



1372154

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 <i>(Attach Additional Sheets)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Log	Formation (Top), Depth and Datum	<input type="checkbox"/> Sample
Samples Sent to Geological Survey	<input type="checkbox"/> Yes <input type="checkbox"/> No	Name	Top	Datum
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:				

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				

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

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>			PRODUCTION INTERVAL: Top _____ Bottom _____	

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 67601-9696

Contact Geologist: TOM DENNING  
 Contact Phone Nbr: 785-628-2593  
 Well Name: WILLIE # 2  
 Location: S2 NW NE SE SEC.9-T15S-R19W  
 API: 15-051-26,877-00-00  
 Pool: IN FIELD  
 State: KANSAS

Field: VIRGINIA  
 Country: USA



Scale 1:240 Imperial

Well Name: WILLIE # 2  
 Surface Location: S2 NW NE SE SEC.9-T15S-R19W  
 Bottom Location:  
 API: 15-051-26,877-00-00  
 License Number: 4787  
 Spud Date: 6/30/2017 Time: 4:30 PM  
 Region: ELLIS COUNTY  
 Drilling Completed: 7/7/2017 Time: 2:57 AM  
 Surface Coordinates: 2260' FSL & 990' FEL  
 Bottom Hole Coordinates:  
 Ground Elevation: 2028.00ft  
 K.B. Elevation: 2038.00ft  
 Logged Interval: 2700.00ft To: 3750.00ft  
 Total Depth: 3750.00ft  
 Formation: LANSING-KANSAS CITY  
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude: -99.4334539  
 Latitude: 38.7610241  
 N/S Co-ord: 2260' FSL  
 E/W Co-ord: 990' FEL

**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: 6/30/2017 Time: 4:30 PM  
 TD Date: 7/7/2017 Time: 2:57 AM

**ELEVATIONS**

K.B. Elevation: 2038.00ft  
K.B. to Ground: 10.00ft

Ground Elevation: 2028.00ft

**NOTES**

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON POSITIVE RESULTS TO LAST TWO DRILL STEM TESTS AND LOG ANALYSIS.

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

DRILL STEM TESTING BY TRILOBITE TESTING INC: THREE (3) CONVENTIONAL TESTS

	<b>WILLIE # 2</b>	<b>WILLIE # 1</b>	<b>REICHERT # 1</b>
	<b>S2 NW NE SE</b>	<b>NW SE SE SE</b>	<b>N2 S2 SE NE</b>
	<b>SEC.9-15S-19W</b>	<b>SEC.9-15-19W</b>	<b>SEC.9-15-19W</b>
	<b>2038'KB</b>	<b>KB 2043'</b>	<b>KB 2044'</b>
<u>FORMATION</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>
<b>Anhydrite</b>	<b>1259 +779</b>	<b>+ 785</b>	<b>+ 775</b>
<b>B-Anhydrite</b>	<b>1297 +741</b>	<b>+ 749</b>	<b>+ 738</b>
<b>Topeka</b>	<b>3014 - 976</b>	<b>- 969</b>	<b>- 978</b>
<b>Heebner Sh.</b>	<b>3290-1252</b>	<b>-1246</b>	<b>-1257</b>
<b>Toronto</b>	<b>3314-1276</b>	<b>-1268</b>	<b>-1284</b>
<b>LKC</b>	<b>3338-1300</b>	<b>-1293</b>	<b>-1306</b>
<b>BKC</b>	<b>3578-1540</b>	<b>-1540</b>	<b>-1548</b>
<b>Arbuckle</b>	<b>3670-1632</b>	<b>-1620</b>	<b>-1639</b>
<b>RTD</b>	<b>3750-1712</b>	<b>-1707</b>	<b>-1710</b>

**SUMMARY OF DAILY ACTIVITY**

**6-30-17** Spud 4:30 PM, set 8 5/8" surface casing to 215' w/ 150 sxs 60/40 POS 2%gel 3%CC, WOC 8 hrs, slope 1 degree.

**7-01-17** 215', drill plug at 7:30AM

**7-02-17** 1675', drilling

**7-03-17** 2583', drilling, displaced 2658' to 2689'

**7-04-17** 3196', drilling, CFS 3330', short trip 25 stands, CFS 3375', CFS 3400', DST # 1 3352' to 3400' "C" and "D", survey 3/4 degree @ 3400'

**7-05-17** 3400', finish DST # 1, TIWB, drilling, CFS 3530', DST # 2 3462' to 3530' "H to J"

**7-06-17** 3555', finish DST # 2, TIWB, drilling, CFS 3662' DST # 3 3630'-3662' Conglomerate sand.





**TRILOBITE TESTING, INC.**

**DRILL STEM TEST REPORT**

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

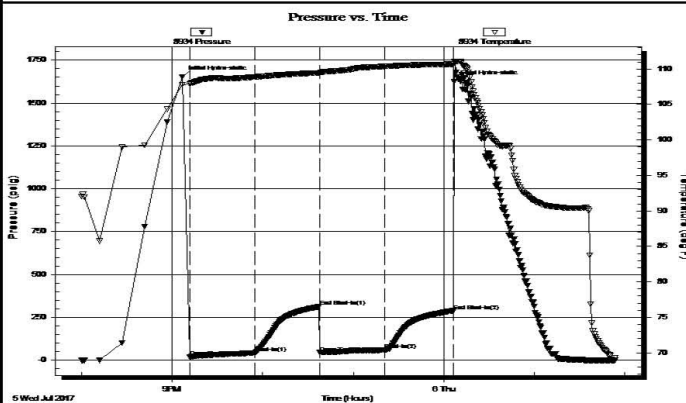
**9-15S-19W Ellis KS**  
**Willie #2**  
Job Ticket: 62985 **DST#: 2**  
Test Start: 2017.07.05 @ 20:00:15

**GENERAL INFORMATION:**

Formation: **LKC "H-I-J"**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 21:12:00  
Time Test Ended: 01:53:30  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Spencer J. Staab  
Unit No: 84  
Interval: **3462.00 ft (KB) To 3530.00 ft (KB) (TVD)**  
Total Depth: 3530.00 ft (KB) (TVD)  
Reference Elevations: 2038.00 ft (KB)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
KB to GR/CF: 9.00 ft  
2029.00 ft (CF)

**Serial #: 8934 Inside**  
Press@RunDepth: 58.70 psig @ 3463.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2017.07.05 End Date: 2017.07.06 Last Calib.: 2017.07.06  
Start Time: 20:00:00 End Time: 01:53:15 Time On Btm: 2017.07.05 @ 21:06:45  
Time Off Btm: 2017.07.06 @ 00:07:00

**TEST COMMENT:** 45-IF-Fair Blow ; BOB in 30 mins  
45-ISI-No Return  
45-FF-Fair Blow ; BOB in 31 mins  
45-FSI-No Return



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1652.18	107.80	Initial Hydro-static
5	18.88	107.89	Open To Flow (1)
48	41.24	108.86	Shut-In(1)
91	311.66	109.44	End Shut-In(1)
91	43.52	109.32	Open To Flow (2)
135	58.70	110.35	Shut-In(2)
180	288.01	110.67	End Shut-In(2)
181	1625.01	111.04	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
15.00	WGOCM 2%W 5%G 15%O 78%M	0.21
10.00	WGOCM 2%W 5%G 25%O 68%M	0.14
25.00	GWOCM 5%G 20%W 30%O 45%M	0.35
40.00	GWOCM 5%G 5%W 5%O 85%M	0.56

\* Recovery from multiple tests

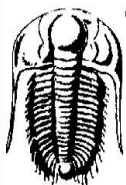
**Gas Rates**

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

Trilobite Testing, Inc

Ref. No: 62985

Printed: 2017.07.06 @ 07:01:02



**TRILOBITE TESTING, INC.**

**DRILL STEM TEST REPORT**

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis KS**  
**Willie #2**  
Job Ticket: 62986 **DST#: 3**  
Test Start: 2017.07.06 @ 14:46:00

**GENERAL INFORMATION:**

Formation: **Conglomerate Sand**  
Deviated: No Whipstock: ft (KB)  
Test Type: Conventional Bottom Hole (Reset)

Time Tool Opened: 16:22:00  
 Time Test Ended: 21:01:30

Tester: Spencer J. Staab  
 Unit No: 84

Interval: 3630.00 ft (KB) To 3662.00 ft (KB) (TVD)  
 Total Depth: 3662.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair

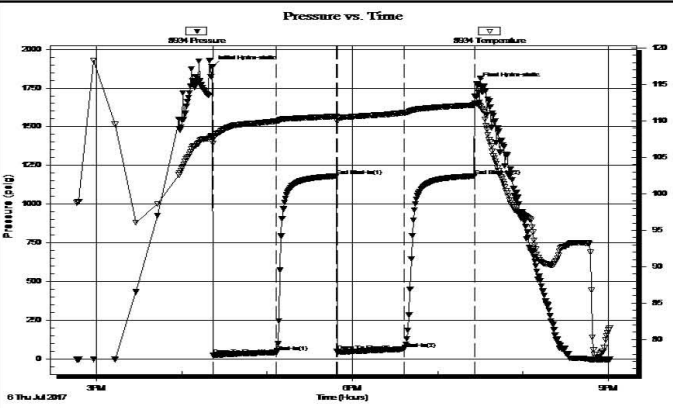
Reference Elevations: 2038.00 ft (KB)  
 2029.00 ft (CF)  
 KB to GR/CF: 9.00 ft

**Serial #: 8934 Outside**

Press@RunDepth: 65.02 psig @ 3631.00 ft (KB)  
 Start Date: 2017.07.06 End Date: 2017.07.06  
 Start Time: 14:46:15 End Time: 21:01:30

Capacity: 8000.00 psig  
 Last Calib.: 2017.07.06  
 Time On Btm: 2017.07.06 @ 16:21:45  
 Time Off Btm: 2017.07.06 @ 19:27:45

TEST COMMENT: 45-IF-Weak Blow ; Built to 6"  
 45-ISI-No Return  
 45-FF-Weak Blow ; Built to 5&3/4"  
 45-FSI-No Return



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1888.10	107.95	Initial Hydro-static
1	23.12	106.92	Open To Flow (1)
45	44.00	109.97	Shut-In(1)
88	1181.22	110.63	End Shut-In(1)
88	49.02	109.95	Open To Flow (2)
135	65.02	111.12	Shut-In(2)
185	1181.39	112.17	End Shut-In(2)
186	1778.73	112.39	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
40.00	Clean Oil 100%O	0.56
90.00	MCO 40%M 60%O	1.26

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

\* Recovery from multiple tests

Trilobite Testing, Inc

Ref. No: 62986

Printed: 2017.07.06 @ 22:18:52

**ROCK TYPES**

- Dolprim
- Lmst fw>7
- shale, gry
- Shcol
- Dol Lime
- Lscongl
- Carbon Sh
- Ss
- Lmst fw<7
- shale, grn
- shale, red

**ACCESSORIES**

**MINERAL**

- ▲ Chert, dark
- P Pyrite
- Sandy

Printed by GEOstrip VC Striplog version 4.0.8.15 (www.grsi.ca)

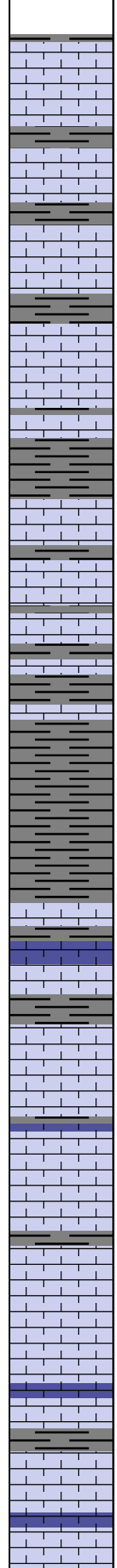
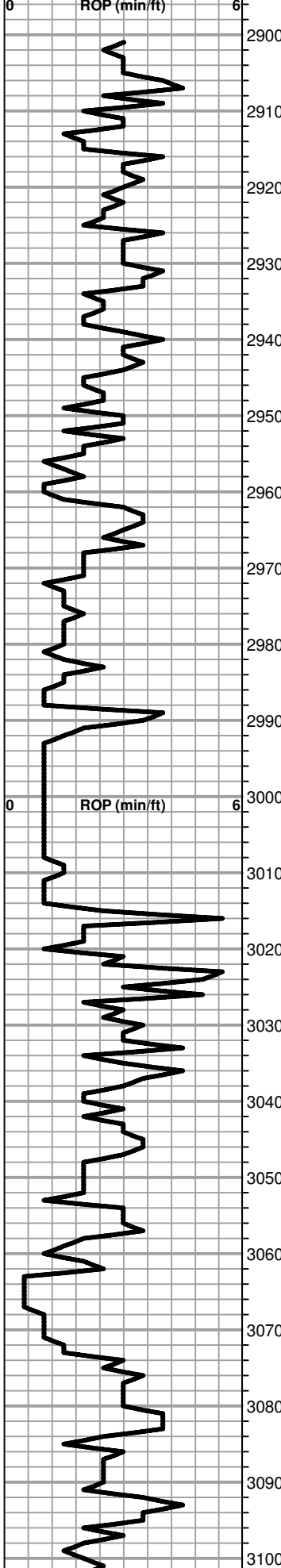
Curve Track #1 ROP (min/ft)	—	Depth   Intervals	DST	Lithology	Oil Show	Geological Descriptions	Curve Track #3
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Cored Interval  
DST Interval

1:240 Imperial  
ROP (min/ft)

1:240 Imperial



BEGIN 1' DRILL TIME FROM 2900' TO RTD  
 BEGIN 10' WET AND DRY SAMPLES FROM 3000' TO RTD

**ANHYDRITE TOP 1259+779**  
**ANHYDRITE BASE 1297+741**

8 5/8" SURFACE CASING SET TO 215' W/ 150 SXS 60/40 POS 2%GEL 3%CC  
 SLOPE 1 DEGREE @ 215'

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

Lime, lt brn, fnxln, slight bedded chalk

Lime, med brn, fn-vfxln

Shale, lt-med gray, soft blocky

**TOPEKA 3014-976**

Lime, lt brn, fn-vfxln

Lime, crm-lt brn, fn-vfxln

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

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

Lime, crm-lt brn, fnxln, increasing chalk, NS

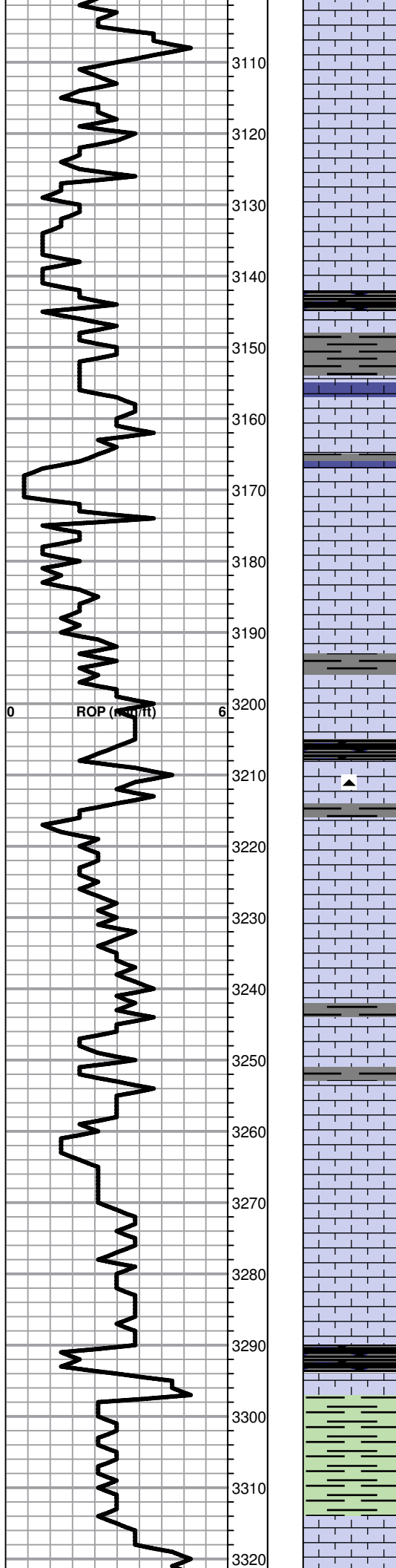
Lime, lt-dark brn, fn-vfxln

Lime, lt brn, fnxln-slightly granular in part, NS, chalk matrix in part

Lime, lt-med brn, fn-micro xln, slightly fossiliferous

Lime, lt-med brn, fn-vfxln, slightly fossiliferous

Lime, lt-med brn, fnxln, soft chalk matrix in part, NS



Lime, lt brn, fn-vfxln

Lime, lt brn, fnxln, lot of bedded chalk

Lime, lt brn, fn-vfxln, bedded soft chalk

Lime, lt brn-crm, granular with soft chalk, few fusulinids

Shale, black carbonaceous, blocky  
Lime, lt brn, fn-vfxln

Lime, crm-lt brn, fn-micro xln

Lime, crm-lt brn, fn-vfxln

Lime, lt brn, fn-micro xln

Lime, lt-med brn, fn-vfxln, slight bed chalk

Lime, crm-lt brn, fnxln

Shale, black carbonaceous, blocky

Lime, crm-lt brn, fn-micro xln

Lime, crm-lt brn, fnxln, soft on crush, chalky, NS

○ Lime, lt brn, fnxln-granular in part, no odor, NFO, light wet cut in few chips

Lime, crm-lt brn, fnxln-slightly granular in part

Lime, tt brn fn-vfxln

Lime, crm-lt brn, fnxln with bedded chalk, NS

Lime, lt-med brn, fnxln-slightly granular in part

Lime, lt-med brn, fn-vfxln

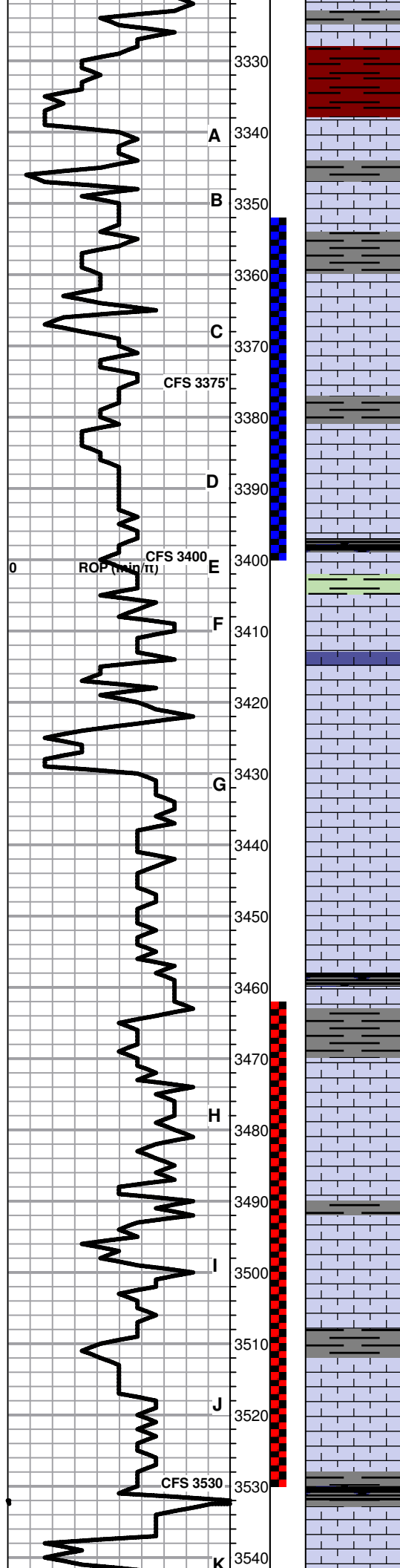
**HEEBNER SHALE 3290-1252**

Shale, black carbonaceous, fissile, blocky  
Lime, med brn, fn-micro xln

Shale, lime green, soft sticky mud clumps

**TORONTO 3314-1276**

Lime, lt brn, fnxln, NS



Lime, crm-lt brn, fn-micro xln

Shale, reddish brn, soft blocky with light red wash

**LKC 3338-1300**

Lime, lt-med brn, fn-micro xln

Lime, lt gray, fn-vfxln, slightly fossiliferous

Lime, crm-lt brn, fnxln with zone of soft chalky lime. Spotty stain, NFO, no odor and very little oomoldic material

Lime, crm-lt brn-med gray, fnxln with thin cemented oolitic beds, NS

Lime, lt-med brn, fn-vfxln, spotty staining, NFO, lt odor in fine pinpoint vuggy porosity. Does not appear to be well developed

Shale, black carbonaceous, blocky

Lime, lt grayish green, fn-vfxln

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

Lime, crm-lt brn, fnxln, bedded chalk, NS

Lime, crm-lt brn, chalk in soft matrix, NS

Lime, lt-med grayish brn, fn-vfxln

Lime, crm-lt brn, fn-vfxln

Lime, crm-lt brn, fn-vfxln

Shale, black carbonaceous, blocky

Lime, crm-lt brn, fn-vfxln, fine staining in microfossil casts, NFO, very lt odor, not well developed

Lime, crm-tan, fn-micro xln

Lime, white - crm, fn-micro xln, scattered staining in spotty fine vuggy porosity, NFO, no odor, some gilsonitic dead oil staining in part

Lime, offwhite-crm, fn-vfxln

Lime, crm, micro xln and brittle on crush

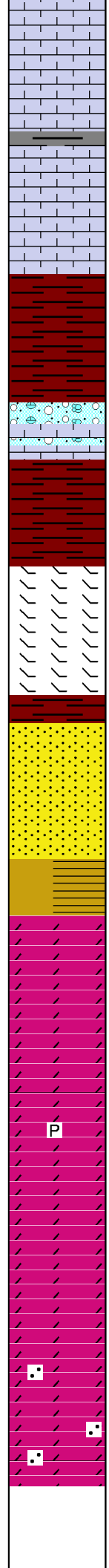
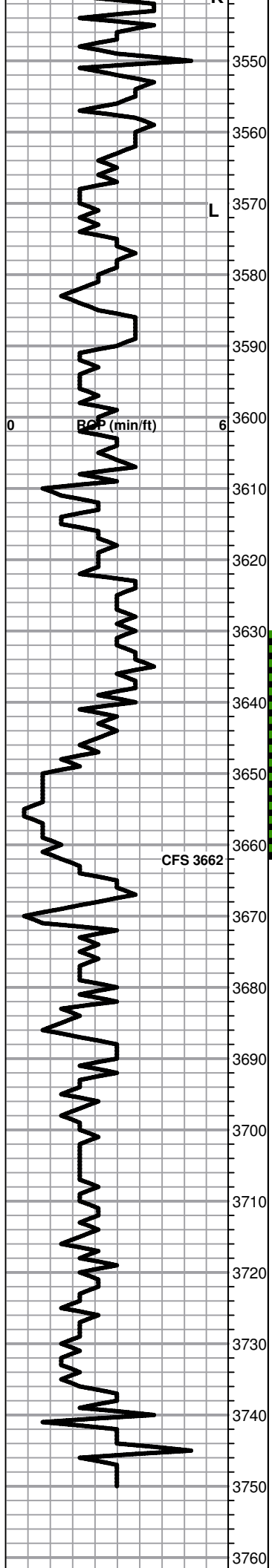
Lime, crm, micro xln

Lime, white-crm, fnxln-granular in part with spotty dead oil staining, NFO, no odor

DST # 1 3352' TO 3400' SEE HEADER FOR TEST SUMMARY

SLOPE 3/4 DEGREE @3400'

DST # 2 3462' TO 3530' SEE HEADER FOR TEST SUMMARY



Lime, buff, fn-micro xln, bedded chalk  
 Lime, white-crm, fnxln to granular in part  
 Lime, crm-lt brn, fn-micro xln

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

**BKC 3578-1540**

Shale, reddish brn, soft-firm blocky

Lime, crm-lt brn, red shale staining in part, appears to be clastic in composition

Shale, reddish brn, soft blocky

Lime, crm-lt brn, fn-vfxln, orange chert, fresh sharp

Lime, crm-lt brn, fnxln, dolomitic, NS

**CONGLOMERATE SAND 3643-1605**

Sandstone, quartz, poor to fair sorting of fine grained material, white clay cementing in part, scattered to saturated staining in better sorted sandstone absent white clays, friable, no reaction to acid test.

Shales and clays, vari colored, soft blocky

**ARBUCKLE 3670-1632**

Dolomite, crm, fnxln, NS, scattered gilsonitic specks in part

Dolomite, crm, fnxln-fine granular, slight gilsonite content, NFO, no odor

Dolomite, crm, fnxln-fine granular, slightly pyritic

Dolomite, white-crm, fnxln-fine granular

Dolomite, crm, fnxln-fine granular

Dolomite, crm, fn-vfxln, few quartz clusters and inclusions

Dolomite, white-crm, fn-vfxln with increasing quartz inclusions

**RTD 3750-1712 LTD 3750-1712**

DST # 3 3630' TO 3662' SEE HEADER FOR TEST SUMMARY

RAN 5 1/2" 15.5#  
 PRODUCTION CASING SET TO 3745' W/ 150 SXS COMMON. DV SET AT 1239' W/ 300 SXS 60/40 POS 6% GEL

SLOPE 1 DEGREE@ RTD

				
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# GLOBAL OIL FIELD SERVICES, LLC

3004

REMIT TO 24 S. Lincoln  
Russell, KS 67665

SERVICE POINT: \_\_\_\_\_

DATE <u>6-30-17</u>	SEC. <u>9</u>	TWP. <u>15S</u>	RANGE <u>19W</u>	CALLED OUT	ON LOCATION	JOB START	JOB FINISH
LEASE <u>Willie</u> WELL # <u>2</u> LOCATION						COUNTY <u>Ellis</u>	STATE <u>KS</u>
OLD OR <u>NEW</u> (CIRCLE ONE)							

CONTRACTOR SOUTHWIND DRILLING RIG #1

TYPE OF JOB SURFACE

HOLE SIZE 12 1/4 T.D. 213'

CASING SIZE 8 5/8 DEPTH 210.86 w/ 10' LS

TUBING SIZE DEPTH

DRILL PIPE DEPTH

TOOL DEPTH

PRES. MAX. MINIMUM

MEAS. LINE SHOE JOINT 40.21'

CEMENT LEFT IN CSG. 20'

PERFS

DISPLACEMENT 12 BBH

OWNER \_\_\_\_\_

CEMENT AMOUNT ORDERED 150SX 60/40PP 3%CC 2%GEL

COMMON @ \_\_\_\_\_

POZMIX @ \_\_\_\_\_

GEL @ \_\_\_\_\_

CHLORIDE @ \_\_\_\_\_

ASC @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

HANDLING @ \_\_\_\_\_

MILEAGE @ \_\_\_\_\_

TOTAL \_\_\_\_\_

EQUIPMENT

PUMP TRUCK CEMENTER BRAD

# 417 HELPER JASON

BULK TRUCK DRIVER TOM

# 378

BULK TRUCK DRIVER

# \_\_\_\_\_

REMARKS:  
RUN IN 5 LTS. 8 5/8 CASING W/ 10' LS, CIRCULATE MUD, MIX 150SX, WASH UP + DISPLACE W/ 12 PBL H2O, SHUT IN @ 200 PSI, CEMENT DID CIRCULATE

CHARGE TO: TDI

STREET \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

Global Oil Field Services, LLC  
You are hereby requested to rent cementing equipment and furnish cementer and helper(s) to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read and understand the "GENERAL TERMS AND CONDITIONS" listed on the reverse side.

PRINTED NAME \_\_\_\_\_

SIGNATURE [Signature]

SERVICE

DEPTH OF JOB \_\_\_\_\_

PUMP TRUCK CHARGE \_\_\_\_\_

EXTRA FOOTAGE @ \_\_\_\_\_

MILEAGE @ \_\_\_\_\_

MANIFOLD @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

TOTAL \_\_\_\_\_

PLUG & FLOAT EQUIPMENT

\_\_\_\_\_ @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

\_\_\_\_\_ @ \_\_\_\_\_

TOTAL \_\_\_\_\_

SALES TAX (If Any) \_\_\_\_\_

TOTAL CHARGES \_\_\_\_\_

DISCOUNT \_\_\_\_\_ IF PAID IN 30 DAYS

# GLOBAL OIL FIELD SERVICES, LLC

3009

REMIT TO 24 S. Lincoln  
Russell, KS 67665

SERVICE POINT:  
RUSSELL, KS

DATE <u>7-7-17</u>	SEC.	TWP.	RANGE	CALLED OUT	ON LOCATION	JOB START	JOB FINISH <u>3AM</u>
LEASE <u>Willis</u>	WELL#. <u>2</u>	LOCATION			COUNTY <u>Ellis</u>	STATE <u>KS</u>	
OLD OR <input checked="" type="radio"/> NEW (CIRCLE ONE)							

CONTRACTOR Southwind Drilling Rig #1

TYPE OF JOB Pipe Job

HOLE SIZE <u>7 7/8</u>	T.D.
CASING SIZE <u>5 1/2 14 #</u>	DEPTH <u>3746'</u>
TUBING SIZE	DEPTH
DRILL PIPE	DEPTH
TOOL <u>DV</u>	DEPTH <u>1238'</u>
PRES. MAX <u>1500 PSI</u>	MINIMUM
MEAS. LINE <u>3703'</u>	SHOE JOINT <u>42.47'</u>
CEMENT LEFT IN CSG. <u>42.47'</u>	
PERFS	
DISPLACEMENT <u>90 BBL 30 BBL</u>	

EQUIPMENT

PUMP TRUCK # <u>409</u>	CEMENTER <u>Beau</u>	
	HELPER <u>Cody</u>	
BULK TRUCK # <u>412</u>	DRIVER <u>Tom</u>	
BULK TRUCK # <u>473</u>	DRIVER <u>Kris</u>	

OWNER

CEMENT  
AMOUNT ORDERED 150 SX COM 10% SALT 7% GEL 5lb gils mix 350 SX 100/100 100% 6% GEL

COMMON	@	
POZMIX	@	
GEL	@	
CHLORIDE	@	
ASC	@	
	@	
	@	
	@	
	@	
	@	
HANDLING	@	
MILEAGE	@	
TOTAL		

REMARKS:  
Run in casing, circulate mud, mix 150 SX, dump plugs @ 1500 PSI 45 BBL 42.6' & 25 BBL mud, land plug @ 1500 PSI, drop dart, open dy, circulate mud for 3 hrs, mix 30 SX for rats 20 SX for mouse, mix 300 SX, cement, dia circulate, pump plug w/ 30 BBL 42.6, land plug @ 1500 PSI.

CHARGE TO: TDI

STREET \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

Global Oil Field Services, LLC  
You are hereby requested to rent cementing equipment and furnish cementer and helper(s) to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read and understand the "GENERAL TERMS AND CONDITIONS" listed on the reverse side.

PRINTED NAME \_\_\_\_\_

SIGNATURE [Signature]

SERVICE

DEPTH OF JOB	
PUMP TRUCK CHARGE	
EXTRA FOOTAGE	@
MILEAGE	@
MANIFOLD	@
	@
	@
TOTAL	

PLUG & FLOAT EQUIPMENT

AFU shoe 1	@	
Basket 3	@	
Cent 10	@	
Dv Tool	@	
KCC	@	
Mud Sweep	@	
TOTAL		

SALES TAX (If Any) \_\_\_\_\_

TOTAL CHARGES \_\_\_\_\_

DISCOUNT \_\_\_\_\_ IF PAID IN 30 DAYS



## DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Rd  
Hays KS 67601+9696

ATTN: Herb Deines

**Willie #2**

**9-15S-19W Ellis,KS**

Start Date: 2017.07.05 @ 00:12:00

End Date: 2017.07.05 @ 06:14:30

Job Ticket #: 62984                      DST #: 1

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

Printed: 2017.07.11 @ 10:28:10





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

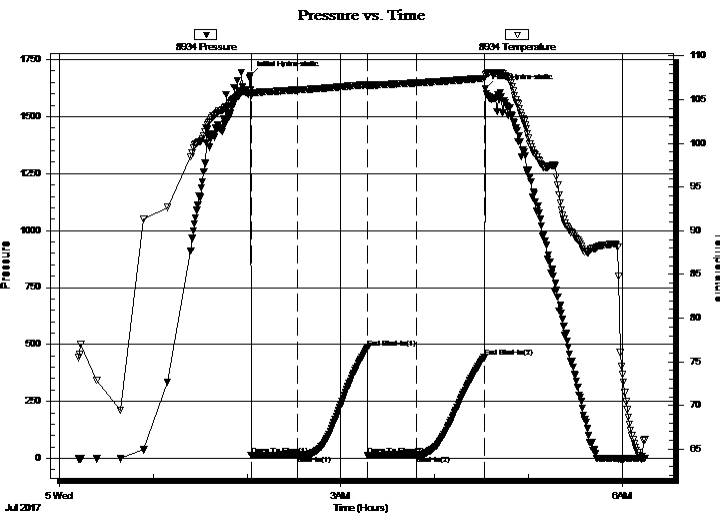
**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62984      **DST#: 1**  
Test Start: 2017.07.05 @ 00:12:00

## GENERAL INFORMATION:

Formation: **LKC "C - D"**  
Deviated: No Whipstock: ft (KB)      Test Type: Conventional Bottom Hole (Initial)  
Time Tool Opened: 02:02:30      Tester: Spencer J. Staab  
Time Test Ended: 06:14:30      Unit No: 84  
**Interval: 3352.00 ft (KB) To 3400.00 ft (KB) (TVD)**      Reference Elevations: 2038.00 ft (KB)  
Total Depth: 3400.00 ft (KB) (TVD)      2029.00 ft (CF)  
Hole Diameter: 7.88 inches Hole Condition: Fair      KB to GR/CF: 9.00 ft

**Serial #: 8934      Inside**  
Press@RunDepth: 15.37 psig @ 3353.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2017.07.05      End Date: 2017.07.05      Last Calib.: 2017.07.05  
Start Time: 00:12:15      End Time: 06:14:30      Time On Btm: 2017.07.05 @ 02:02:15  
Time Off Btm: 2017.07.05 @ 04:32:15

**TEST COMMENT:** 30-IF-Weak Blow ; Built to 1/4"; died back to surface  
45-ISI-No Return  
30-FF-No Blow  
45-FSI-No Return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1678.43	106.12	Initial Hydro-static
1	13.67	105.52	Open To Flow (1)
31	15.08	106.13	Shut-In(1)
75	485.16	106.74	End Shut-In(1)
75	14.34	106.52	Open To Flow (2)
106	15.37	106.92	Shut-In(2)
150	445.44	107.44	End Shut-In(2)
150	1623.82	107.86	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
3.00	Mud 100%M	0.04

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62984      **DST#: 1**  
Test Start: 2017.07.05 @ 00:12:00

**Tool Information**

Drill Pipe:	Length: 3360.00 ft	Diameter: 3.80 inches	Volume: 47.13 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 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:	45000.00 lb
			<u>Total Volume: 47.13 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial	44000.00 lb
Depth to Top Packer:	3352.00 ft			Final	44000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	48.00 ft				
Tool Length:	68.00 ft				
Number of Packers:	1	Diameter: 6.75 inches			
Tool Comments:					

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
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Change Over Sub	1.00			3333.00	
Shut In Tool	5.00			3338.00	
Hydraulic tool	5.00			3343.00	
Packer	5.00			3348.00	20.00      Bottom Of Top Packer
Packer	4.00			3352.00	
Stubb	1.00			3353.00	
Recorder	0.00	9120	Inside	3353.00	
Recorder	0.00	8934	Inside	3353.00	
Perforations	2.00			3355.00	
Change Over Sub	1.00			3356.00	
Drill Pipe	31.00			3387.00	
Change Over Sub	1.00			3388.00	
Perforations	8.00			3396.00	
Bullnose	4.00			3400.00	48.00      Bottom Packers & Anchor

**Total Tool Length: 68.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62984      **DST#: 1**  
Test Start: 2017.07.05 @ 00:12:00

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 59.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.40 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 5700.00 ppm			
Filter Cake: inches			

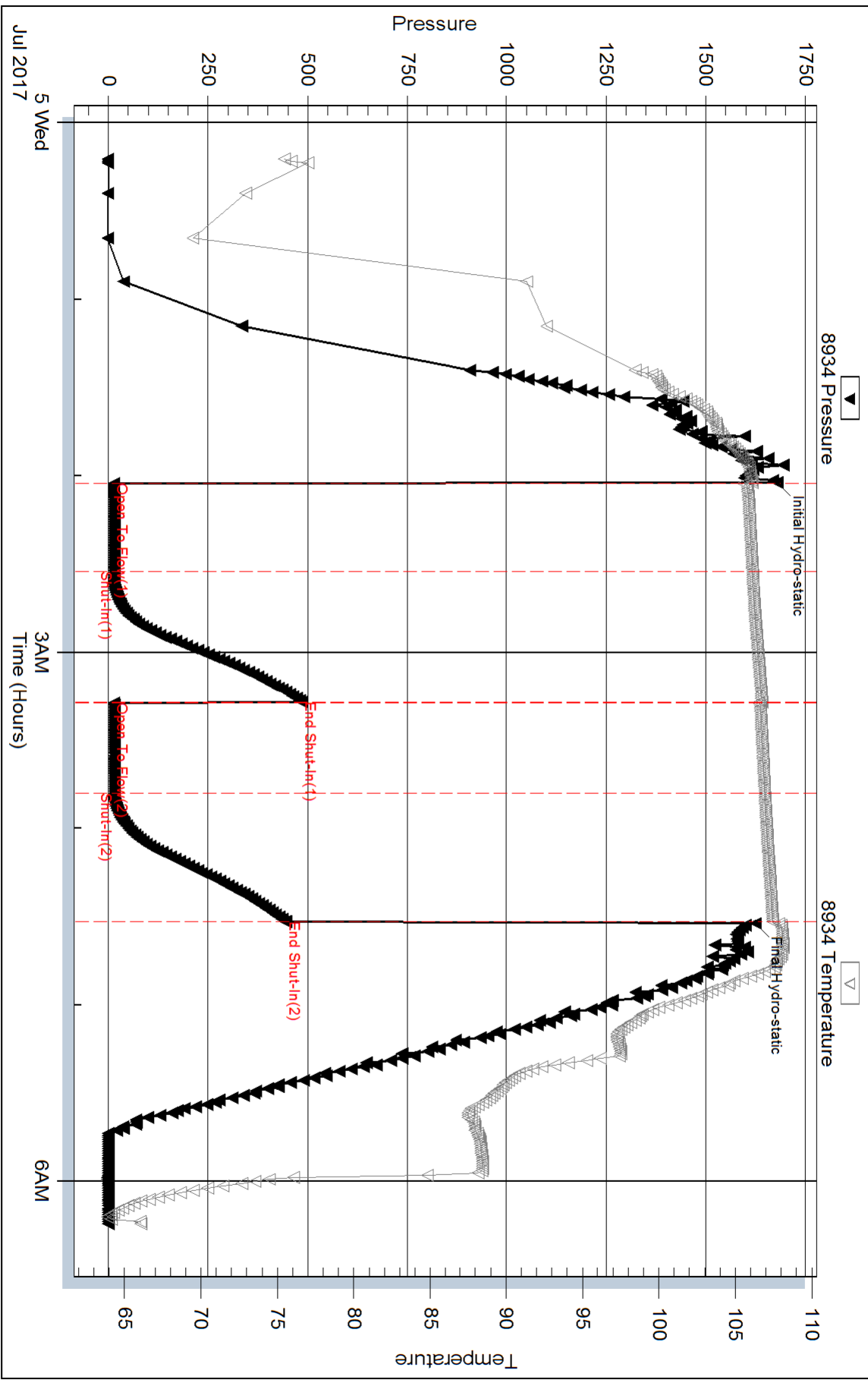
## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
3.00	Mud 100%M	0.042

Total Length: 3.00 ft      Total Volume: 0.042 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments: 2#LCM

### Pressure vs. Time



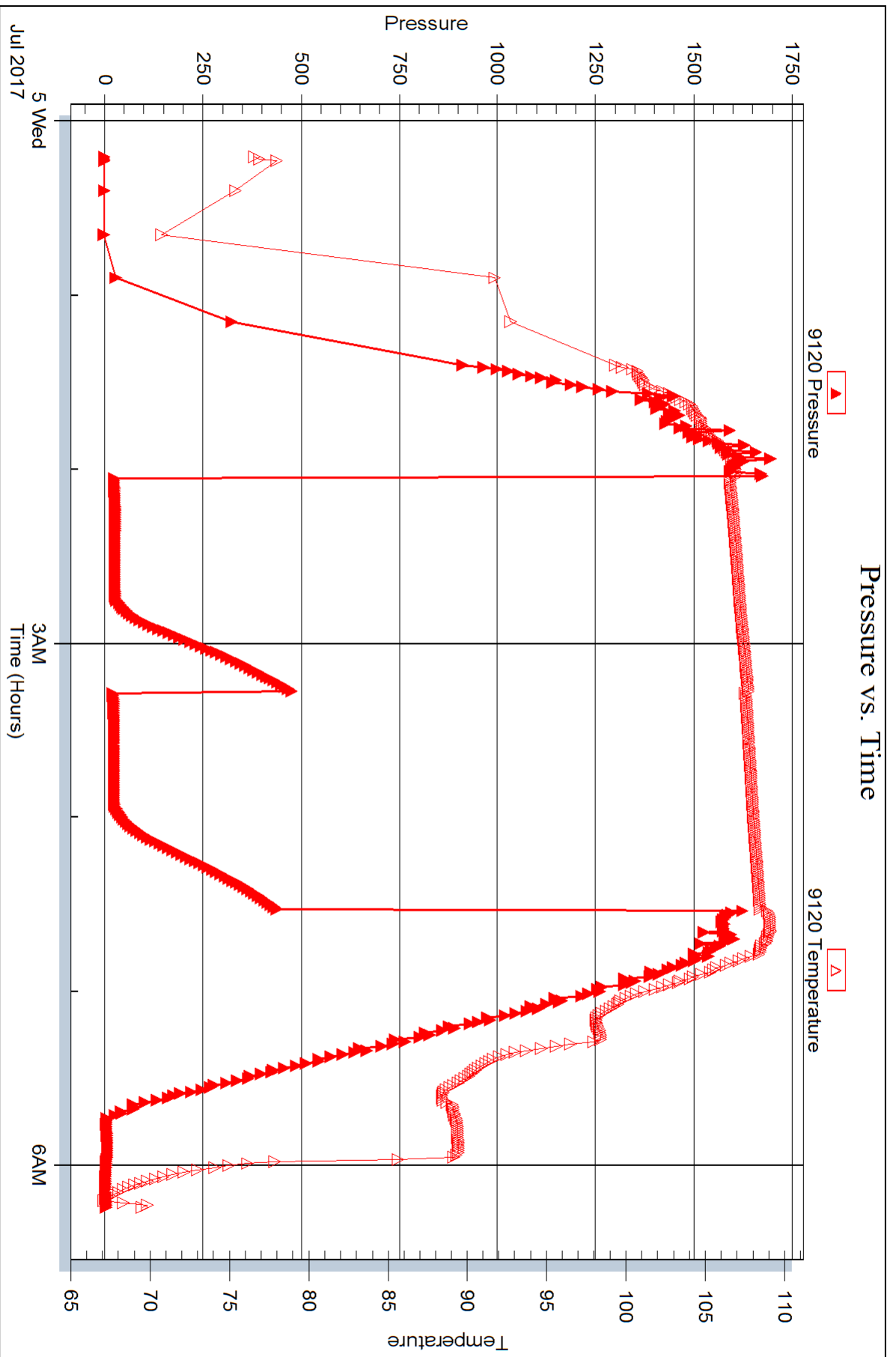
Serial #: 9120

Inside

TDI, Inc.

Wille #2

DST Test Number: 1





## DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Rd  
Hays KS 67601+9696

ATTN: Herb Deines

**Willie #2**

**9-15S-19W Ellis,KS**

Start Date: 2017.07.05 @ 20:00:15

End Date: 2017.07.06 @ 01:53:30

Job Ticket #: 62985                      DST #: 2

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

Printed: 2017.07.11 @ 10:27:01



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

TDI, Inc.  
 1310 Bison Rd  
 Hays KS 67601+9696  
 ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
 Job Ticket: 62985 **DST#: 2**  
 Test Start: 2017.07.05 @ 20:00:15

## GENERAL INFORMATION:

Formation: **LKC "H - J"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 21:12:00  
 Time Test Ended: 01:53:30  
 Interval: **3462.00 ft (KB) To 3530.00 ft (KB) (TVD)**  
 Total Depth: 3530.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Spencer J. Staab  
 Unit No: 84  
 Reference Elevations: 2038.00 ft (KB)  
 2029.00 ft (CF)  
 KB to GR/CF: 9.00 ft

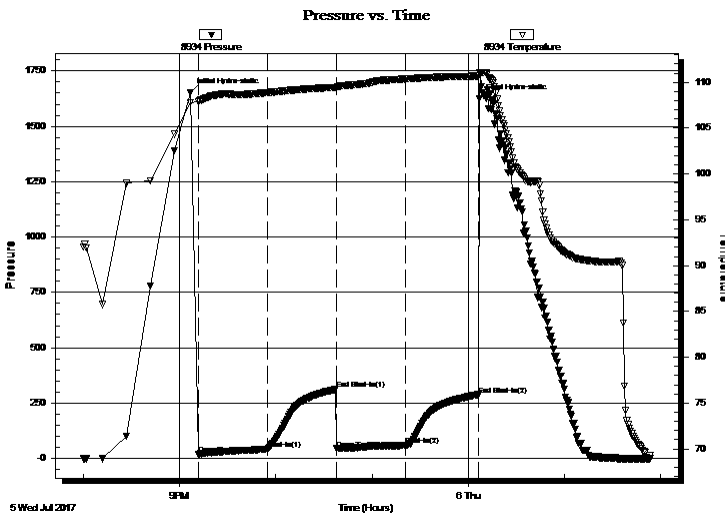
## Serial #: 8934

Inside

Press@RunDepth: 58.70 psig @ 3463.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2017.07.05 End Date: 2017.07.06 Last Calib.: 2017.07.06  
 Start Time: 20:00:00 End Time: 01:53:15 Time On Btm: 2017.07.05 @ 21:06:45  
 Time Off Btm: 2017.07.06 @ 00:07:00

TEST COMMENT: 45-IF-Fair Blow ; BOB in 30 mins  
 45-ISI-No Return  
 45-FF-Fair Blow ; BOB in 31 mins  
 45-FSI-No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1652.18	107.80	Initial Hydro-static
5	18.88	107.89	Open To Flow (1)
48	41.24	108.86	Shut-In(1)
91	311.66	109.44	End Shut-In(1)
91	43.52	109.32	Open To Flow (2)
135	58.70	110.35	Shut-In(2)
180	288.01	110.67	End Shut-In(2)
181	1625.01	111.04	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
15.00	WGOCM 2%W 5%G 15%O 78%M	0.21
10.00	WGOCM 2%W 5%G 25%O 68%M	0.14
25.00	GWOCM 5%G 20%W 30%O 45%M	0.35
40.00	GWOCM 5%G 5%W 5%O 85%M	0.56

\* Recovery from multiple tests

## Gas Rates

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







**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62985      **DST#: 2**  
Test Start: 2017.07.05 @ 20:00:15

**Tool Information**

Drill Pipe:	Length: 3454.00 ft	Diameter: 3.80 inches	Volume: 48.45 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 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:	50000.00 lb
			<u>Total Volume: 48.45 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial	46000.00 lb
Depth to Top Packer:	3462.00 ft			Final	46000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	68.00 ft				
Tool Length:	88.00 ft				
Number of Packers:	1	Diameter: 6.75 inches			
Tool Comments:					

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
Change Over Sub	1.00			3443.00	
Shut In Tool	5.00			3448.00	
Hydraulic tool	5.00			3453.00	
Packer	5.00			3458.00	20.00      Bottom Of Top Packer
Packer	4.00			3462.00	
Stubb	1.00			3463.00	
Recorder	0.00	9120	Inside	3463.00	
Recorder	0.00	8934	Inside	3463.00	
Perforations	2.00			3465.00	
Change Over Sub	1.00			3466.00	
Drill Pipe	31.00			3497.00	
Change Over Sub	1.00			3498.00	
Perforations	28.00			3526.00	
Bullnose	4.00			3530.00	68.00      Bottom Packers & Anchor

**Total Tool Length: 88.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62985      **DST#: 2**  
Test Start: 2017.07.05 @ 20:00:15

## Mud and Cushion Information

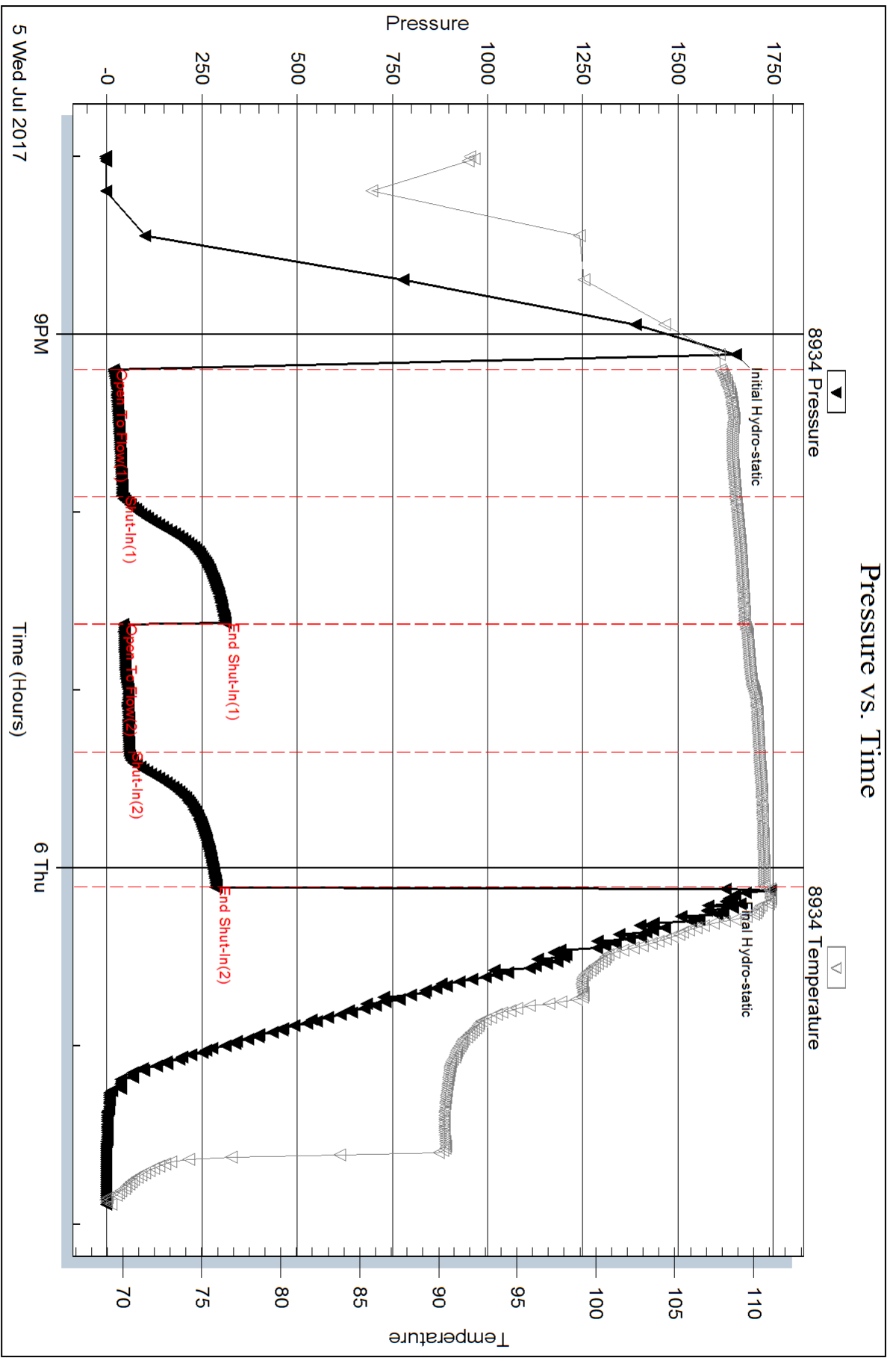
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 52.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.20 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 9600.00 ppm			
Filter Cake: inches			

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	WGOCM 2%W 5%G 15%O 78%M	0.210
10.00	WGOCM 2%W 5%G 25%O 68%M	0.140
25.00	GWOCM 5%G 20%W 30%O 45%M	0.351
40.00	GWOCM 5%G 5%W 5%O 85%M	0.561

Total Length: 90.00 ft      Total Volume: 1.262 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments: 2# LCM



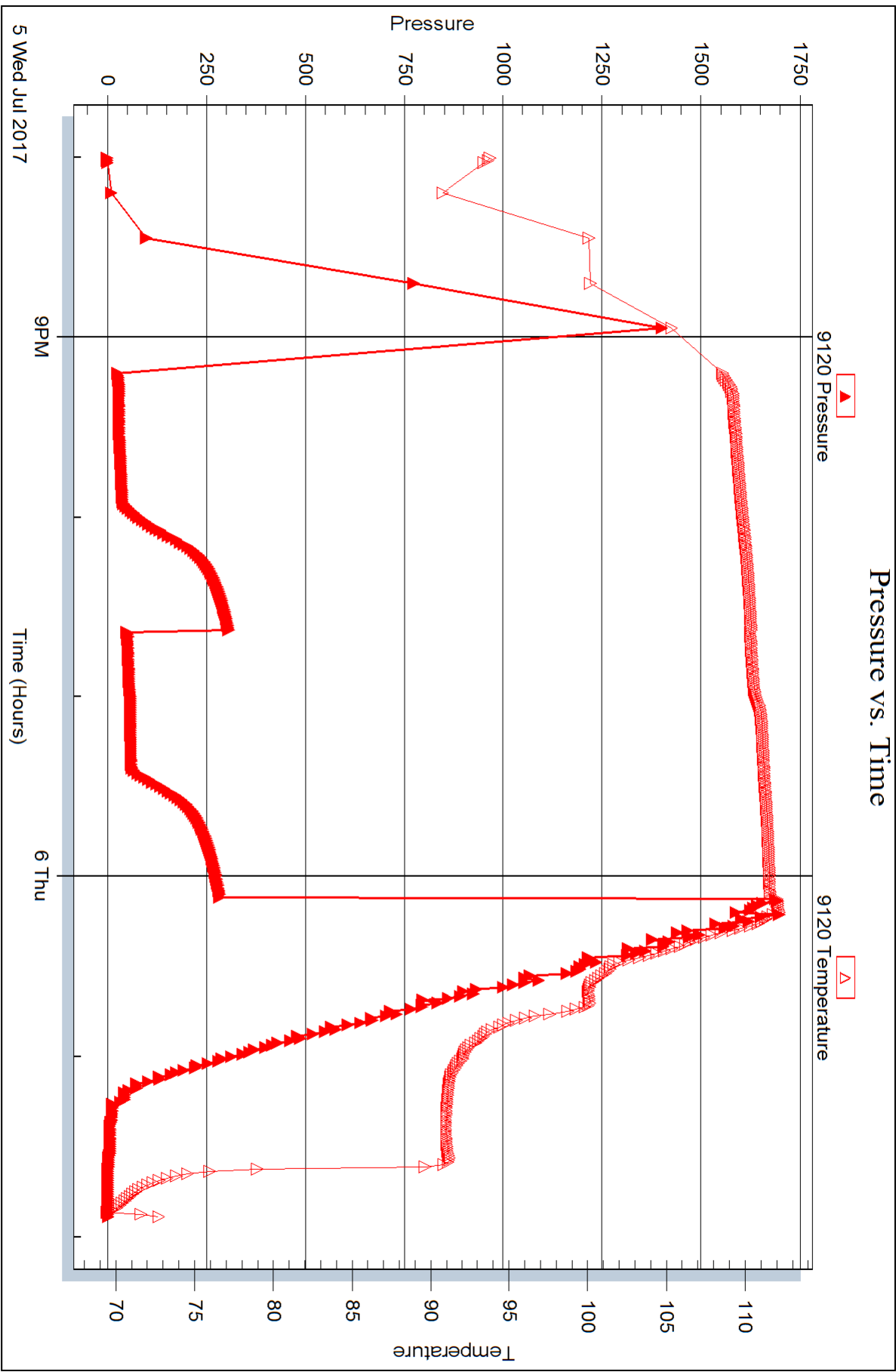
Serial #: 9120

Inside

TDI, Inc.

Wille #2

DST Test Number: 2





## DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Rd  
Hays KS 67601+9696

ATTN: Herb Deines

**Willie #2**

**9-15S-19W Ellis,KS**

Start Date: 2017.07.06 @ 14:46:00

End Date: 2017.07.06 @ 21:01:30

Job Ticket #: 62986                      DST #: 3

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

Printed: 2017.07.11 @ 10:25:55



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

TDI, Inc.  
 1310 Bison Rd  
 Hays KS 67601+9696  
 ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
 Job Ticket: 62986 **DST#: 3**  
 Test Start: 2017.07.06 @ 14:46:00

## GENERAL INFORMATION:

Formation: **Conglomerate Sand**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 16:22:00  
 Time Test Ended: 21:01:30  
 Interval: **3630.00 ft (KB) To 3662.00 ft (KB) (TVD)**  
 Total Depth: 3662.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Spencer J. Staab  
 Unit No: 84  
 Reference Elevations: 2038.00 ft (KB)  
 2029.00 ft (CF)  
 KB to GR/CF: 9.00 ft

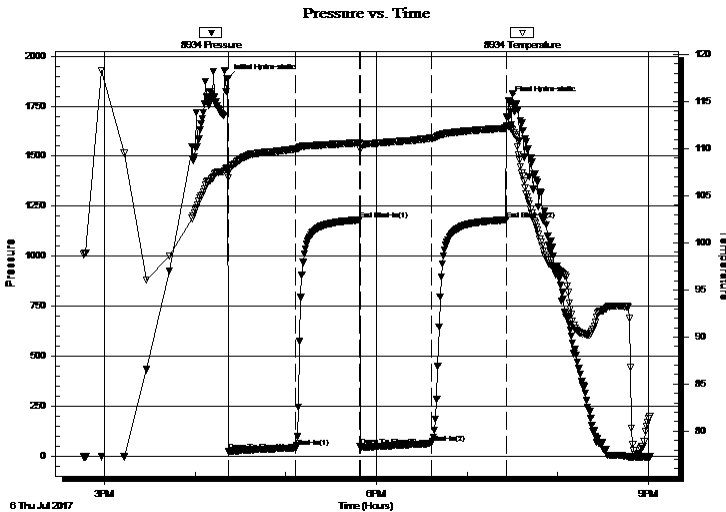
## Serial #: 8934

Outside

Press@RunDepth: 65.02 psig @ 3631.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2017.07.06 End Date: 2017.07.06 Last Calib.: 2017.07.06  
 Start Time: 14:46:15 End Time: 21:01:30 Time On Btm: 2017.07.06 @ 16:21:45  
 Time Off Btm: 2017.07.06 @ 19:27:45

TEST COMMENT: 45-IF-Weak Blow ; Built to 6"  
 45-ISI-No Return  
 45-FF-Weak Blow ; Built to 5&3/4"  
 45-FSI-No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1888.10	107.95	Initial Hydro-static
1	23.12	106.92	Open To Flow (1)
45	44.00	109.97	Shut-In(1)
88	1181.22	110.63	End Shut-In(1)
88	49.02	109.95	Open To Flow (2)
135	65.02	111.12	Shut-In(2)
185	1181.39	112.17	End Shut-In(2)
186	1778.73	112.39	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
40.00	Clean Oil 100%O	0.56
90.00	MCO 40%M 60%O	1.26

\* Recovery from multiple tests

## Gas Rates

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







**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62986 **DST#: 3**  
Test Start: 2017.07.06 @ 14:46:00

**Tool Information**

Drill Pipe:	Length: 3615.00 ft	Diameter: 3.80 inches	Volume: 50.71 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 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:	50000.00 lb
			<u>Total Volume: 50.71 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial	45000.00 lb
Depth to Top Packer:	3630.00 ft			Final	45000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	32.00 ft				
Tool Length:	52.00 ft				
Number of Packers:	1	Diameter: 6.75 inches			
Tool Comments:					

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

Change Over Sub	1.00			3611.00	
Shut In Tool	5.00			3616.00	
Hydraulic tool	5.00			3621.00	
Packer	5.00			3626.00	20.00 Bottom Of Top Packer
Packer	4.00			3630.00	
Stubb	1.00			3631.00	
Recorder	0.00	9120	Inside	3631.00	
Recorder	0.00	8934	Outside	3631.00	
Perforations	27.00			3658.00	
Bullnose	4.00			3662.00	32.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>52.00</b>				



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62986      **DST#: 3**  
Test Start: 2017.07.06 @ 14:46:00

### Mud and Cushion Information

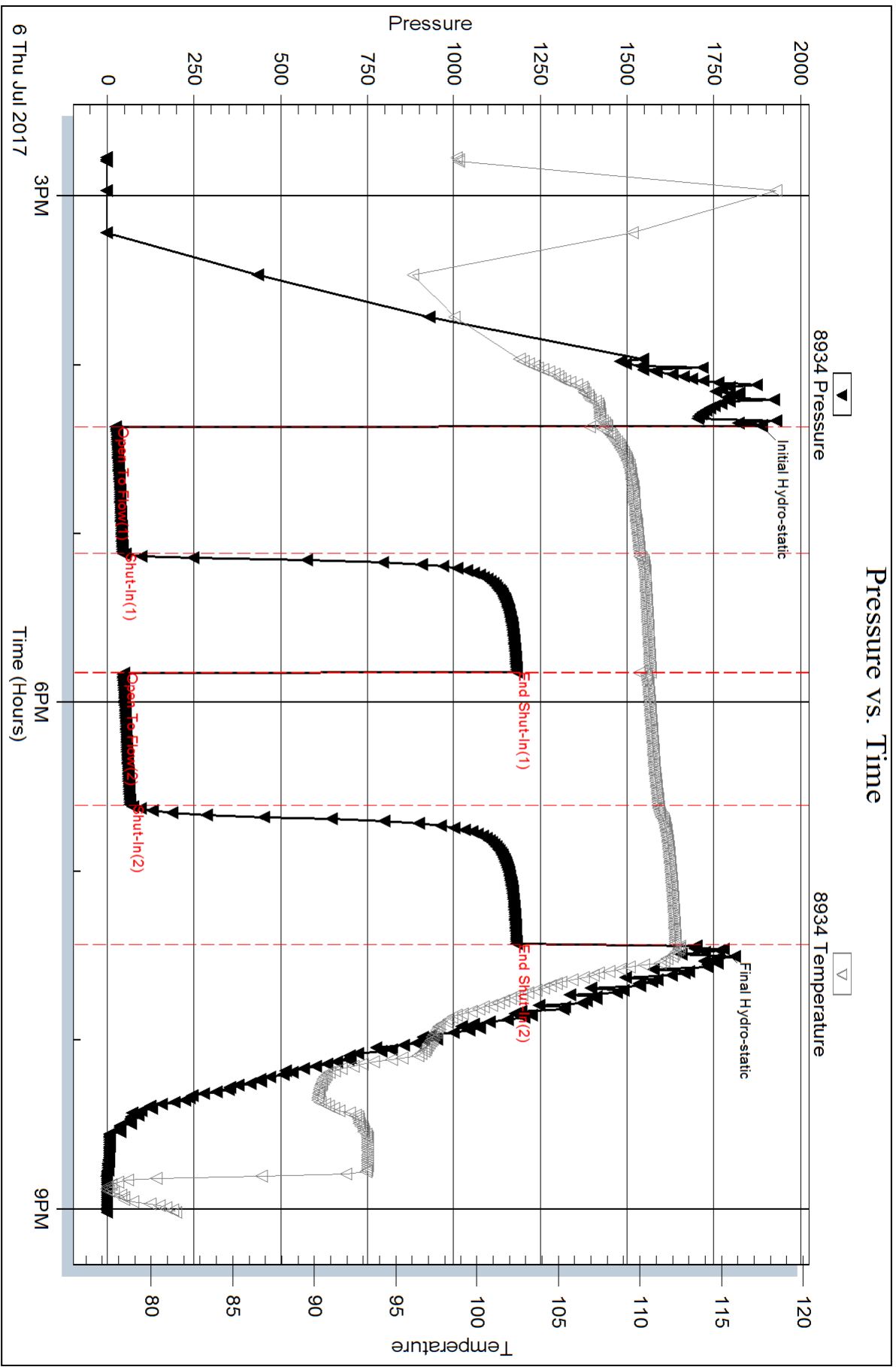
Mud Type: Gel Chem	Cushion Type:	Oil API: 29 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 51.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.80 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 8900.00 ppm		
Filter Cake: inches		

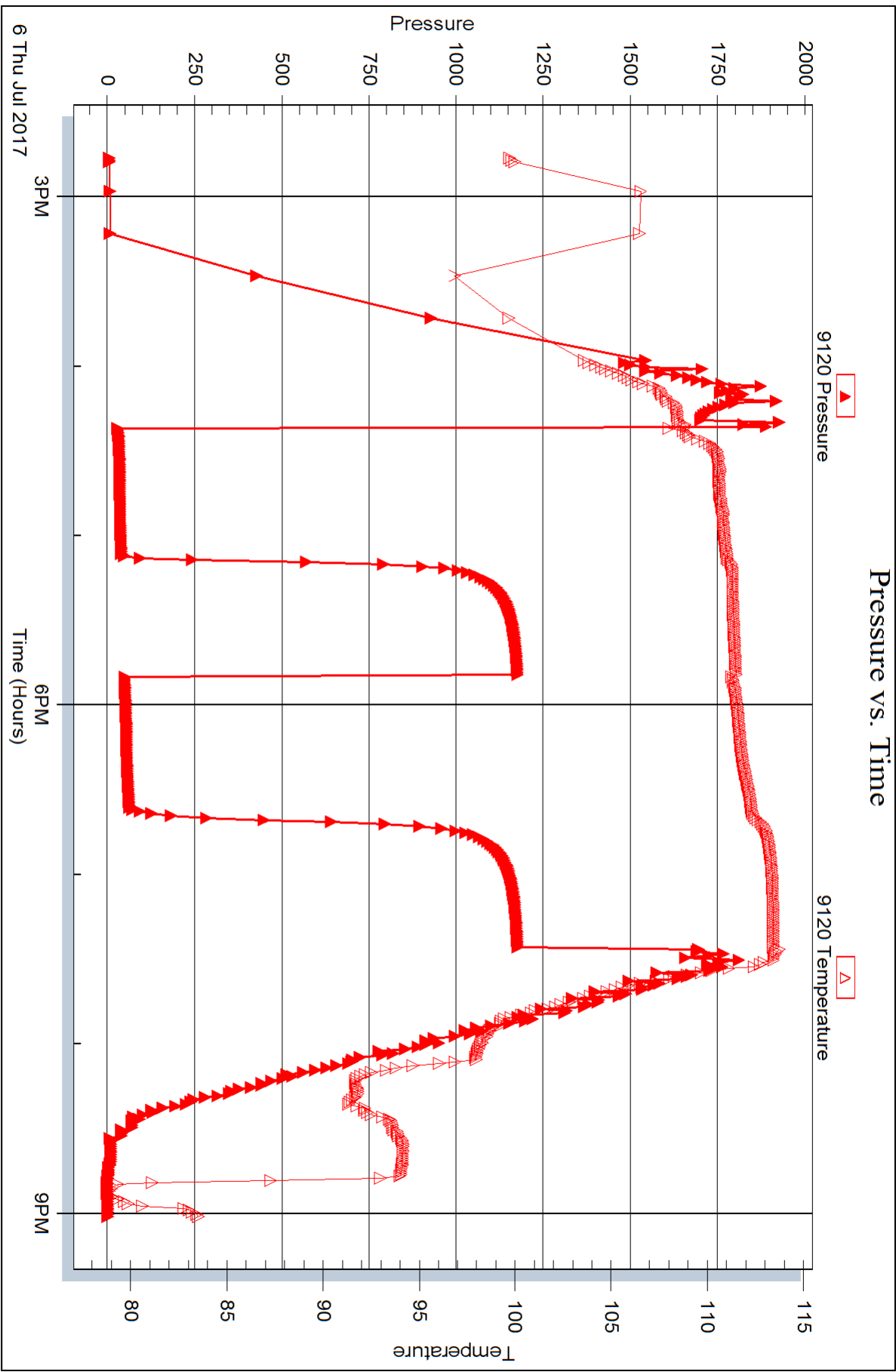
### Recovery Information

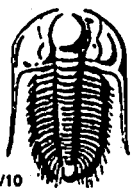
Recovery Table

Length ft	Description	Volume bbl
40.00	Clean Oil 100%O	0.561
90.00	MCO 40%M 60%O	1.262

Total Length: 130.00 ft      Total Volume: 1.823 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments: 1#LCM







# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 62984

Well Name & No. Willie #2 Test No. 1 Date 07/04/2017  
 Company 7Ded, Inc. Elevation 2038 KB 2029 GL  
 Address 1310 Bison Rd Hays Ks 67601 + 9696  
 Co. Rep / Geo. Herb Deines Rig Southwind #1  
 Location: Sec. 9 Twp. 15N Rge. 19W Co. Ellis State Ks

Interval Tested 3352' - 3400' Zone Tested LRC "C-D"  
 Anchor Length 48' Drill Pipe Run 3360' Mud Wt. 9.1  
 Top Packer Depth 3347' Drill Collars Run - Vis 59  
 Bottom Packer Depth 3352' Wt. Pipe Run - WL 6.4  
 Total Depth 3400' Chlorides 5,700 ppm System LCM 2#

Blow Description 17- Weak Blow; Built to 1/4"; died back to surface  
15D - No Blow Back  
77 - No Blow  
75D - No Blow Back

Rec	Feet of	%gas	%oil	%water	%mud
<u>3'</u>	<u>Mud</u>			<u>100</u>	
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 Total 3' BHT 108° Gravity - API RW - @ - °F Chlorides - ppm

- (A) Initial Hydrostatic 1678
- (B) First Initial Flow 13
- (C) First Final Flow 15
- (D) Initial Shut-In 485
- (E) Second Initial Flow 14
- (F) Second Final Flow 15
- (G) Final Shut-In 445
- (H) Final Hydrostatic 1623

- Test 1050
- Jars
- Safety Joint
- Circ Sub
- Hourly Standby
- Mileage 3487 25.50
- Sampler
- Straddle
- Shale Packer
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 1075.50

T-On Location 23:10  
 T-Started 00:12 07/05/2017  
 T-Open 02:02  
 T-Pulled 04:32  
 T-Out 06:13

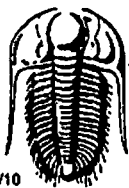
Comments \_\_\_\_\_  
 \_\_\_\_\_  
 Ruined Shale Packer  
 Ruined Packer  
 Extra Copies  
 Sub Total 0  
 Total 1075.50  
 MP/DST Disc't \_\_\_\_\_

Initial Open 30  
 Initial Shut-In 45  
 Final Flow 30  
 Final Shut-In 45

Approved By \_\_\_\_\_ Our Representative Spencer J. Josal Thanks!

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.

785-259-0056



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 62985

Well Name & No. Willie #2 Test No. 2 Date 07/05/2017  
 Company 7Del, Inc Elevation 2038 KB 2029 GL  
 Address 1310 Bison Rd Hays Ks 67601 +9696  
 Co. Rep / Geo. Herb Deines Rig Southerwind #1  
 Location: Sec. 9 Twp. 15a Rge. 19w Co. Ellis State Ks

Interval Tested 3462' - 3530' Zone Tested LKC "A-d-j"  
 Anchor Length 68' Drill Pipe Run 3454' Mud Wt. 9.2  
 Top Packer Depth 3457' Drill Collars Run - Vis 52  
 Bottom Packer Depth 3462' Wt. Pipe Run - WL 7.2  
 Total Depth 3530' Chlorides 9,600 ppm System LCM 2#

Blow Description: 77- Fair Blow; BOB in 30 minutes  
75d- No Return  
77- Fair Blow; BOB in 31 minutes  
75d- No Return

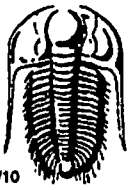
Rec	Feet of	%gas	%oil	%water	%mud
<u>15'</u>	<u>WGOCM</u>	<u>5</u>	<u>15</u>	<u>2</u>	<u>78</u>
<u>10'</u>	<u>WGOCM</u>	<u>5</u>	<u>25</u>	<u>2</u>	<u>68</u>
<u>25'</u>	<u>GWOCM</u>	<u>5</u>	<u>30</u>	<u>20</u>	<u>45</u>
<u>40'</u>	<u>GWOCM</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>85</u>

Rec Total 90' BHT 111° Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1652  Test 1050 T-On Location 19:00  
 (B) First Initial Flow 18  Jars - T-Started 20:00  
 (C) First Final Flow 41  Safety Joint - T-Open 21:09  
 (D) Initial Shut-In 311  Circ Sub - T-Pulled 00:09 07/06/2017  
 (E) Second Initial Flow 43  Hourly Standby - T-Out 01:51  
 (F) Second Final Flow 58  Mileage 3427 25.50 Comments -  
 (G) Final Shut-In 288  Sampler -  
 (H) Final Hydrostatic 1625  Straddle -  Ruined Shale Packer -  
 Shale Packer -  Ruined Packer -  
 Extra Packer -  Extra Copies -  
 Initial Open 45  Extra Recorder - Sub Total 0  
 Initial Shut-In 45  Day Standby - Total 1075.50  
 Final Flow 45  Accessibility - MP/DST Disc't -  
 Final Shut-In 45 Sub Total 1075.50

Approved By \_\_\_\_\_ Our Representative Spencer J. Stahl Thanks  
 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.

785-259-0056



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 62986

Well Name & No. Wallie #2 Test No. 3 Date 07/06/2017  
 Company 700, Inc. Elevation 2038 KB 2029 GL  
 Address 1310 Bison Rd Hays Ks 67601 +9696  
 Co. Rep / Geo. Herb Deines Rig Southwind #1  
 Location: Sec. 9 Twp. 15a Rge. 19w Co. Ellis State Ks

Interval Tested 3630' - 3662' Zone Tested Conglomerate Sand  
 Anchor Length 32' Drill Pipe Run 3645' Mud Wt. 9.1  
 Top Packer Depth 3625' Drill Collars Run - Vis 51  
 Bottom Packer Depth 3630' Wt. Pipe Run - WL 7.8  
 Total Depth 3662' Chlorides 8,900 ppm System LCM 1#

Blow Description: 77-Weak Blow; Built to 6"  
5SD - No Return  
77-Weak Blow; Built to 5 3/4"  
7SD - No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>40'</u>	<u>Clean Oil</u>	<u>100</u>			
<u>90'</u>	<u>MCO</u>	<u>60</u>		<u>40</u>	

Rec Total 130' BHT 112° Gravity 29° API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1888  Test 1050 T-On Location 14:13  
 (B) First Initial Flow 23  Jars - T-Started 14:46  
 (C) First Final Flow 44  Safety Joint - T-Open 16:20  
 (D) Initial Shut-In 1181  Circ Sub - T-Pulled 19:20  
 (E) Second Initial Flow 49  Hourly Standby - T-Out 21:00  
 (F) Second Final Flow 65  Mileage 34 RT 25.50 Comments -  
 (G) Final Shut-In 1181  Sampler -  
 (H) Final Hydrostatic 1778  Straddle -  
 Shale Packer -  
 Shale Packer -  
 Extra Packer -  
 Extra Recorder -  
 Day Standby -  
 Accessibility -  
 Sub Total 1075.50

Initial Open 45  
 Initial Shut-In 45  
 Final Flow 45  
 Final Shut-In 45  
 Sub Total 1075.50  
 MP/DST Disc't -

Approved By \_\_\_\_\_ Our Representative Spencer J. Staal Thanks!  
 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.

785-259-0056



## DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Rd  
Hays KS 67601+9696

ATTN: Herb Deines

**Willie #2**

**9-15S-19W Ellis,KS**

Start Date: 2017.07.05 @ 00:12:00

End Date: 2017.07.05 @ 06:14:30

Job Ticket #: 62984                      DST #: 1

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

Printed: 2017.07.11 @ 10:28:10





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

TDI, Inc.  
 1310 Bison Rd  
 Hays KS 67601+9696  
 ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
 Job Ticket: 62984 **DST#: 1**  
 Test Start: 2017.07.05 @ 00:12:00

## GENERAL INFORMATION:

Formation: **LKC "C - D"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 02:02:30  
 Time Test Ended: 06:14:30  
 Interval: **3352.00 ft (KB) To 3400.00 ft (KB) (TVD)**  
 Total Depth: 3400.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Spencer J. Staab  
 Unit No: 84  
 Reference Elevations: 2038.00 ft (KB)  
 2029.00 ft (CF)  
 KB to GR/CF: 9.00 ft

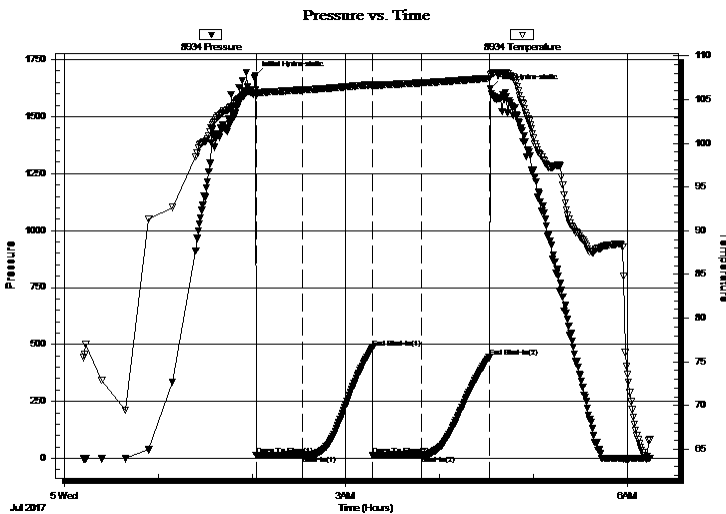
## Serial #: 8934

Inside

Press@RunDepth: 15.37 psig @ 3353.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2017.07.05 End Date: 2017.07.05 Last Calib.: 2017.07.05  
 Start Time: 00:12:15 End Time: 06:14:30 Time On Btm: 2017.07.05 @ 02:02:15  
 Time Off Btm: 2017.07.05 @ 04:32:15

TEST COMMENT: 30-IF-Weak Blow ; Built to 1/4"; died back to surface  
 45-ISI-No Return  
 30-FF-No Blow  
 45-FSI-No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1678.43	106.12	Initial Hydro-static
1	13.67	105.52	Open To Flow (1)
31	15.08	106.13	Shut-In(1)
75	485.16	106.74	End Shut-In(1)
75	14.34	106.52	Open To Flow (2)
106	15.37	106.92	Shut-In(2)
150	445.44	107.44	End Shut-In(2)
150	1623.82	107.86	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
3.00	Mud 100%M	0.04

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62984      **DST#: 1**  
Test Start: 2017.07.05 @ 00:12:00

**Tool Information**

Drill Pipe:	Length: 3360.00 ft	Diameter: 3.80 inches	Volume: 47.13 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 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:	45000.00 lb
			<u>Total Volume: 47.13 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial	44000.00 lb
Depth to Top Packer:	3352.00 ft			Final	44000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	48.00 ft				
Tool Length:	68.00 ft				
Number of Packers:	1	Diameter: 6.75 inches			

Tool Comments:

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

Change Over Sub	1.00			3333.00	
Shut In Tool	5.00			3338.00	
Hydraulic tool	5.00			3343.00	
Packer	5.00			3348.00	20.00      Bottom Of Top Packer
Packer	4.00			3352.00	
Stubb	1.00			3353.00	
Recorder	0.00	9120	Inside	3353.00	
Recorder	0.00	8934	Inside	3353.00	
Perforations	2.00			3355.00	
Change Over Sub	1.00			3356.00	
Drill Pipe	31.00			3387.00	
Change Over Sub	1.00			3388.00	
Perforations	8.00			3396.00	
Bullnose	4.00			3400.00	48.00      Bottom Packers & Anchor

**Total Tool Length: 68.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62984      **DST#: 1**  
Test Start: 2017.07.05 @ 00:12:00

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 59.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.40 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 5700.00 ppm			
Filter Cake: inches			

## Recovery Information

Recovery Table

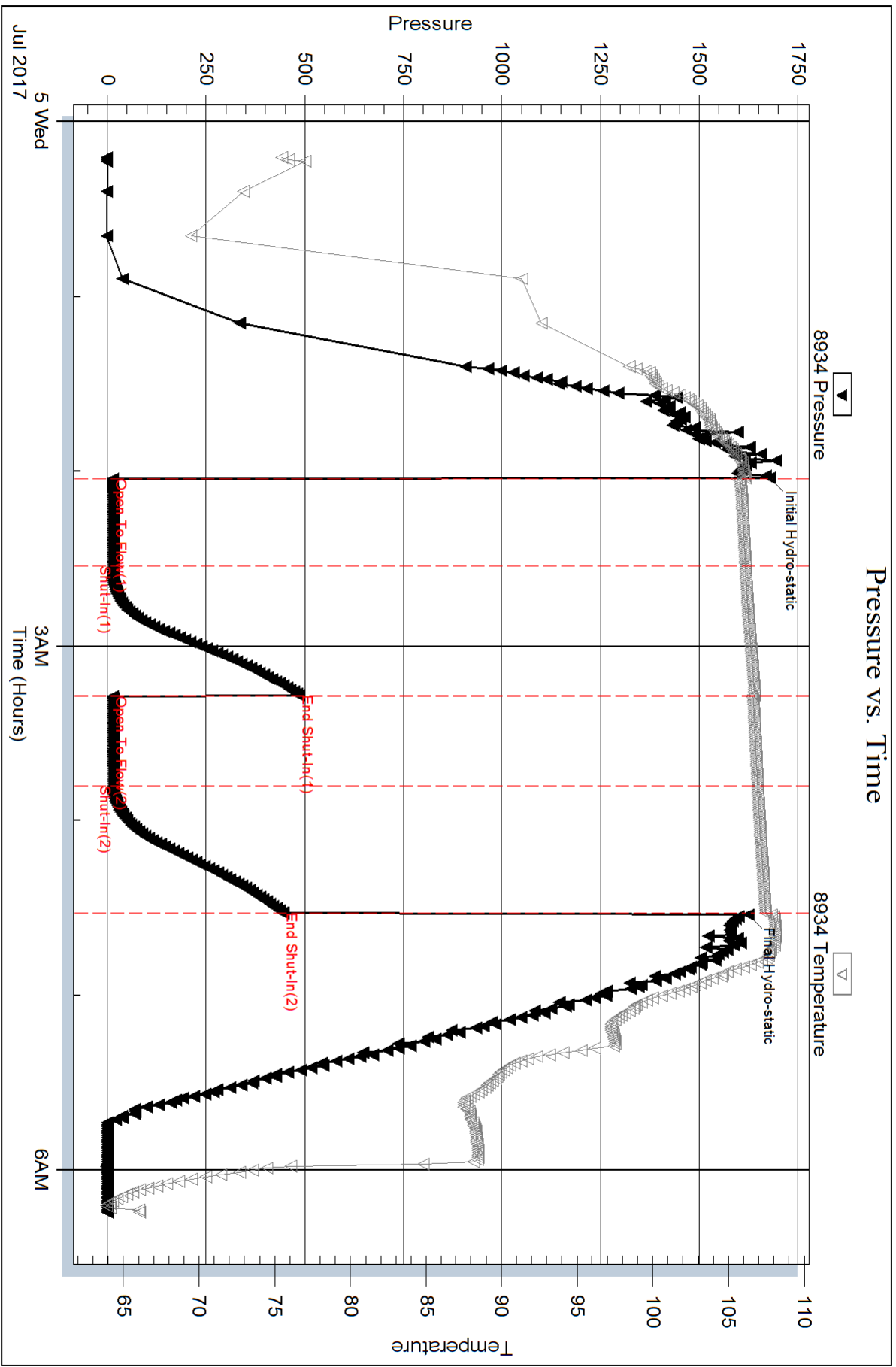
Length ft	Description	Volume bbl
3.00	Mud 100%M	0.042

Total Length: 3.00 ft      Total Volume: 0.042 bbl

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

Laboratory Name:      Laboratory Location:

Recovery Comments: 2#LCM



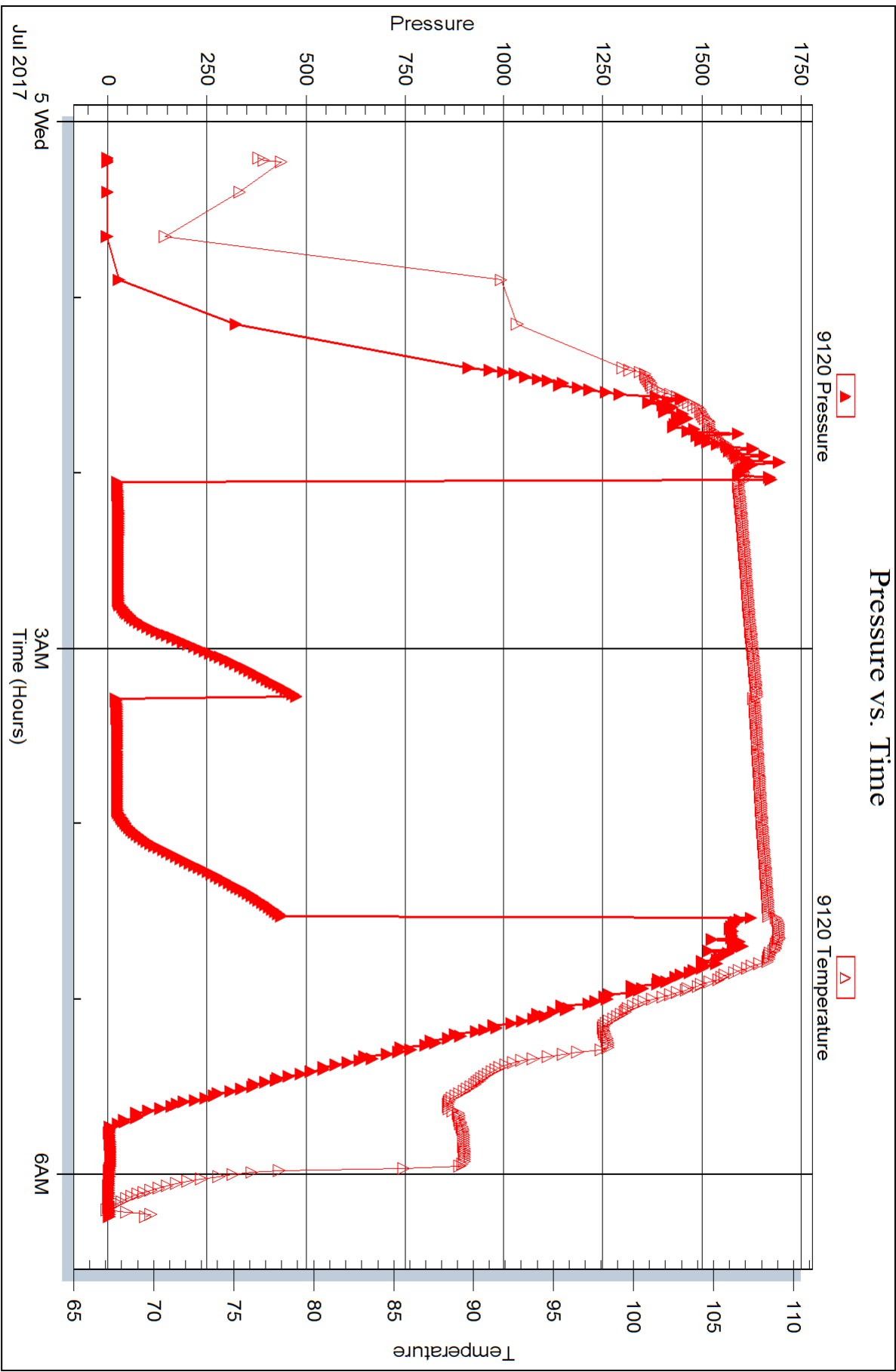
Serial #: 9120

Inside

TDI, Inc.

Wille #2

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 62984

Printed: 2017.07.11 @ 10:28:10



## DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Rd  
Hays KS 67601+9696

ATTN: Herb Deines

**Willie #2**

**9-15S-19W Ellis,KS**

Start Date: 2017.07.05 @ 20:00:15

End Date: 2017.07.06 @ 01:53:30

Job Ticket #: 62985                      DST #: 2

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

Printed: 2017.07.11 @ 10:27:01



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62985 **DST#: 2**  
Test Start: 2017.07.05 @ 20:00:15

## GENERAL INFORMATION:

Formation: **LKC "H - J"**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 21:12:00  
Time Test Ended: 01:53:30  
Interval: **3462.00 ft (KB) To 3530.00 ft (KB) (TVD)**  
Total Depth: 3530.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Spencer J. Staab  
Unit No: 84  
Reference Elevations: 2038.00 ft (KB)  
2029.00 ft (CF)  
KB to GR/CF: 9.00 ft

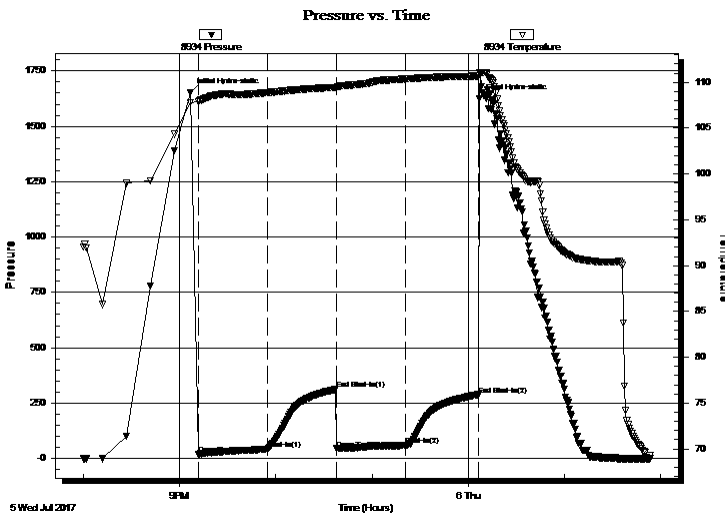
## Serial #: 8934

Inside

Press@RunDepth: 58.70 psig @ 3463.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2017.07.05 End Date: 2017.07.06 Last Calib.: 2017.07.06  
Start Time: 20:00:00 End Time: 01:53:15 Time On Btm: 2017.07.05 @ 21:06:45  
Time Off Btm: 2017.07.06 @ 00:07:00

TEST COMMENT: 45-IF-Fair Blow ; BOB in 30 mins  
45-ISI-No Return  
45-FF-Fair Blow ; BOB in 31 mins  
45-FSI-No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1652.18	107.80	Initial Hydro-static
5	18.88	107.89	Open To Flow (1)
48	41.24	108.86	Shut-In(1)
91	311.66	109.44	End Shut-In(1)
91	43.52	109.32	Open To Flow (2)
135	58.70	110.35	Shut-In(2)
180	288.01	110.67	End Shut-In(2)
181	1625.01	111.04	Final Hydro-static

## Recovery

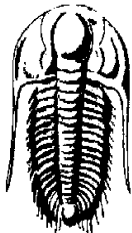
Length (ft)	Description	Volume (bbl)
15.00	WGOCM 2%W 5%G 15%O 78%M	0.21
10.00	WGOCM 2%W 5%G 25%O 68%M	0.14
25.00	GWOCM 5%G 20%W 30%O 45%M	0.35
40.00	GWOCM 5%G 5%W 5%O 85%M	0.56

\* Recovery from multiple tests

## Gas Rates

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





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

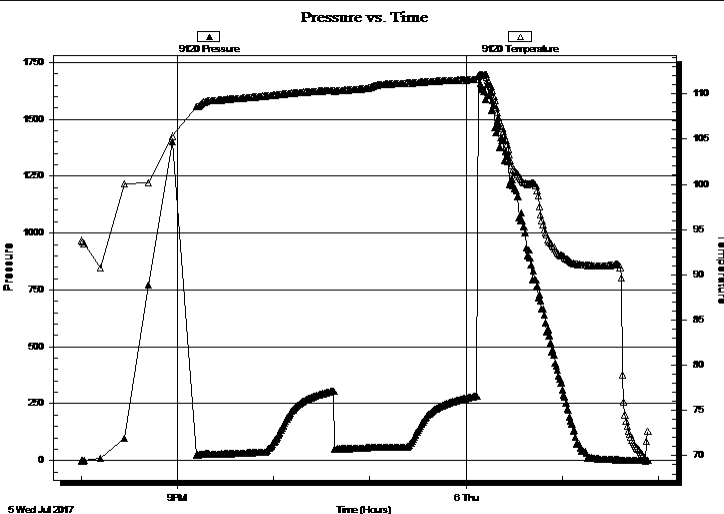
**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62985 **DST#: 2**  
Test Start: 2017.07.05 @ 20:00:15

## GENERAL INFORMATION:

Formation: **LKC "H - J"**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 21:12:00  
Time Test Ended: 01:53:30  
Interval: **3462.00 ft (KB) To 3530.00 ft (KB) (TVD)**  
Total Depth: 3530.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Spencer J. Staab  
Unit No: 84  
Reference Elevations: 2038.00 ft (KB)  
2029.00 ft (CF)  
KB to GR/CF: 9.00 ft

**Serial #: 9120** Inside  
Press@RunDepth: psig @ 3463.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2017.07.05 End Date: 2017.07.06 Last Calib.: 2017.07.06  
Start Time: 20:00:15 End Time: 01:53:30 Time On Btm:  
Time Off Btm:

TEST COMMENT: 45-IF-Fair Blow ; BOB in 30 mins  
45-ISI-No Return  
45-FF-Fair Blow ; BOB in 31 mins  
45-FSI-No Return



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
15.00	WGOCM 2%W 5%G 15%O 78%M	0.21
10.00	WGOCM 2%W 5%G 25%O 68%M	0.14
25.00	GWOCM 5%G 20%W 30%O 45%M	0.35
40.00	GWOCM 5%G 5%W 5%O 85%M	0.56

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62985      **DST#: 2**  
Test Start: 2017.07.05 @ 20:00:15

**Tool Information**

Drill Pipe:	Length: 3454.00 ft	Diameter: 3.80 inches	Volume: 48.45 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 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:	50000.00 lb
			<u>Total Volume: 48.45 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial	46000.00 lb
Depth to Top Packer:	3462.00 ft			Final	46000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	68.00 ft				
Tool Length:	88.00 ft				
Number of Packers:	1	Diameter: 6.75 inches			

Tool Comments:

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

Change Over Sub	1.00			3443.00	
Shut In Tool	5.00			3448.00	
Hydraulic tool	5.00			3453.00	
Packer	5.00			3458.00	20.00      Bottom Of Top Packer
Packer	4.00			3462.00	
Stubb	1.00			3463.00	
Recorder	0.00	9120	Inside	3463.00	
Recorder	0.00	8934	Inside	3463.00	
Perforations	2.00			3465.00	
Change Over Sub	1.00			3466.00	
Drill Pipe	31.00			3497.00	
Change Over Sub	1.00			3498.00	
Perforations	28.00			3526.00	
Bullnose	4.00			3530.00	68.00      Bottom Packers & Anchor

**Total Tool Length: 88.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62985      **DST#: 2**  
Test Start: 2017.07.05 @ 20:00:15

### Mud and Cushion Information

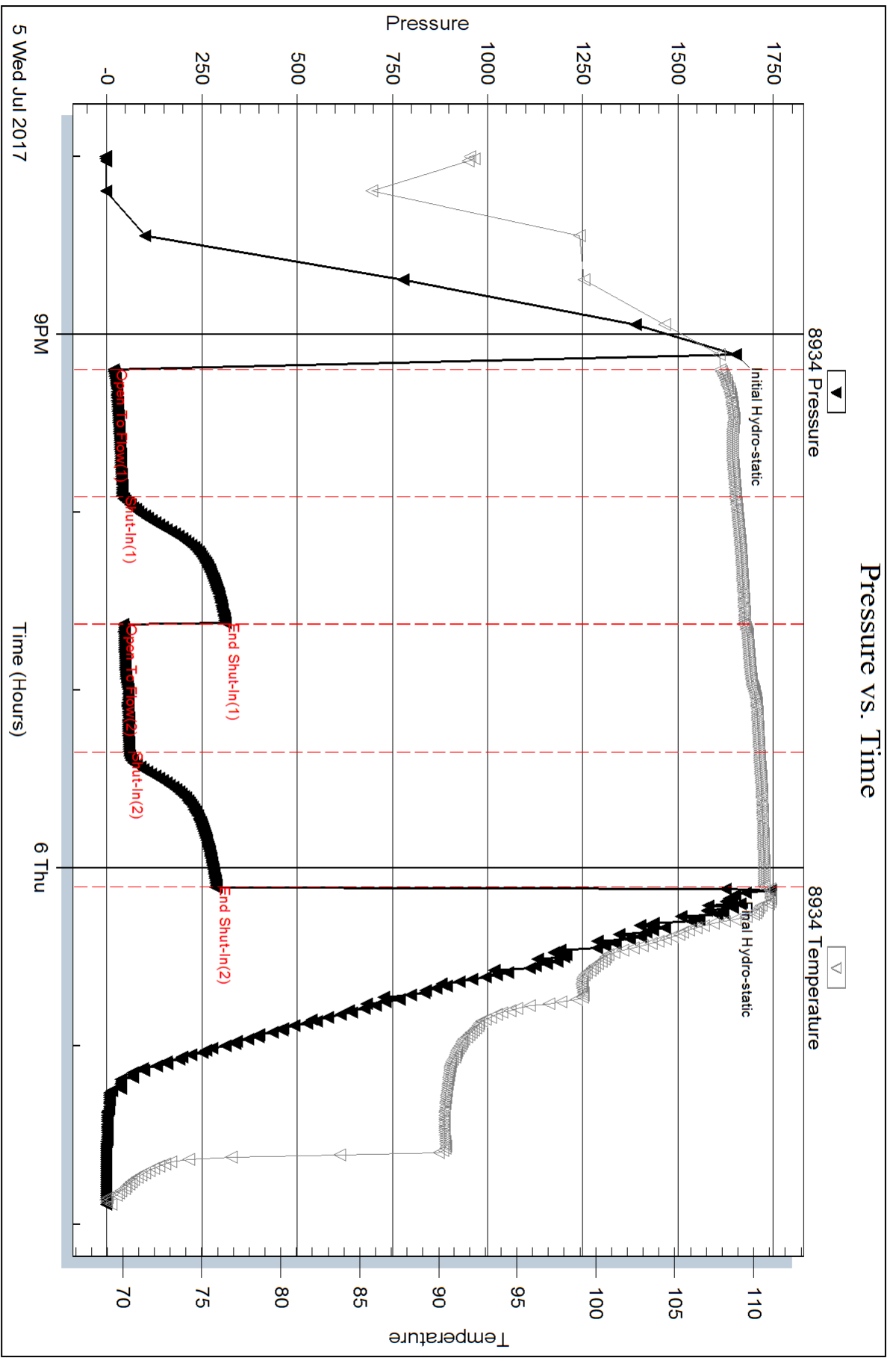
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 52.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.20 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 9600.00 ppm			
Filter Cake: inches			

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	WGOCM 2%W 5%G 15%O 78%M	0.210
10.00	WGOCM 2%W 5%G 25%O 68%M	0.140
25.00	GWOCM 5%G 20%W 30%O 45%M	0.351
40.00	GWOCM 5%G 5%W 5%O 85%M	0.561

Total Length: 90.00 ft      Total Volume: 1.262 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments: 2# LCM



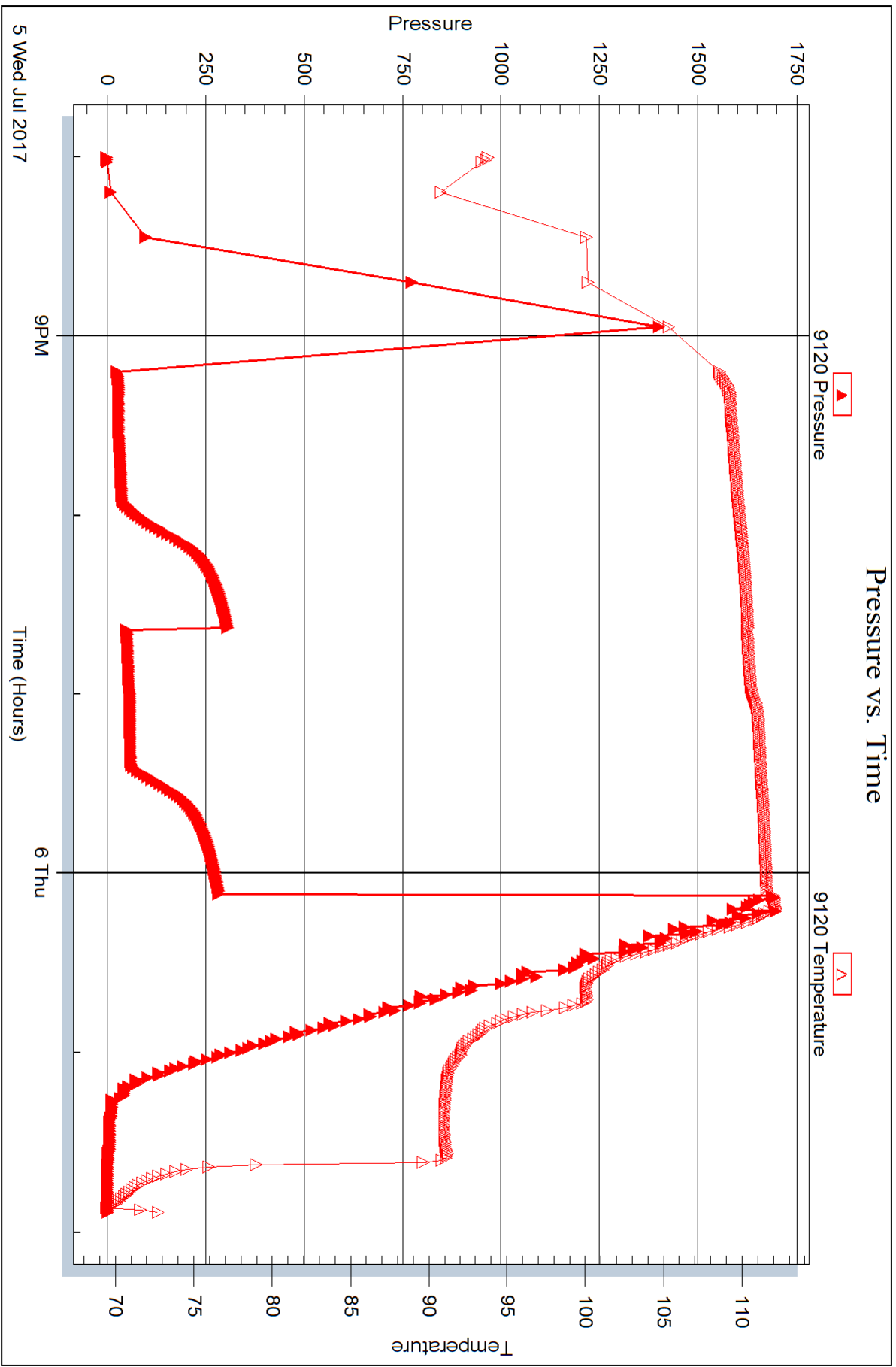
Serial #: 9120

Inside

TDI, Inc.

Wille #2

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 62985

Printed: 2017.07.11 @ 10:27:02



## DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Rd  
Hays KS 67601+9696

ATTN: Herb Deines

**Willie #2**

**9-15S-19W Ellis,KS**

Start Date: 2017.07.06 @ 14:46:00

End Date: 2017.07.06 @ 21:01:30

Job Ticket #: 62986                      DST #: 3

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

Printed: 2017.07.11 @ 10:25:55



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

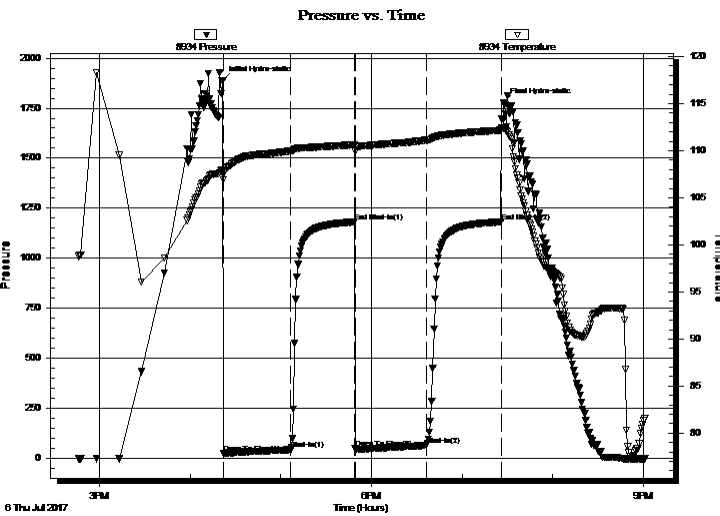
**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62986 **DST#: 3**  
Test Start: 2017.07.06 @ 14:46:00

## GENERAL INFORMATION:

Formation: **Conglomerate Sand**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 16:22:00  
Time Test Ended: 21:01:30  
Interval: **3630.00 ft (KB) To 3662.00 ft (KB) (TVD)**  
Total Depth: 3662.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Spencer J. Staab  
Unit No: 84  
Reference Elevations: 2038.00 ft (KB)  
2029.00 ft (CF)  
KB to GR/CF: 9.00 ft

**Serial #: 8934 Outside**  
Press@RunDepth: 65.02 psig @ 3631.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2017.07.06 End Date: 2017.07.06 Last Calib.: 2017.07.06  
Start Time: 14:46:15 End Time: 21:01:30 Time On Btm: 2017.07.06 @ 16:21:45  
Time Off Btm: 2017.07.06 @ 19:27:45

**TEST COMMENT:** 45-IF-Weak Blow ; Built to 6"  
45-ISI-No Return  
45-FF-Weak Blow ; Built to 5&3/4"  
45-FSI-No Return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1888.10	107.95	Initial Hydro-static
1	23.12	106.92	Open To Flow (1)
45	44.00	109.97	Shut-In(1)
88	1181.22	110.63	End Shut-In(1)
88	49.02	109.95	Open To Flow (2)
135	65.02	111.12	Shut-In(2)
185	1181.39	112.17	End Shut-In(2)
186	1778.73	112.39	Final Hydro-static

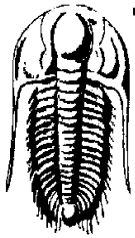
## Recovery

Length (ft)	Description	Volume (bbl)
40.00	Clean Oil 100%O	0.56
90.00	MCO 40%M 60%O	1.26

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

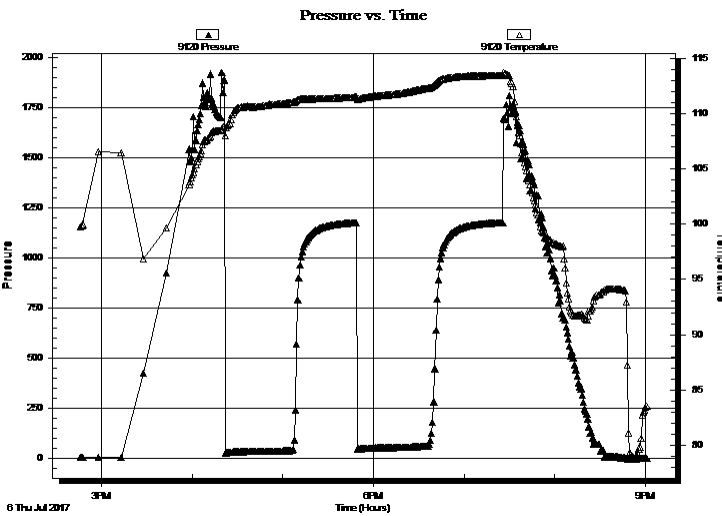
**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62986 **DST#: 3**  
Test Start: 2017.07.06 @ 14:46:00

### GENERAL INFORMATION:

Formation: **Conglomerate Sand**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 16:22:00  
 Time Test Ended: 21:01:30  
 Interval: **3630.00 ft (KB) To 3662.00 ft (KB) (TVD)**  
 Total Depth: 3662.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches  
 Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Spencer J. Staab  
 Unit No: 84  
 Reference Elevations: 2038.00 ft (KB)  
 2029.00 ft (CF)  
 KB to GR/CF: 9.00 ft

**Serial #: 9120** Inside  
 Press@RunDepth: psig @ 3631.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2017.07.06 End Date: 2017.07.06 Last Calib.: 2017.07.06  
 Start Time: 14:46:15 End Time: 21:01:30 Time On Btm:  
 Time Off Btm:

TEST COMMENT: 45-IF-Weak Blow ; Built to 6"  
 45-ISI-No Return  
 45-FF-Weak Blow ; Built to 5&3/4"  
 45-FSI-No Return



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

Recovery		
Length (ft)	Description	Volume (bbl)
40.00	Clean Oil 100%O	0.56
90.00	MCO 40%M 60%O	1.26

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

\* Recovery from multiple tests





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62986      **DST#: 3**  
Test Start: 2017.07.06 @ 14:46:00

**Tool Information**

Drill Pipe:	Length: 3615.00 ft	Diameter: 3.80 inches	Volume: 50.71 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 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:	50000.00 lb
			<u>Total Volume: 50.71 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial	45000.00 lb
Depth to Top Packer:	3630.00 ft			Final	45000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	32.00 ft				
Tool Length:	52.00 ft				
Number of Packers:	1	Diameter: 6.75 inches			
Tool Comments:					

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

Change Over Sub	1.00			3611.00	
Shut In Tool	5.00			3616.00	
Hydraulic tool	5.00			3621.00	
Packer	5.00			3626.00	20.00      Bottom Of Top Packer
Packer	4.00			3630.00	
Stubb	1.00			3631.00	
Recorder	0.00	9120	Inside	3631.00	
Recorder	0.00	8934	Outside	3631.00	
Perforations	27.00			3658.00	
Bullnose	4.00			3662.00	32.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>52.00</b>				



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

TDI, Inc.  
1310 Bison Rd  
Hays KS 67601+9696  
ATTN: Herb Deines

**9-15S-19W Ellis,KS**  
**Willie #2**  
Job Ticket: 62986      **DST#: 3**  
Test Start: 2017.07.06 @ 14:46:00

### Mud and Cushion Information

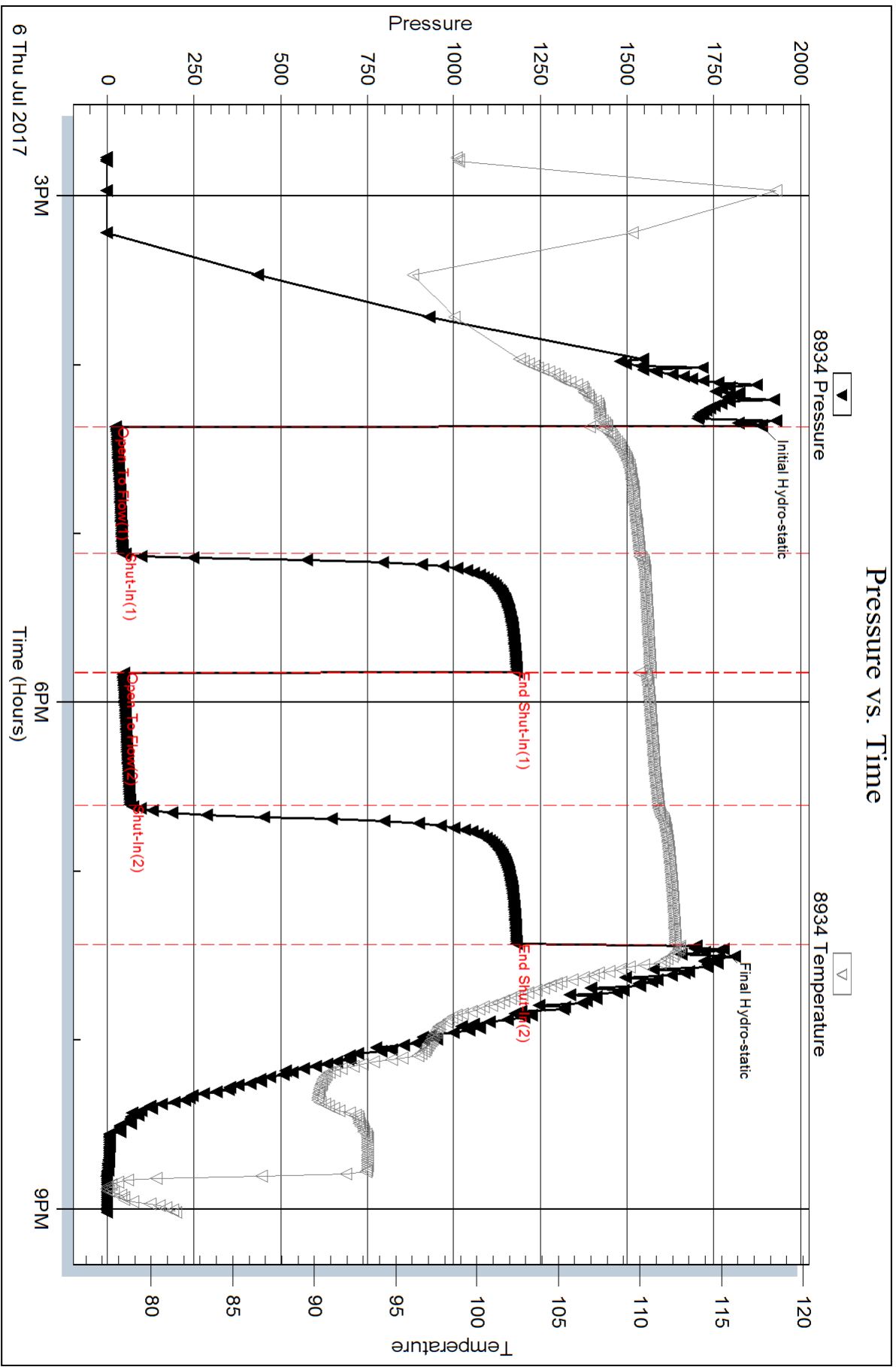
Mud Type: Gel Chem	Cushion Type:	Oil API: 29 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 51.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.80 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 8900.00 ppm		
Filter Cake: inches		

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
40.00	Clean Oil 100%O	0.561
90.00	MCO 40%M 60%O	1.262

Total Length: 130.00 ft      Total Volume: 1.823 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments: 1#LCM



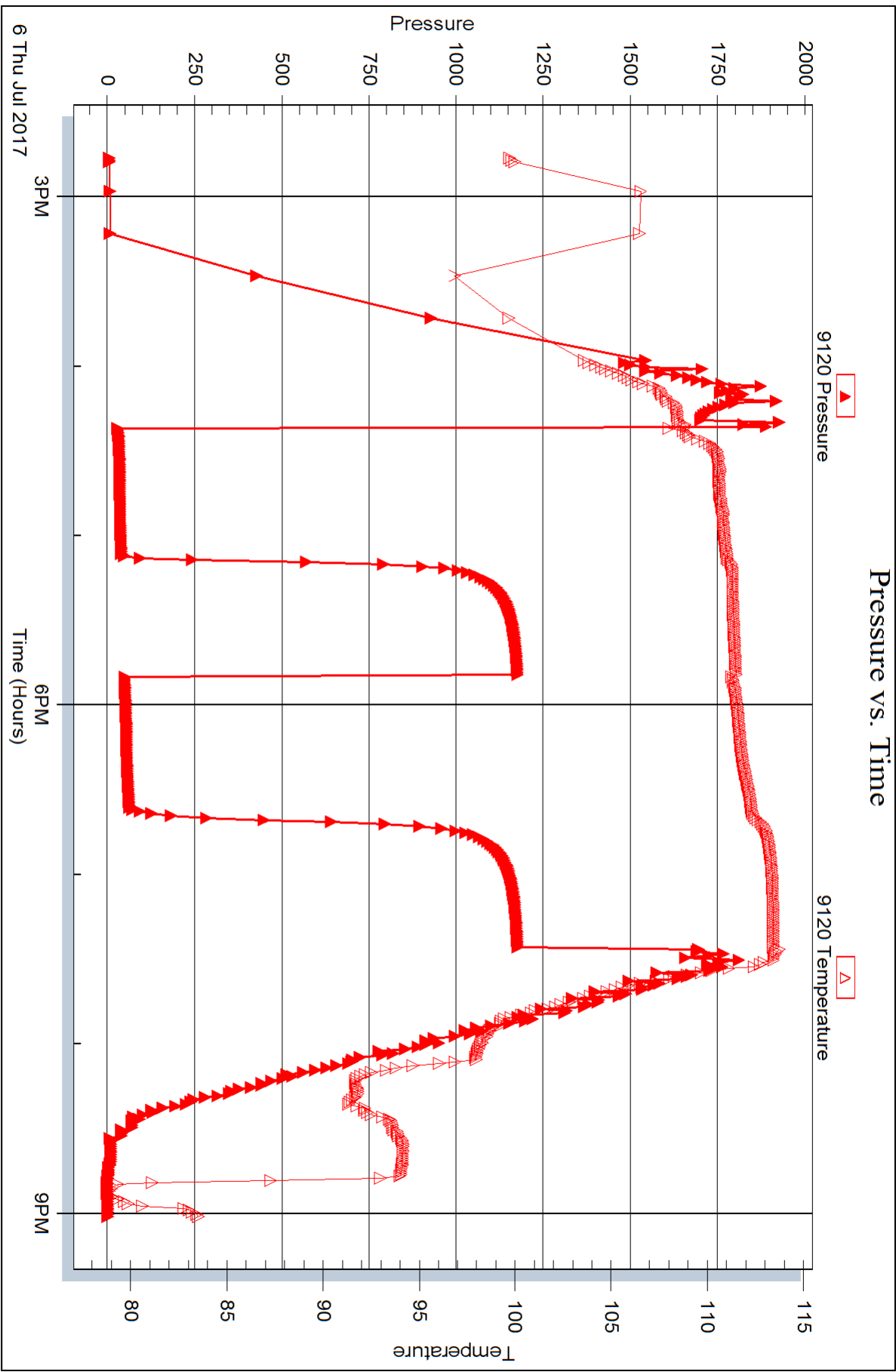
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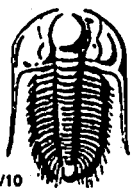
Inside

TDI, Inc.

Wille #2

DST Test Number: 3





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 62984

Well Name & No. Willie #2 Test No. 1 Date 07/04/2017  
 Company 7 D&D, Inc. Elevation 2038 KB 2029 GL  
 Address 1310 Bison Rd Hays Ks 67601 + 9696  
 Co. Rep / Geo. Herb Deines Rig Southwind #1  
 Location: Sec. 9 Twp. 15N Rge. 19W Co. Ellis State Ks

Interval Tested 3352' - 3400' Zone Tested LRC "C-D"  
 Anchor Length 48' Drill Pipe Run 3360' Mud Wt. 9.1  
 Top Packer Depth 3347' Drill Collars Run - Vis 59  
 Bottom Packer Depth 3352' Wt. Pipe Run - WL 6.4  
 Total Depth 3400' Chlorides 5,700 ppm System LCM 2#

Blow Description 17- Weak Blow; Built to 1/4"; died back to surface  
150- No Blow Back  
77- No Blow  
750- No Blow Back

Rec	Feet of	%gas	%oil	%water	%mud
<u>3'</u>	<u>Mud</u>			<u>100</u>	
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 Total 3' BHT 108° Gravity - API RW - @ - °F Chlorides - ppm

- (A) Initial Hydrostatic 1678
- (B) First Initial Flow 13
- (C) First Final Flow 15
- (D) Initial Shut-In 485
- (E) Second Initial Flow 14
- (F) Second Final Flow 15
- (G) Final Shut-In 445
- (H) Final Hydrostatic 1623

- Test 1050
- Jars
- Safety Joint
- Circ Sub
- Hourly Standby
- Mileage 3487 25.50
- Sampler
- Straddle
- Shale Packer
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 1075.50

T-On Location 23:10  
 T-Started 00:12 07/05/2017  
 T-Open 02:02  
 T-Pulled 04:32  
 T-Out 06:13

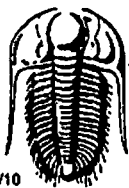
Comments \_\_\_\_\_  
 Ruined Shale Packer  
 Ruined Packer  
 Extra Copies  
 Sub Total 0  
 Total 1075.50  
 MP/DST Disc't \_\_\_\_\_

Initial Open 30  
 Initial Shut-In 45  
 Final Flow 30  
 Final Shut-In 45

Approved By \_\_\_\_\_ Our Representative Spencer J. Josal Thanks!

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.

785-259-0056



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 62985

Well Name & No. Willie #2 Test No. 2 Date 07/05/2017  
 Company 7Del, Inc Elevation 2038 KB 2029 GL  
 Address 1310 Bison Rd Hays Ks 67601 +9696  
 Co. Rep / Geo. Herb Deines Rig Southerwind #1  
 Location: Sec. 9 Twp. 15a Rge. 19w Co. Ellis State Ks

Interval Tested 3462' - 3530' Zone Tested LKC "A-d-j"  
 Anchor Length 68' Drill Pipe Run 3454' Mud Wt. 9.2  
 Top Packer Depth 3457' Drill Collars Run - Vis 52  
 Bottom Packer Depth 3462' Wt. Pipe Run - WL 7.2  
 Total Depth 3530' Chlorides 9,600 ppm System LCM 2#

Blow Description: 77- Fair Blow; BOB in 30 minutes  
75d- No Return  
77- Fair Blow; BOB in 31 minutes  
75d- No Return

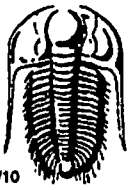
Rec	Feet of	%gas	%oil	%water	%mud
<u>15'</u>	<u>WGOCM</u>	<u>5</u>	<u>15</u>	<u>2</u>	<u>78</u>
<u>10'</u>	<u>WGOCM</u>	<u>5</u>	<u>25</u>	<u>2</u>	<u>68</u>
<u>25'</u>	<u>GWOCM</u>	<u>5</u>	<u>30</u>	<u>20</u>	<u>45</u>
<u>40'</u>	<u>GWOCM</u>	<u>5</u>	<u>5</u>	<u>5</u>	<u>85</u>

Rec Total 90' BHT 111° Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1652  Test 1050 T-On Location 19:00  
 (B) First Initial Flow 18  Jars - T-Started 20:00  
 (C) First Final Flow 41  Safety Joint - T-Open 21:09  
 (D) Initial Shut-In 311  Circ Sub - T-Pulled 00:09 07/06/2017  
 (E) Second Initial Flow 43  Hourly Standby - T-Out 01:51  
 (F) Second Final Flow 58  Mileage 3427 25.50 Comments -  
 (G) Final Shut-In 288  Sampler -  
 (H) Final Hydrostatic 1625  Straddle -  Ruined Shale Packer -  
 Shale Packer -  Ruined Packer -  
 Extra Packer -  Extra Copies -  
 Initial Open 45  Extra Recorder - Sub Total 0  
 Initial Shut-In 45  Day Standby - Total 1075.50  
 Final Flow 45  Accessibility - MP/DST Disc't -  
 Final Shut-In 45 Sub Total 1075.50

Approved By \_\_\_\_\_ Our Representative Spencer J. Stahl Thanks  
 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.

785-259-0056



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 62986

Well Name & No. Wallie #2 Test No. 3 Date 07/06/2017  
 Company 700, Inc. Elevation 2038 KB 2029 GL  
 Address 1310 Bison Rd Hays Ks 67601 +9696  
 Co. Rep / Geo. Herb Deines Rig Southwind #1  
 Location: Sec. 9 Twp. 15a Rge. 19w Co. Ellis State Ks

Interval Tested 3630' - 3662' Zone Tested Conglomerate Sand  
 Anchor Length 32' Drill Pipe Run 3645' Mud Wt. 9.1  
 Top Packer Depth 3625' Drill Collars Run - Vis 51  
 Bottom Packer Depth 3630' Wt. Pipe Run - WL 7.8  
 Total Depth 3662' Chlorides 8,900 ppm System LCM 1#

Blow Description: 77-Weak Blow; Built to 6"  
55D - No Return  
77-Weak Blow; Built to 5 3/4"  
75D - No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>40'</u>	<u>Clean Oil</u>	<u>100</u>			
<u>90'</u>	<u>MCO</u>	<u>60</u>		<u>40</u>	

Rec Total 130' BHT 112° Gravity 29° API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1888  Test 1050 T-On Location 14:13  
 (B) First Initial Flow 23  Jars - T-Started 14:46  
 (C) First Final Flow 44  Safety Joint - T-Open 16:20  
 (D) Initial Shut-In 1181  Circ Sub - T-Pulled 19:20  
 (E) Second Initial Flow 49  Hourly Standby - T-Out 21:00  
 (F) Second Final Flow 65  Mileage 34 RT 25.50 Comments \_\_\_\_\_  
 (G) Final Shut-In 1181  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1778  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Initial Open 45  
 Initial Shut-In 45  
 Final Flow 45  
 Final Shut-In 45

Sub Total 1075.50

Sub Total 1075.50

MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Spencer J. Staal Thanks!  
 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.

785-259-0056

Conservation Division  
266 N. Main St., Ste. 220  
Wichita, KS 67202-1513



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

Pat Apple, Chairman  
Shari Feist Albrecht, Commissioner  
Jay Scott Emler, Commissioner

Sam Brownback, Governor

November 08, 2017

Tom Denning  
TDI, Inc.  
1310 BISON RD  
HAYS, KS 67601-9696

Re: ACO-1  
API 15-051-26877-00-00  
WILLIE 2  
SE/4 Sec.09-15S-19W  
Ellis County, Kansas

Dear Tom Denning:

K.A.R. 82-3-107 provides for all completion information to be filed within 120 days of the spud date. Subsection(e)(2) of that regulation states "All rights to confidentiality shall be lost if the filings are not timely."

The above referenced well was spudded on 6/30/2017 and the ACO-1 was received on November 08, 2017 (not within the 120 days timely requirement).

Therefore, your request for confidential treatment of data contained within the ACO-1 filing cannot be granted at this time.

If you should have any questions, please do not hesitate to contact me at (316)337-6200.

Sincerely,

Production Department