbl

Total Length: ft Total Volume: bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **TDI**

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

Charlie #1

29-8s-19w Rooks,KS

Start Date: 2015.07.17 @ 13:50:13

End Date: 2015.07.17 @ 22:29:43

Job Ticket #: 34531 DST #: 2

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

Printed: 2015.07.20 @ 08:36:38

TDI
29-8s-19w Rooks,KS
Charlie #1
DST # 2
LKC "C&D"
2015.07.17



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TDI
1310 Bison Rd.
Hays, KS 67601
ATTN: Herb Deines

29-8s-19w Rooks,KS
Charlie #1
Job Ticket: 34531 **DST#: 2**
Test Start: 2015.07.17 @ 13:50:13

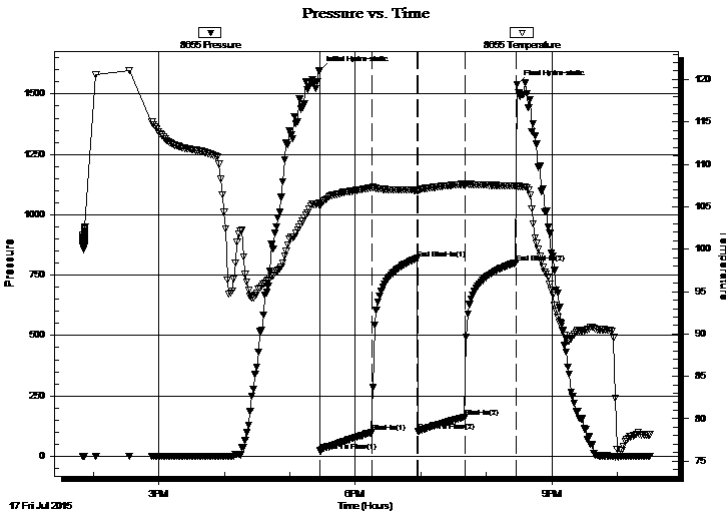
GENERAL INFORMATION:

Formation: **LKC "C&D"**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 17:27:43
 Time Test Ended: 22:29:43
 Interval: **3225.00 ft (KB) To 3285.00 ft (KB) (TVD)**
 Total Depth: 3285.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Brannan Lonsdale
 Unit No: 62
 Reference Elevations: 2015.00 ft (KB)
 2007.00 ft (CF)
 KB to GR/CF: 8.00 ft

Serial #: 8655 Outside
 Press@RunDepth: 161.94 psig @ 3249.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2015.07.17 End Date: 2015.07.17 Last Calib.: 2015.07.17
 Start Time: 13:50:14 End Time: 22:29:43 Time On Btm: 2015.07.17 @ 17:27:13
 Time Off Btm: 2015.07.17 @ 20:28:13

TEST COMMENT: 45- IF- BOB 23 mins
 45- IS- No blow
 45- FF- BOB 39 mins
 45- FS- No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1597.75	105.46	Initial Hydro-static
1	21.99	105.11	Open To Flow (1)
48	98.60	107.22	Shut-In(1)
90	819.07	106.95	End Shut-In(1)
91	104.17	106.88	Open To Flow (2)
133	161.94	107.66	Shut-In(2)
180	801.76	107.43	End Shut-In(2)
181	1540.64	107.48	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
315.00	WM, 45%W 55%M	4.47
1.00	CO	0.01

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI
1310 Bison Rd.
Hays, KS 67601
ATTN: Herb Deines

29-8s-19w Rooks,KS
Charlie #1
Job Ticket: 34531 **DST#: 2**
Test Start: 2015.07.17 @ 13:50:13

Tool Information

Drill Pipe:	Length: 3233.00 ft	Diameter: 3.82 inches	Volume: 45.83 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: inches	Volume: - bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	43000.00 lb
			<u>Total Volume:</u> - bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial	40000.00 lb
Depth to Top Packer:	3225.00 ft			Final	40000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	60.00 ft				
Tool Length:	80.00 ft				
Number of Packers:	2	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			3206.00	
Shut In Tool	5.00			3211.00	
Hydraulic tool	5.00			3216.00	
Packer	5.00			3221.00	20.00 Bottom Of Top Packer
Packer	4.00			3225.00	
Stubb	1.00			3226.00	
Perforations	22.00			3248.00	
Change Over Sub	1.00			3249.00	
Recorder	0.00	8651	Inside	3249.00	
Recorder	0.00	8655	Outside	3249.00	
Drill Pipe	32.00			3281.00	
Change Over Sub	1.00			3282.00	
Bullnose	3.00			3285.00	60.00 Bottom Packers & Anchor

Total Tool Length: 80.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI **29-8s-19w Rooks,KS**
 1310 Bison Rd. **Charlie #1**
 Hays, KS 67601 Job Ticket: 34531 **DST#: 2**
 ATTN: Herb Deines Test Start: 2015.07.17 @ 13:50:13

Mud and Cushion Information

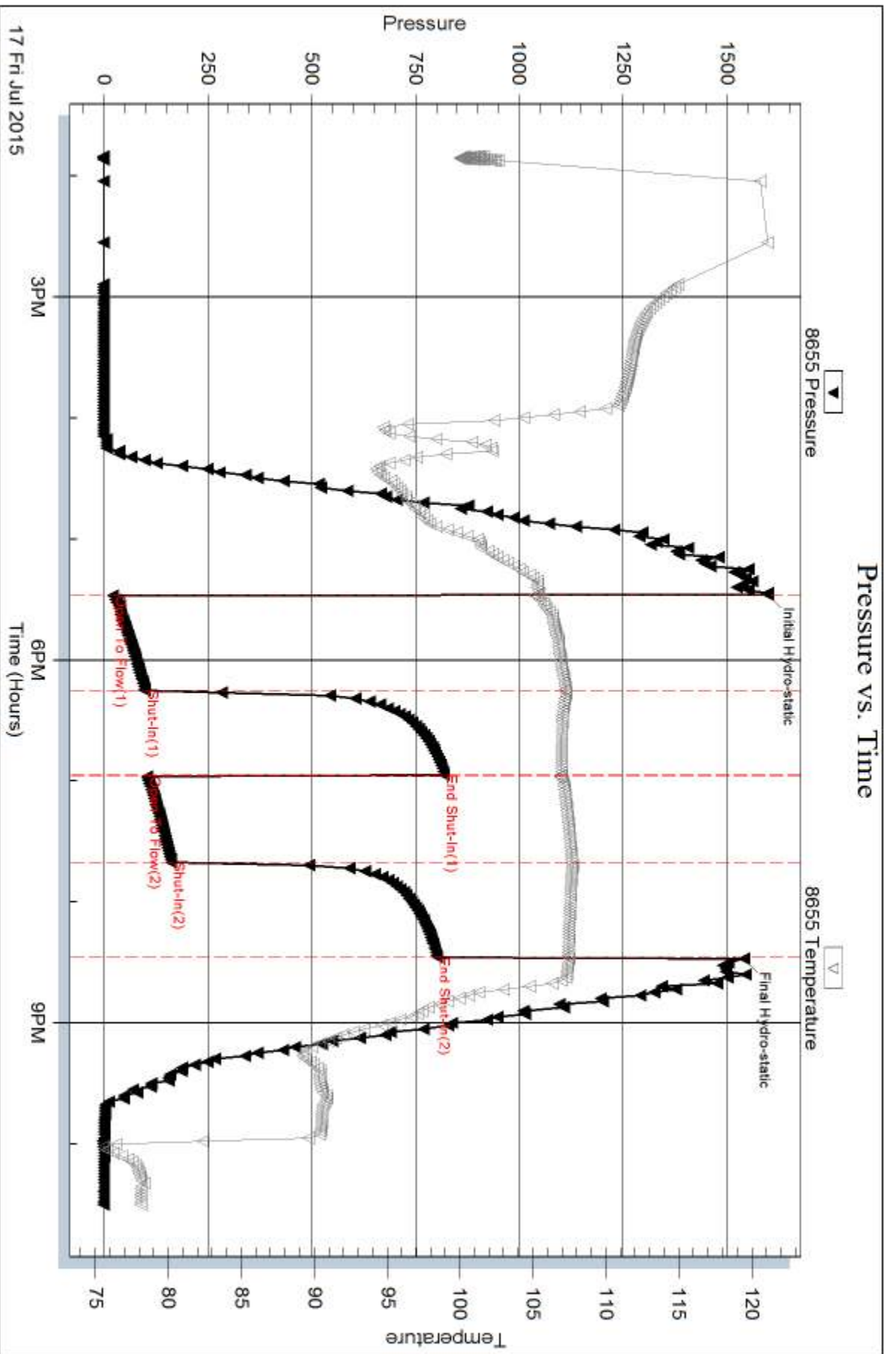
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 115000 ppm	
Viscosity: 52.00 sec/qt	Cushion Volume: bbl		
Water Loss: 8.78 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 3900.00 ppm			
Filter Cake: inches			

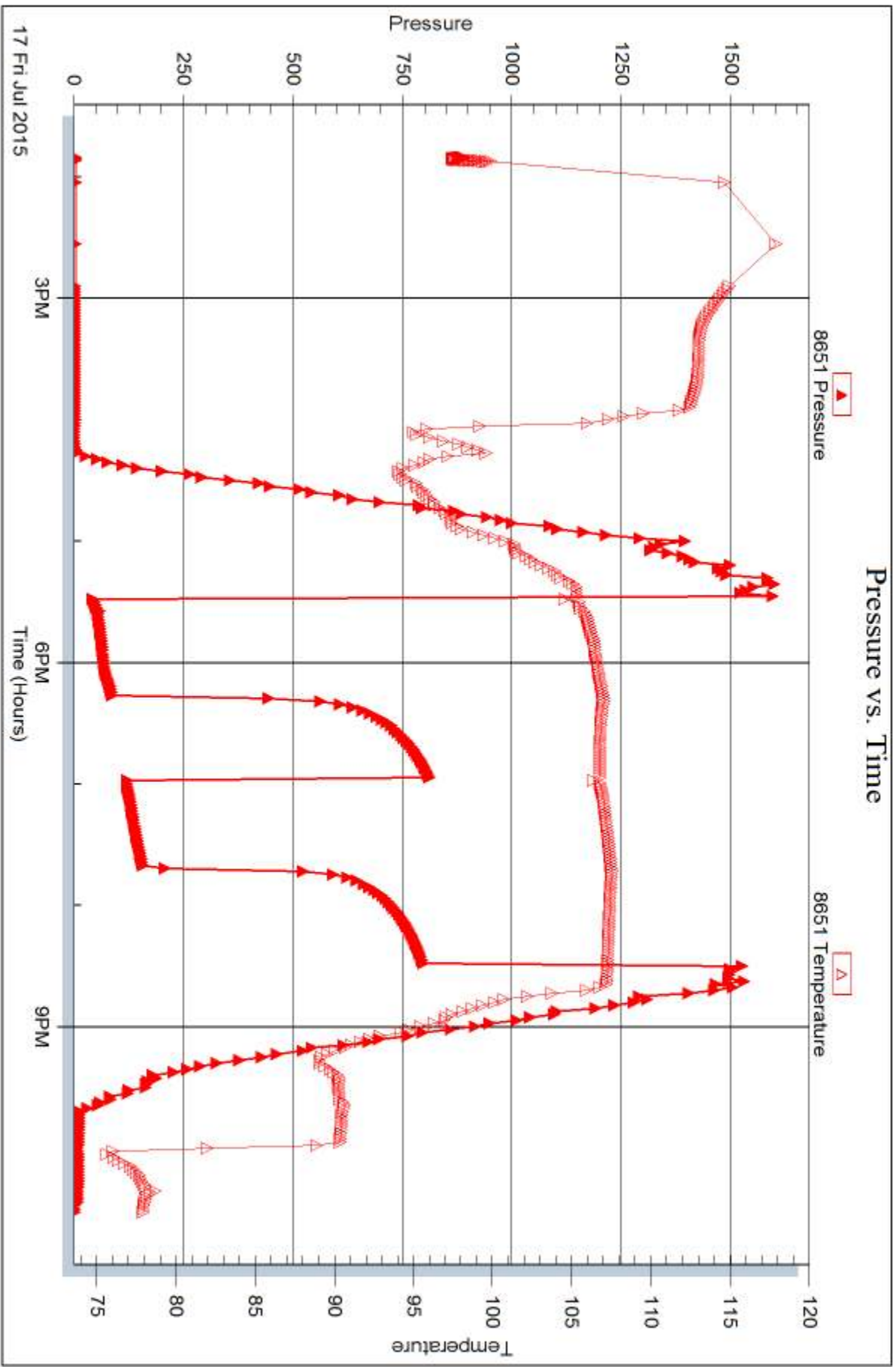
Recovery Information

Recovery Table

Length ft	Description	Volume bbl
315.00	WM, 45%W 55%M	4.465
1.00	CO	0.014

Total Length: 316.00 ft Total Volume: 4.479 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:







DRILL STEM TEST REPORT

Prepared For: **TDI**

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

Charlie #1

29-8s-19w Rooks,KS

Start Date: 2015.07.18 @ 13:55:09

End Date: 2015.07.18 @ 20:56:09

Job Ticket #: 34532 DST #: 3

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

Printed: 2015.07.20 @ 08:36:10

TDI
29-8s-19w Rooks,KS
Charlie #1
DST # 3
Arbuckle
2015.07.18



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

TDI
1310 Bison Rd.
Hays, KS 67601
ATTN: Herb Deines

29-8s-19w Rooks,KS

Charlie #1

Job Ticket: 34532

DST#: 3

Test Start: 2015.07.18 @ 13:55:09

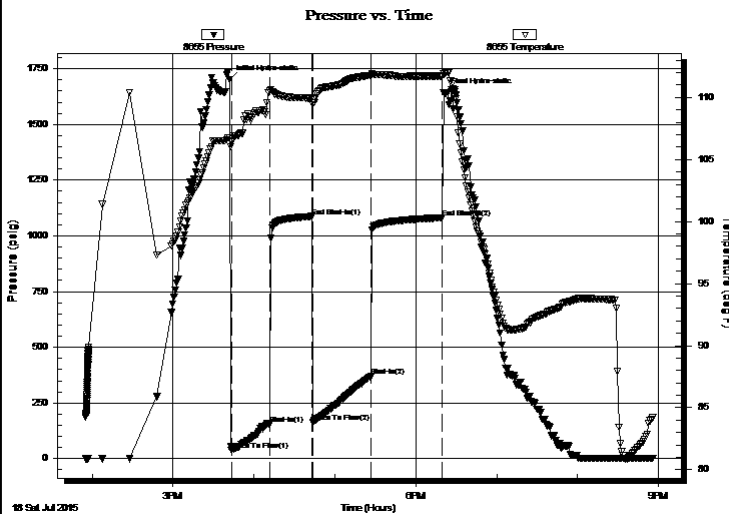
GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 15:43:09
 Time Test Ended: 20:56:09
 Interval: **3410.00 ft (KB) To 3468.00 ft (KB) (TVD)**
 Total Depth: 3468.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Brannan Lonsdale
 Unit No: 62
 Reference Elevations: 2015.00 ft (KB)
 2007.00 ft (CF)
 KB to GR/CF: 8.00 ft

Serial #: 8655 Outside

Press@RunDepth: 368.66 psig @ 3432.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2015.07.18 End Date: 2015.07.18 Last Calib.: 2015.07.18
 Start Time: 13:55:10 End Time: 20:56:09 Time On Btm: 2015.07.18 @ 15:41:39
 Time Off Btm: 2015.07.18 @ 18:21:09

TEST COMMENT: 30- IF- BOB 13 mins
 30- IS- No blow
 45- FF- BOB 8 mins
 45- FS- No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1703.00	106.74	Initial Hydro-static
2	38.70	106.40	Open To Flow (1)
30	157.08	110.55	Shut-In(1)
61	1087.05	109.91	End Shut-In(1)
62	163.07	109.44	Open To Flow (2)
105	368.66	111.75	Shut-In(2)
158	1081.20	111.71	End Shut-In(2)
160	1642.98	111.94	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
565.00	WMCO, 30%W 25%M 45%O	8.01
220.00	HOCM, 45%O 55%M	3.12

* Recovery from multiple tests

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI
1310 Bison Rd.
Hays, KS 67601
ATTN: Herb Deines

29-8s-19w Rooks, KS
Charlie #1
Job Ticket: 34532 **DST#: 3**
Test Start: 2015.07.18 @ 13:55:09

Tool Information

Drill Pipe:	Length: 3421.00 ft	Diameter: 3.82 inches	Volume: 48.49 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: inches	Volume: - bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose:	68000.00 lb
			<u>Total Volume:</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	31.00 ft			String Weight: Initial	40000.00 lb
Depth to Top Packer:	3410.00 ft			Final	43000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	58.00 ft				
Tool Length:	78.00 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			3391.00	
Shut In Tool	5.00			3396.00	
Hydraulic tool	5.00			3401.00	
Packer	5.00			3406.00	20.00 Bottom Of Top Packer
Packer	4.00			3410.00	
Stubb	1.00			3411.00	
Perforations	20.00			3431.00	
Change Over Sub	1.00			3432.00	
Recorder	0.00	8651	Inside	3432.00	
Recorder	0.00	8655	Outside	3432.00	
Drill Pipe	32.00			3464.00	
Change Over Sub	1.00			3465.00	
Bullnose	3.00			3468.00	58.00 Bottom Packers & Anchor

Total Tool Length: 78.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI **29-8s-19w Rooks,KS**
 1310 Bison Rd. **Charlie #1**
 Hays, KS 67601 Job Ticket: 34532 **DST#: 3**
 ATTN: Herb Deines Test Start: 2015.07.18 @ 13:55:09

Mud and Cushion Information

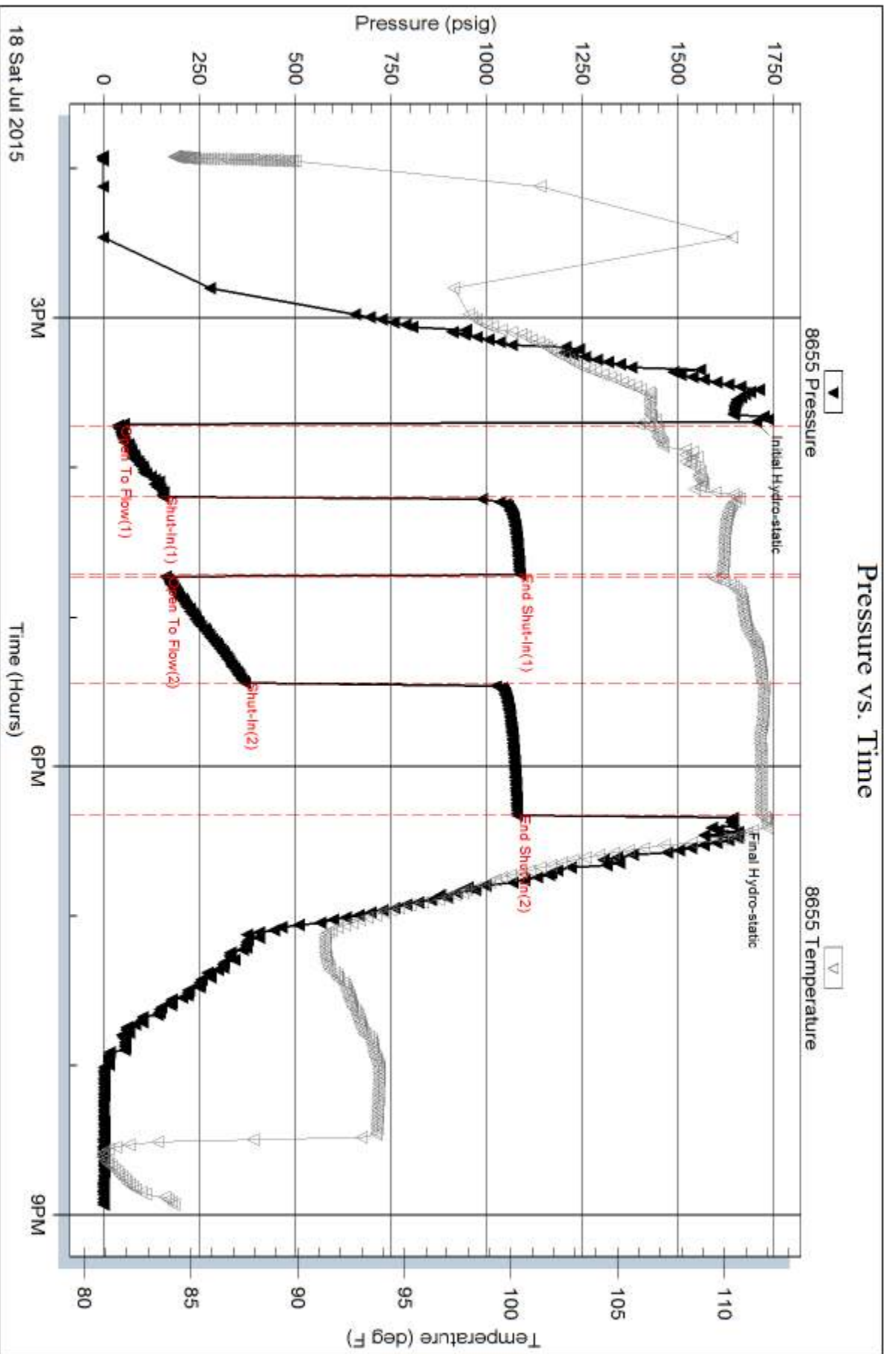
Mud Type: Gel Chem	Cushion Type:	Oil API: 26 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 45.00 sec/qt	Cushion Volume: bbl	
Water Loss: 8.19 in ³	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 4100.00 ppm		
Filter Cake: inches		

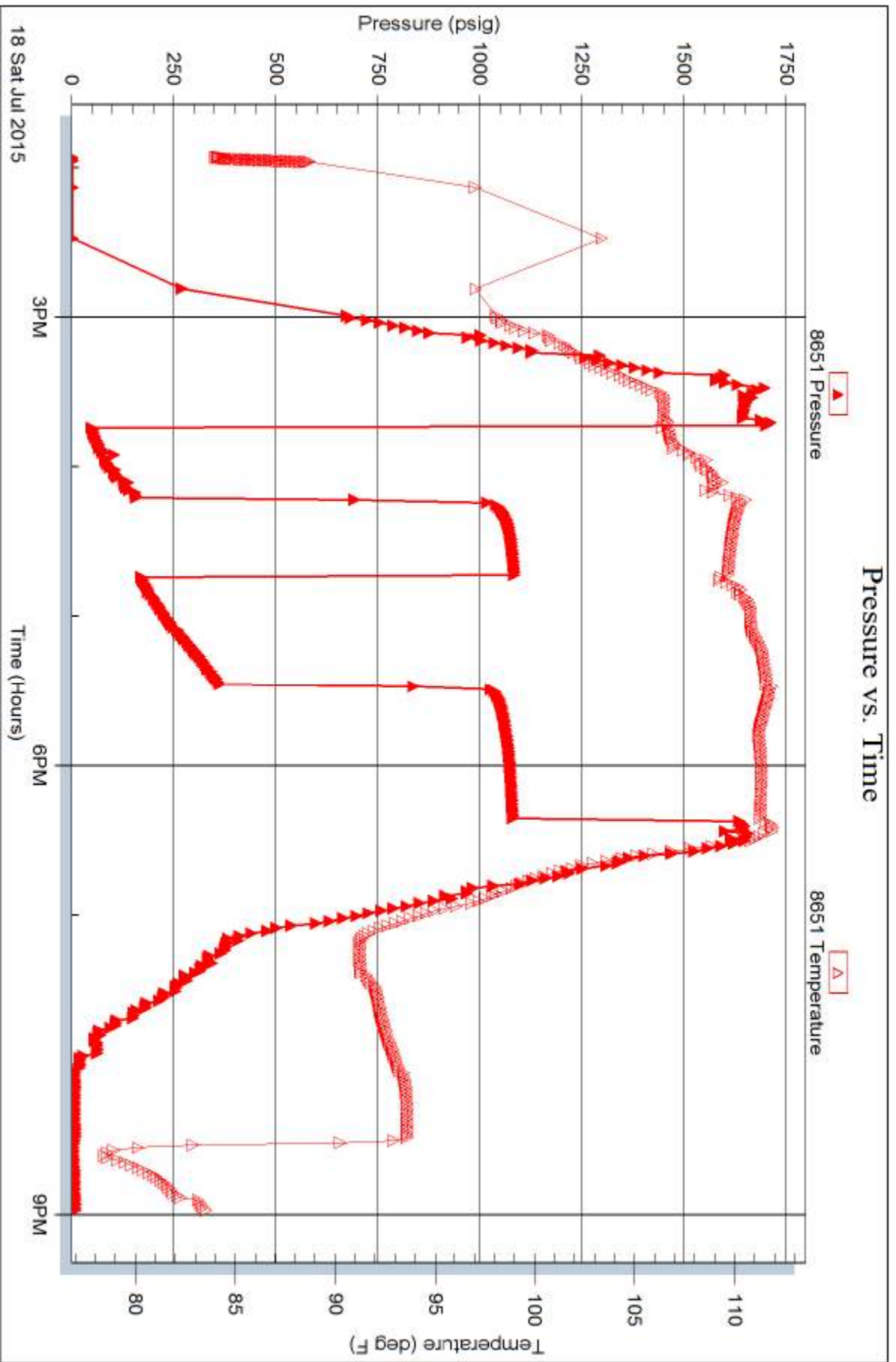
Recovery Information

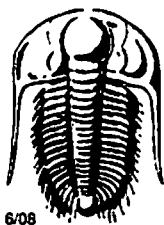
Recovery Table

Length ft	Description	Volume bbl
565.00	WMCO, 30%W 25%M 45%O	8.009
220.00	HOCM, 45%O 55%M	3.119

Total Length: 785.00 ft Total Volume: 11.128 bbl
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
 Laboratory Name: Laboratory Location:
 Recovery Comments:







TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

Test Ticket

Well Name & No. Charlie #1 Test No. 1 Date 7/17/15
 Company TDI Zone Tested LKC "CVD"
 Address 1310 Bison Rd. Hays, KS 67601 Elevation 2015 KB 2007 GL
 Co. Rep / Geo. Herb Dames Rig Southwind #1
 Location: Sec. 29 Twp. 9S Rge. 19 W Co. Rooks State KS
 Comment: _____

Interval Tested 3225-3285 Drill Pipe Size 4 1/2"
 Anchor Length 60' Wt. Pipe Run _____
 Top Packer Depth 3220 Drill Collar Run _____
 Bottom Packer Depth 3225 Ft. Run 3233
 Total Depth 3285 Recorder #(s) 8651, 8655
 Blow Description Mis run - stuck out on bridge approximately 1000'

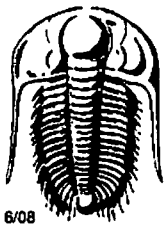
Recovery - Total Feet	GIP	Ft. in DC	Ft. in DP			
Rec. _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____	
Rec. _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____	
Rec. _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____	
Rec. _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____	
Rec. _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____	
BHT _____	*F Gravity _____	*API D @ _____	*F Corrected Gravity _____	*API _____		
RW _____	@ _____	*F Chlorides _____	ppm Recovery _____	Chlorides <u>3900</u>	ppm System	

IF _____	<input checked="" type="checkbox"/> Test <u>850</u>	<input type="checkbox"/> Sampler _____	<input type="checkbox"/> Day Standby _____
ISI _____	<input type="checkbox"/> Jars _____	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Accessibility _____
FF _____	<input type="checkbox"/> Safety Joint _____	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Shale Packer _____
FSI _____	<input type="checkbox"/> Circ Sub _____	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Ruined Packer _____
T-on Loc <u>1010</u>	<input type="checkbox"/> Hourly Standby _____	<input type="checkbox"/> Extra Recorder _____	<input type="checkbox"/> Extra Copies _____
T-started <u>1021</u>	<input checked="" type="checkbox"/> Mileage <u>86 RT</u>	<input type="checkbox"/> Other _____	
T-open _____			
T-pulled _____	Sub Total <u>936</u>	Sub Total <u>0</u>	Sub Total <u>0</u>
T-out <u>1337</u>			Total <u>936</u>

Trilobite Testing, Inc. shall not be liable for damage 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.

Approved By _____

Our Representative Brennan Lonsdale



TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

Test Ticket

Well Name & No. Charlie #1 Test No. 2 Date 7/17/15
 Company TDI Zone Tested LKC "C+D"
 Address 1310 Bron RD, Hays, KS 67601 Elevation 2015 KB 2007 GL
 Co. Rep / Geo. Herb Dames Rig Southwind #1
 Location: Sec. 29 Twp. 8 S Rge. 19 W Co. Reeks State KS
 Comment: _____

Interval Tested 3225 - 3285 Drill Pipe Size 4 1/2"
 Anchor Length 60' Wt. Pipe Run _____
 Top Packer Depth 3220 Drill Collar Run _____
 Bottom Packer Depth 3225 Ft. Run 3233
 Total Depth 3285 Recorder #(s) 8651, 8655
 Blow Description IF - BOB 23 mins
ISI - No blow
EF - BOB 39 mins
FSI - No blow

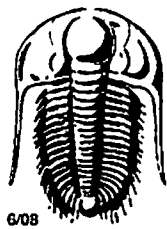
Recovery - Total Feet	GIP	Ft. in DC	Ft. in DP
<u>316</u>	_____	_____	<u>816</u>
Rec. <u>315</u>	Feet of <u>WM</u>	%gas _____ %oil _____	<u>45</u> %water <u>55</u> %mud
Rec. <u>1</u>	Feet of <u>CO</u>	%gas _____ %oil _____	%water _____ %mud _____
Rec. _____	Feet of _____	%gas _____ %oil _____	%water _____ %mud _____
Rec. _____	Feet of _____	%gas _____ %oil _____	%water _____ %mud _____
Rec. _____	Feet of _____	%gas _____ %oil _____	%water _____ %mud _____

BHT 107 °F Gravity _____ °API D @ _____ °F Corrected Gravity _____ °API
 RW 4.77 @ 77 °F Chlorides 115000 ppm Recovery _____ Chlorides 3900 ppm System

IF <u>45</u>	Test <u>1050</u>	<input type="checkbox"/> Sampler _____	<input type="checkbox"/> Day Standby _____
ISI <u>45</u>	<input type="checkbox"/> Jars _____	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Accessibility _____
FF <u>45</u>	<input type="checkbox"/> Safety Joint _____	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Shale Packer _____
FSI <u>45</u>	<input type="checkbox"/> Circ Sub _____	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Ruined Packer _____
T-on Loc <u>1337</u>	<input type="checkbox"/> Hourly Standby _____	<input type="checkbox"/> Extra Recorder _____	<input type="checkbox"/> Extra Copies _____
T-started <u>1350</u>	<input checked="" type="checkbox"/> Mileage _____	<input type="checkbox"/> Other _____	
T-open <u>1828</u>	Sub Total <u>1050</u>	Sub Total <u>0</u>	Sub Total <u>0</u>
T-pulled <u>2028</u>			Total <u>1050</u>
T-out <u>2231</u>			

Trilobite Testing, Inc. shall not be liable for damage 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.

Approved By _____ Our Representative Branner Lonsdale



TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

Test Ticket

Well Name & No. Charlie #1 Test No. 3 Date 2/18/15
 Company TDF Zone Tested Arbuckle
 Address 1310 Bron Rd. Hays, KS 67601 Elevation 2015 KB 2057 GL
 Co. Rep / Geo. Herb Deines Rig Southwind #1
 Location: Sec. 29 Twp. 8 S Rge. 19 W Co. _____ Rocks State KS
 Comment: _____

Interval Tested 3410 - 3468 Drill Pipe Size 4 1/2"
 Anchor Length 58' Wt. Pipe Run _____
 Top Packer Depth 3405 Drill Collar Run _____
 Bottom Packer Depth 3410 Ft. Run 3421
 Total Depth 3468 Recorder #(s) 8651, 8655

Blow Description IF - BOB 13mins
FSI - No blow
PF - BOB 8mins
FSI - No blow

Recovery - Total Feet	GIP	Ft. in DC	Ft. in DP
<u>365</u>	<u>WMIKO</u>	<u>45%oil</u>	<u>30%water</u>
<u>220</u>	<u>HOCM</u>	<u>45%oil</u>	<u>55% mud</u>
_____	_____	%gas _____ %oil _____	%water _____ %mud _____
_____	_____	%gas _____ %oil _____	%water _____ %mud _____
_____	_____	%gas _____ %oil _____	%water _____ %mud _____

BHT 112 °F Gravity 28 °API D @ 80 °F Corrected Gravity 26 °API
 RW _____ @ _____ °F Chlorides _____ ppm Recovery _____ Chlorides 4,100 ppm System

IF <u>30</u>	<input checked="" type="checkbox"/> Test <u>1050</u>	<input type="checkbox"/> Sampler _____	<input type="checkbox"/> Day Standby _____
ISI <u>50</u>	<input type="checkbox"/> Jars _____	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Accessibility _____
FF <u>45</u>	<input type="checkbox"/> Safety Joint _____	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Shale Packer _____
FSI <u>45</u>	<input type="checkbox"/> Circ Sub _____	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Ruined Packer _____
T-on Loc <u>1350</u>	<input type="checkbox"/> Hourly Standby _____	<input type="checkbox"/> Extra Recorder _____	<input type="checkbox"/> Extra Copies _____
T-started <u>1355</u>	<input checked="" type="checkbox"/> Mileage <u>86 RT</u>	<input type="checkbox"/> Other _____	
T-open <u>1543</u>	Sub Total <u>1136</u>	Sub Total <u>0</u>	Sub Total <u>0</u>
T-pulled <u>1813</u>			Total <u>1136</u>
T-out <u>2057</u>			

TriLOBITE Testing, Inc. shall not be liable for damage 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.

Approved By _____ Our Representative Brannan Lonsdale