

Confidentiality Requested:

Yes  No

**KANSAS CORPORATION COMMISSION  
OIL & GAS CONSERVATION DIVISION**

Form ACO-1

January 2018

**Form must be Typed**

**Form must be Signed**

**All blanks must be Filled**

**WELL COMPLETION FORM  
WELL HISTORY - DESCRIPTION OF WELL & LEASE**

OPERATOR: License # \_\_\_\_\_

Name: \_\_\_\_\_

Address 1: \_\_\_\_\_

Address 2: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ + \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone: ( \_\_\_\_\_ ) \_\_\_\_\_

CONTRACTOR: License # \_\_\_\_\_

Name: \_\_\_\_\_

Wellsite Geologist: \_\_\_\_\_

Purchaser: \_\_\_\_\_

Designate Type of Completion:

New Well  Re-Entry  Workover

Oil  WSW  SWD

Gas  DH  EOR

OG  GSW

CM (Coal Bed Methane)

Cathodic  Other (Core, Expl., etc.): \_\_\_\_\_

If Workover/Re-entry: Old Well Info as follows:

Operator: \_\_\_\_\_

Well Name: \_\_\_\_\_

Original Comp. Date: \_\_\_\_\_ Original Total Depth: \_\_\_\_\_

Deepening  Re-perf.  Conv. to EOR  Conv. to SWD

Plug Back  Liner  Conv. to GSW  Conv. to Producer

Commingled Permit #: \_\_\_\_\_

Dual Completion Permit #: \_\_\_\_\_

SWD Permit #: \_\_\_\_\_

EOR Permit #: \_\_\_\_\_

GSW Permit #: \_\_\_\_\_

Spud Date or Recompletion Date \_\_\_\_\_ Date Reached TD \_\_\_\_\_ Completion Date or Recompletion Date \_\_\_\_\_

API No.: \_\_\_\_\_

Spot Description: \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

\_\_\_\_\_ Feet from  North /  South Line of Section

\_\_\_\_\_ Feet from  East /  West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE  NW  SE  SW

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

Datum:  NAD27  NAD83  WGS84

County: \_\_\_\_\_

Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Field Name: \_\_\_\_\_

Producing Formation: \_\_\_\_\_

Elevation: Ground: \_\_\_\_\_ Kelly Bushing: \_\_\_\_\_

Total Vertical Depth: \_\_\_\_\_ Plug Back Total Depth: \_\_\_\_\_

Amount of Surface Pipe Set and Cemented at: \_\_\_\_\_ Feet

Multiple Stage Cementing Collar Used?  Yes  No

If yes, show depth set: \_\_\_\_\_ Feet

If Alternate II completion, cement circulated from: \_\_\_\_\_

feet depth to: \_\_\_\_\_ w/ \_\_\_\_\_ sx cmt.

**Drilling Fluid Management Plan**

*(Data must be collected from the Reserve Pit)*

Chloride content: \_\_\_\_\_ ppm Fluid volume: \_\_\_\_\_ bbls

Dewatering method used: \_\_\_\_\_

Location of fluid disposal if hauled offsite: \_\_\_\_\_

Operator Name: \_\_\_\_\_

Lease Name: \_\_\_\_\_ License #: \_\_\_\_\_

Quarter \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

County: \_\_\_\_\_ Permit #: \_\_\_\_\_

**AFFIDAVIT**

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

Submitted Electronically

**KCC Office Use ONLY**

Confidentiality Requested

Date: \_\_\_\_\_

Confidential Release Date: \_\_\_\_\_

Wireline Log Received  Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT  I  II  III Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

Operator Name: \_\_\_\_\_ Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West County: \_\_\_\_\_

**INSTRUCTIONS:** Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to [kcc-well-logs@kcc.ks.gov](mailto: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 67601-9696

Contact Geologist: TOM DENNING  
 Contact Phone Nbr: 785-628-2593  
 Well Name: HART # 2  
 Location: SW SE SW NE, SEC.26-T13S-R19W  
 API: 15-051-26,986-00-00  
 Pool:  
 State: KANSAS

Field: SACK WEST  
 Country: USA



Scale 1:240 Imperial

Well Name: HART # 2  
 Surface Location: SW SE SW NE, SEC.26-T13S-R19W  
 Bottom Location:  
 API: 15-051-26,986-00-00  
 License Number: 4787  
 Spud Date: 6/3/2020 Time: 6:30 PM  
 Region: ELLIS COUNTY  
 Drilling Completed: 6/9/2020 Time: 3:08 AM  
 Surface Coordinates: 2575' FNL & 1930' FEL  
 Bottom Hole Coordinates:  
 Ground Elevation: 2152.00ft  
 K.B. Elevation: 2162.00ft  
 Logged Interval: 3150.00ft To: 3860.00ft  
 Total Depth: 3860.00ft  
 Formation: LANSING-KANSAS CITY  
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude: -99.3979856  
 Latitude: 38.8928228  
 N/S Co-ord: 2575' FNL  
 E/W Co-ord: 1930' 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 #: 8  
 Rig Type: MUD ROTARY  
 Spud Date: 6/3/2020 Time: 6:30 PM  
 TD Date: 6/9/2020 Time: 3:08 AM

**ELEVATIONS**

K.B. Elevation: 2162.00ft  
 K.B. to Ground: 10.00ft

Ground Elevation: 2152.00ft

**NOTES**

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON LOG ANALYSIS AND RESULTS OF DST # 4.

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

DRILL STEM TESTING BY TRILOBITE TESTING INC: TWO (2) CONVENTIONAL TESTS AND TWO (2) STRADDLE TESTS.

HART # 2	MATLOCK # 1	HART # 1
SW SE SW NE	SW NE SE	NW SE SE NE
SEC.26-13S-19W	SEC.26-13-19W	SEC.26-13-19W
KB 2162'	KB 2172'	KB 2105'

	LOG TOPS		
Anhydrite top	1468 +694	+ 704	+ 707
Anhydrite base	1483 +679	+ 667	+ 669
Topeka	3169-1007	-1010	-1015
Heebner Sh.	3422-1260	-1260	-1262
Toronto	3440-1278	-1280	-1288
LKC	3466-1304	-1305	-1311
BKC	3702-1540	-1542	-1541
Arbuckle	3828-1666	-1642	-1659
RTD	3860-1698	-1730	-1695

**SUMMARY OF DAILY ACTIVITY**

06-03-20 Spud 6:30 pm, set 8 5/8" surface casing to 223' w/ 140 sxs 60/40 pos 2%gel 3%CC, Slope ¾ degree

06-04-20 223', cemented surface pipe, plug down 2:30 AM, WOC, drill plug at 10:30 AM with PDC bit

06-05-20 2115' drilling, displaced 2782-2795, drilled to 3010', CCH, TOWB, slope 1 degree

06-06-20 3071', trip in with button bit, drilling, CFS & short trip 3450'

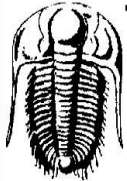
06-07-20 3522' CFS 3522', DST #1 3448'-3522' "C"& "D", TIWB, drilling, CFS 3685'

06-08-20 3685'. DST # 2 3624'-3685' "J" -"K". Straddle DST # 3 3360'-3410'

**Topeka, TIWB**

**06-09-20 3860', RTD 3860' @3:08 AM, TOWB, logs, Straddle DST # 4  
3545' – 3650' "G" to "J", heavy rain and high winds during  
afternoon and evening**

**06-10-20 3860', LDDP and run production casing, job completed 10:30 AM**

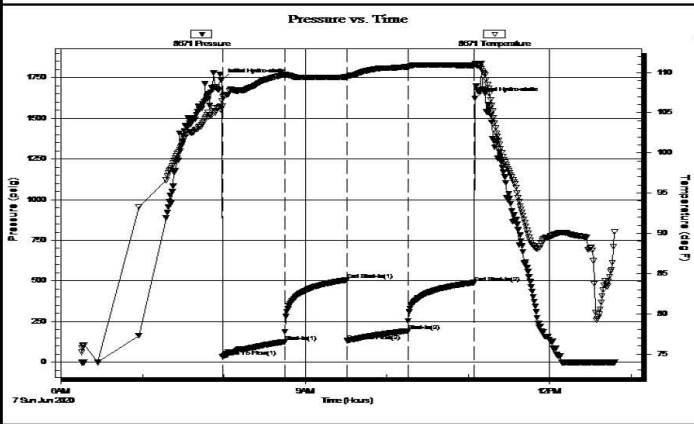
 <p><b>TRILOBITE TESTING, INC.</b></p>	<b>DRILL STEM TEST REPORT</b>	
	TDI Inc. 1310 Bison Rd Hays Ks 67601  ATTN: Herb Deines	<b>26 - 13S - 19W</b>  <b>Hart #2</b> Job Ticket: 66870 <b>DST#: 1</b> Test Start: 2020.06.07 @ 06:15:00

**GENERAL INFORMATION:**

Formation: <b>Lansing C &amp; D</b>	Test Type: Conventional Bottom Hole (Initial)
Deviated: No Whipstock:                      ft (KB)	Tester: Royal Fisher
Time Tool Opened: 07:58:45	Unit No: #77
Time Test Ended: 12:48:30	
<b>Interval: 3448.00 ft (KB) To 3522.00 ft (KB) (TVD)</b>	Reference Elevations: 2162.00 ft (KB)
Total Depth: 3522.00 ft (KB) (TVD)	2152.00 ft (CF)
Hole Diameter: 7.88 inches Hole Condition: Poor	KB to GR/CF: 10.00 ft

<b>Serial #: 8671</b>	<b>Outside</b>				
Press@RunDepth: 193.49 psig @ 3449.00 ft (KB)	Capacity: 8000.00 psig				
Start Date: 2020.06.07	End Date: 2020.06.07	Last Calib.: 2020.06.07			
Start Time: 06:15:05	End Time: 12:48:29	Time On Btm: 2020.06.07 @ 07:58:30			
		Time Off Btm: 2020.06.07 @ 11:05:15			

**TEST COMMENT:** 45 - IFP - Blow built to bottom of Bucket in 17 mins. then built to 18"  
 45 - ISI - No Return  
 45 - FFP - Blow built up to 8 1/4"  
 45 - FSI - No Return



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1738.63	106.47	Initial Hydro-static
1	34.81	105.81	Open To Flow (1)
47	126.26	109.75	Shut-In(1)
92	505.73	109.42	End Shut-In(1)
93	132.29	109.28	Open To Flow(2)
137	193.49	110.70	Shut-In(2)
187	488.38	110.86	End Shut-In(2)
187	1624.55	111.13	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
126.00	OSWM - Oil Spots - 40%w - 60%m	1.29
252.00	OSMW - Oil Spots - 15% m - 85%w	2.59

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  
ATTN: Herb Deines

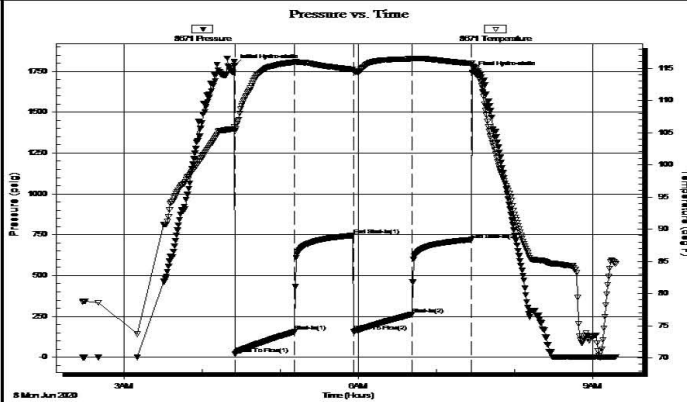
**26 - 13S - 19W**  
**Hart #2**  
Job Ticket: 66871 **DST#: 2**  
Test Start: 2020.06.08 @ 02:28:00

**GENERAL INFORMATION:**

Formation: **Lansing J & K**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 04:25:00  
Time Test Ended: 09:17:30  
Interval: **3624.00 ft (KB) To 3685.00 ft (KB) (TVD)**  
Total Depth: 3685.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Poor  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Royal Fisher  
Unit No: #77  
Reference Elevations: 2162.00 ft (KB)  
2152.00 ft (CF)  
KB to GR/CF: 10.00 ft

**Serial #: 8671 Outside**  
Press@RunDepth: 260.80 psig @ 3625.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2020.06.08 End Date: 2020.06.08 Last Calib.: 2020.06.08  
Start Time: 02:28:05 End Time: 09:17:29 Time On Btm: 2020.06.08 @ 04:24:45  
Time Off Btm: 2020.06.08 @ 07:27:15

**TEST COMMENT:** 45 - IFP - Blow built to B.o.B. in 24 mins and built up to 14"  
45 - ISI - No Return  
45 - FFP - Surface blow slowly built up to 7"  
45 - FSI - No Return



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1785.83	105.96	Initial Hydro-static
1	19.82	105.25	Open To Flow (1)
47	155.74	115.93	Shut-In(1)
92	745.35	114.80	End Shut-In(1)
92	157.19	114.53	Open To Flow (2)
137	260.80	116.45	Shut-In(2)
182	719.90	115.73	End Shut-In(2)
183	1741.69	115.79	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
189.00	OSMVV - Oil Spots - 40% m - 60% w	1.94
378.00	OSMVV - Oil Spots - 5% m - 95% w	3.88

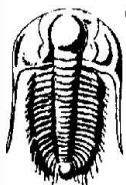
**Gas Rates**

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

TriLOBITE Testing, Inc

Ref. No: 66871

Printed: 2020.06.08 @ 10:36:29



**TRILOBITE TESTING, INC.**

**DRILL STEM TEST REPORT**

TDI Inc.  
1310 Bison Rd  
Hays Ks 67601  
ATTN: Herb Deines

**26 - 13S - 19W**  
**Hart #2**  
Job Ticket: 66872 **DST#: 3**  
Test Start: 2020.06.08 @ 10:30:00

**GENERAL INFORMATION:**

Formation: **Topeka/Oread**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 12:18:45  
 Time Test Ended: 17:09:45

Test Type: Conventional Straddle (Initial)  
 Tester: Royal Fisher  
 Unit No: #77

Interval: **3360.00 ft (KB) To 3410.00 ft (KB) (TVD)**  
 Total Depth: 3685.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 2162.00 ft (KB)  
 2152.00 ft (CF)  
 KB to GR/CF: 10.00 ft

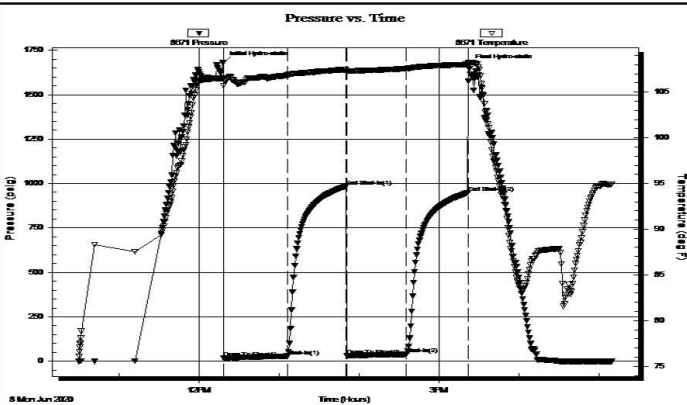
**Serial #: 8671**

**Inside**

Press@RunDepth: 39.95 psig @ 3361.00 ft (KB)  
 Start Date: 2020.06.08 End Date: 2020.06.08  
 Start Time: 10:30:05 End Time: 17:09:44

Capacity: 8000.00 psig  
 Last Calib.: 2020.06.08  
 Time On Btm: 2020.06.08 @ 12:18:30  
 Time Off Btm: 2020.06.08 @ 15:22:45

TEST COMMENT: 45 - IFP - Surface blow built up to 1/2" and stayed  
 45 - ISI - No Return  
 45 - FFP - Blow started at a weak blow and stayed  
 45 - FSI - No Return



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1681.66	106.51	Initial Hydro-static
1	17.40	105.68	Open To Flow (1)
49	28.83	106.86	Shut-In(1)
92	984.00	107.46	End Shut-In(1)
93	31.09	107.13	Open To Flow (2)
138	39.95	107.58	Shut-In(2)
184	947.64	108.03	End Shut-In(2)
185	1662.85	108.25	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
53.00	OSM - Oil Spots - 100% m	0.54

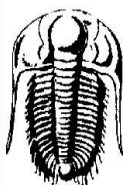
**Gas Rates**

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

Trilobite Testing, Inc

Ref. No: 66872

Printed: 2020.06.08 @ 21:07:06



**TRILOBITE TESTING, INC.**

**DRILL STEM TEST REPORT**

TDI Inc.  
 1310 Bison Rd  
 Hays Ks 67601  
 ATTN: Herb Deines

**26 - 13S - 19W**  
**Hart #2**  
 Job Ticket: 66873 **DST#: 4**  
 Test Start: 2020.06.09 @ 11:43:00

**GENERAL INFORMATION:**

Formation: **G - J**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 13:36:30  
 Time Test Ended: 18:40:00

Test Type: Conventional Straddle (Initial)  
 Tester: Royal Fisher  
 Unit No: #77

Interval: **3545.00 ft (KB) To 3650.00 ft (KB) (TVD)**  
 Total Depth: 3860.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 2162.00 ft (KB)  
 2152.00 ft (CF)  
 KB to GR/CF: 10.00 ft

**Serial #: 8671**

**Inside**

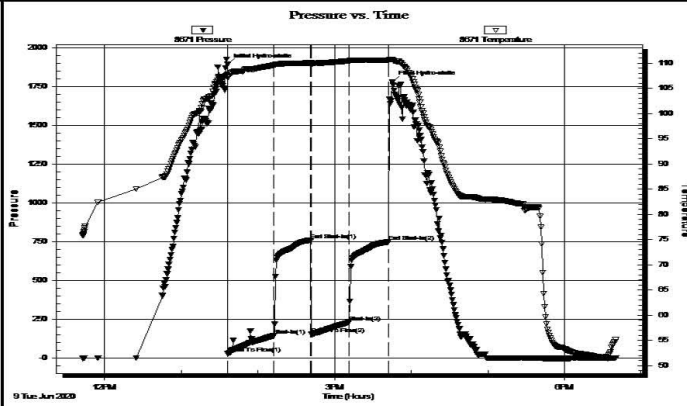
Press@RunDepth: 231.74 psig @ 3546.00 ft (KB)  
 Start Date: 2020.06.09 End Date: 2020.06.09  
 Start Time: 11:43:05 End Time: 18:39:59

Capacity: 8000.00 psig  
 Last Calib.: 2020.06.09  
 Time On Btm: 2020.06.09 @ 13:36:15  
 Time Off Btm: 2020.06.09 @ 15:45:15

TEST COMMENT: 35 - IFP - Blow built to B.o.B. in 10 mins and built up to 13"



30 - ISI - Started with a faint return then died off in 10 mins  
 30 - FFP - Blow built to B.o.B. in 15 mins and built up to 12 3/4"  
 30 - FSI - Return started right away and built up to 1/2"



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1894.15	107.75	Initial Hydro-static
1	28.58	107.10	Open To Flow (1)
37	144.09	109.57	Shut-In(1)
66	760.87	110.01	End Shut-In(1)
66	153.75	109.77	Open To Flow (2)
96	231.74	110.44	Shut-In(2)
126	749.03	110.56	End Shut-In(2)
129	1779.48	110.71	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
116.00	GOCWM - 15%g - 5%o - 40%w - 40%m	1.19
126.00	GOCWM - 5%g - 20%o - 25%w - 50%m	1.29
252.00	GOCMV - 20%g - 30%o - 20%m - 30%w	2.59
0.00	252 - GIP	0.00

**Gas Rates**

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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Trilobite Testing, Inc

Ref. No: 66873

Printed: 2020.06.09 @ 20:44:11

**ROCK TYPES**

Clystg	Dolprim	Lmst fw7>	shale, gry	shale, red
Chtcongl	Dol Lime	shale, grn	Carbon Sh	

**ACCESSORIES**

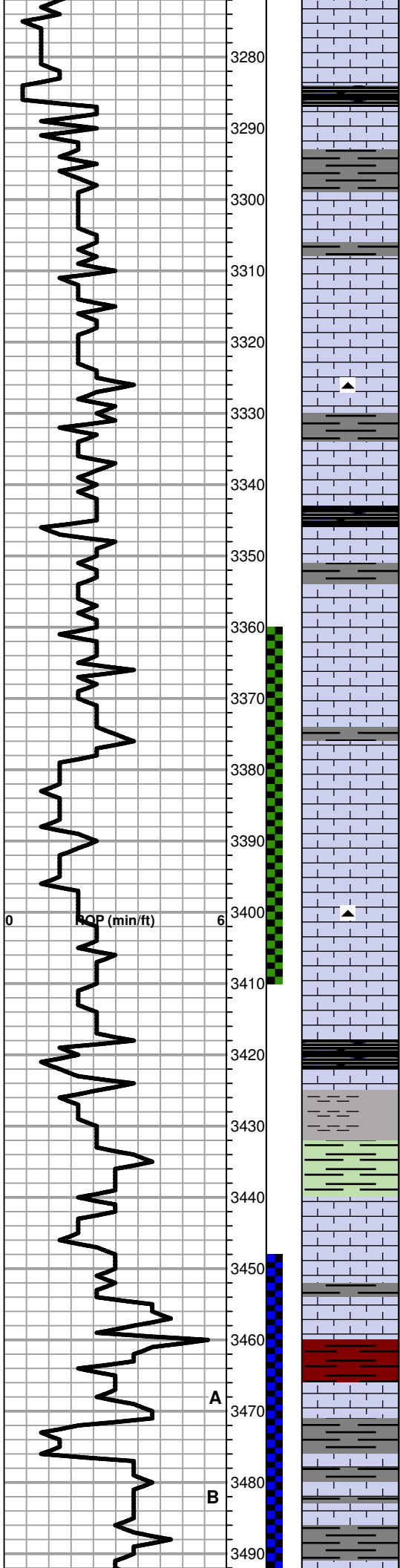
**MINERAL**

- ▲ Chert, dark
- △ Chert White

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
1:240 Imperial	ROP (min/ft)	Cored Interval DST Interval					1:240 Imperial
0	6	3030				BEGIN 1' DRILL TIME FROM 3050' TO RTD BEGIN 10' WET AND DRY SAMPLES FROM 3150' TO RTD	8 5/8" SURFACE CASING SET TO 223' W/140 SXS 60/40 POS 2%GEL 3%CC
		3040				<b>ANHYDRITE TOP 1468+694</b> <b>ANHYDRITE BASE 1483+679</b>	
		3050					





Lime, lt-med brn, fnxln-granular, bedded chalk in part

Shale, black carbonaceous, blocky

Lime, med brn, micro xln

Lime, lt brn, micro xln, lithographic

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

Lime, lt-med brn, fn-micro xln, slightly fossiliferous  
Chert, tan, sharp

Lime, lt gray, fn-vfxln, gray mottling in part

Shale, black carbonaceous, blocky

Lime, crm-med brn, fn-micro xln, sticky chalk in part

Lime, lt-med brn, fn-vfxln

Lime, lt-med brn-lt grayish brn, fn-micro xln

Lime, crm-lt brn, granular, micro oolmoldic with scattered  
fine vugs, scattered to sat dark stain, good odor, NFO

Lime, lt brn, fnxln, bedded chalk

Lime, lt-med brn, fnxln, white chalk wash

Lime, lt brn, fnxln

**HEEBNER SHALESPL 3418-1256 E-LOG 3422-1260**

Shale, black carbonaceous  
Lime, lt brn, micro xln

Shale, dove gray-lime green, soft sticky mud

**TORONTO 3440-1278**

Lime, white-crm, fn-vxln, fine interxln porosity, lt scat to sat  
staining, lite oily sheen

Lime, lt brn, fn-micro xln

Shale, red-gray, soft mud, lt red wash

**LKC 3466-1304**

Lime, lt gray, fn-micro xln

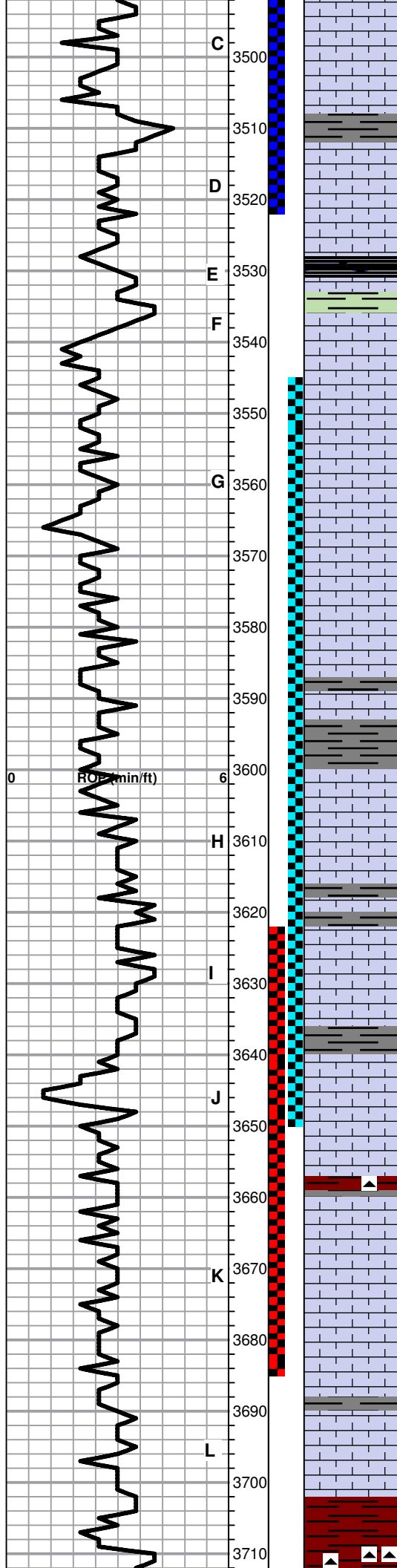
Shale, lt gray, soft blocky to soft mud

Lime, lt-med brn, fn-micro xln

Lime, crm-lt brn, fn-vfxln, micro oolmoldic, lt scattered staining, NFO

DST # 3 STRADDLE TEST  
3360' TO 3410' SEE  
HEADER FOR TEST  
SUMMARY

DST # 1 3448' TO 3522'  
SEE HEADER FOR TEST  
SUMMARY



Lime, crm-lt brn, fnxn-oolmoldic, lt scattered staining, NFO, lt odor

Lime, crm, fnxn, white chalk wash

Lime, crm-lt brn, fnxn-oolmoldic, lt odor, spotty staining, NFO

Lime, crm, fnxn, oolitic/fossil fragments, scattered spotty staining, very lt odor, NFO

Lime, crm-lt brn, fn-micro xln

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

Lime, crm, fn-vfxln, scattered oolitic chips with lt spotted stain, NFO or odor

Lime, crm-tan, fnxn, slight bedded chalk, scattered to sat dark stain, few floating globules of oil

Lime, crm, fn-micro xln

Lime, dark brn, fn-vfxln

Lime, crm, fnxn

Lime, crm, fnxn, few chip of oolitic/ fossil fragments, scattered dark stain, NFO or odor

Lime, lt brn, fn-micro xln

Lime, crm-lt brn, fn-micro xln

Lime, crm-lt brn, fn-micro xln, lt chalk wash , scattered lt staining in few oolmoldic chips

Lime, crm-micro xln, scattered oolmoldic chips with scattered to dark sat staining, sheen of fresh oil in mold cavities

Lime, crm-lt brn, fn-micro xln

Lime, crm, fn-micro xln, lt red wash

Lime, crm, fn-micro xln, bedded chalk with white wash

Lime, tan, fnxn, brittle on crush, bedded chalk with white wash

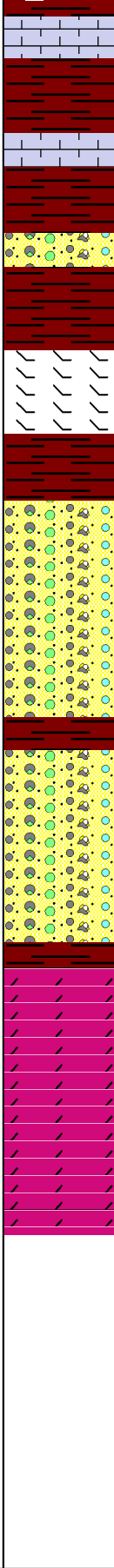
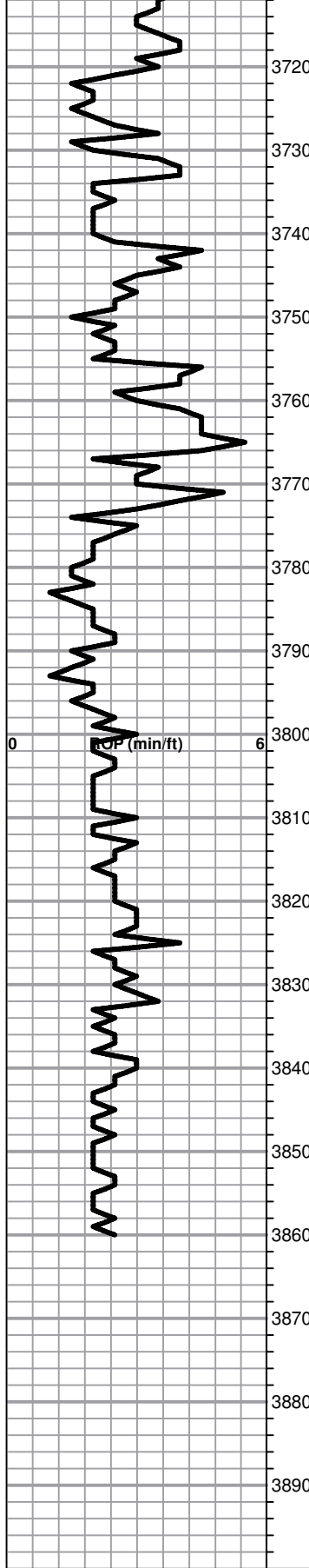
Lime, crm-offwhite, fn-vfxln

**BKC 3702-1540**

Shale, red-gray, firm, blocky

DST # 4 STRADDLE TEST  
3545' TO 3650' SEE  
HEADER FOR TEST  
SUMMARY

DST # 2 3624' TO 3685'  
SEE HEADER FOR TEST  
SUMMARY



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

Shale, red, soft with dark red wash

Lime, crm-lt brn, fn-micro xln

Shale, red with red wash

Cherts and shale, vari colored

Shale, red with red wash

Lime, crm-lt brn, dolomitic, orange-white chert, fresh, sharp

Shale, red with deep red wash

Chert vari colored with red wash shale

Shales and cherts, vari colored

Cherts and shales, vari color, NS

Cherts and shales, vari color, lt red wash

**ARBUCKLE 3828-1666**

Dolomite, ivory-crm, fnxln, no stain, NS or odor

Dolomite, ivory-crm, fnxln-granular

Dolomite, ivory, fnxln-granular

Dolomite, crm-ivory, fnxln-granular

RAN 5 1/2 NEW 14#  
 CASING, TALLY 3847' SET  
 TO 3857' CEMENTED  
 WITH 150 SXS EA-2, DV  
 AT 1476' CEMENTED WITH  
 170 SACKS SMD,  
 CIRCULATED 50 SACKS  
 TO PIT, 30 SACKS IN  
 RATHOLE, SWIFT  
 TICKET# 033156



**CEMENT TREATMENT REPORT**

Customer:	TDI, INC	Well:	HART 2	Ticket:	ICT3612
City, State:	HAYS KS	County:	ELLIS CO KS	Date:	6/4/2020
Field Rep:	FRANK ROME	S-T-R:	26-13S-19W	Service:	8 5/8 SURFACE

Downhole Information		Calculated Slurry - Lead		Calculated Slurry - Tail	
Hole Size:	in	Blend:	60/40/2	Blend:	
Hole Depth:	ft	Weight:	14.8 ppg	Weight:	ppg
Casing Size:	8 5/8 in	Water / Sx:	5.2 gal / sx	Water / Sx:	gal / sx
Casing Depth:	ft	Yield:	1.21 ft <sup>3</sup> / sx	Yield:	ft <sup>3</sup> / sx
Tubing / Liner:	in	Annular Bbls / Ft.:	bbs / ft.	Annular Bbls / Ft.:	bbs / ft.
Depth:	ft	Depth:	ft	Depth:	ft
Tool / Packer:		Annular Volume:	0.0 bbls	Annular Volume:	0 bbls
Tool Depth:	ft	Excess:		Excess:	
Displacement:	bbls	Total Slurry:	30.0 bbls	Total Slurry:	0.0 bbls
		Total Sacks:	140 sx	Total Sacks:	#DIV/0! sx

TIME	RATE	PSI	STAGE BBLs	TOTAL BBLs	REMARKS
1:00 AM			-	-	ON LOCATION/SAFTEY MEETING
				-	RUNNING 8 5/8 CASING
1:40 AM				-	CASING ON BOTTOM
1:55 AM				-	HOOK TO CASING/ BREAK CIRC WITH RIG
2:07 AM	4.0	150.0	30.0	30.0	MIX 140 SKS 60/40/2 POZMIX
2:25 AM	4.0	200.0	-	30.0	START DISPLACEMENT
2:30 AM		200.0	12.5	42.5	PLUG DOWN/CEMENT TO SURFACE
				-	
				-	
				-	JOB COMPLETE/THANK YOU!
				-	MIKE MATTAL
				-	MIKE&E.J.
				-	
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CREW		UNIT	SUMMARY		
Cementer:	MATTAL	912	Average Rate	Average Pressure	Total Fluid
Pump Operator:	MCGRAW	526/521	4.0 bpm	183 psi	43 bbls
Bulk #1:	E.J.MCGRAW	182/260			
Bulk #2:					



**HURRICANE SERVICES INC**

Customer	TDI, INC	Lease & Well #	HART 2		Date	6/4/2020	
Service District	MEDICINE LODGE KS	County & State	ELLIS CO KS	Legals S/T/R	26-13S-19W	Job #	
Job Type	8 5/8 SURFACE	<input checked="" type="checkbox"/> PROD	<input type="checkbox"/> INJ	<input type="checkbox"/> SWD	New Well?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> No	Ticket #
Equipment #	Driver	<b>Job Safety Analysis - A Discussion of Hazards &amp; Safety Procedures</b>					

912	MATTAL	<input checked="" type="checkbox"/> Hard hat	<input checked="" type="checkbox"/> Gloves	<input type="checkbox"/> Lockout/Tagout	<input type="checkbox"/> Warning Signs & Flagging
526/521	MCGRAW	<input checked="" type="checkbox"/> H2S Monitor	<input checked="" type="checkbox"/> Eye Protection	<input type="checkbox"/> Required Permits	<input type="checkbox"/> Fall Protection
182/260	E.J.MCGRAW	<input checked="" type="checkbox"/> Safety Footwear	<input type="checkbox"/> Respiratory Protection	<input type="checkbox"/> Slip/Trip/Fall Hazards	<input type="checkbox"/> Specific Job Sequence/Expectations
		<input checked="" type="checkbox"/> FRC/Protective Clothing	<input type="checkbox"/> Additional Chemical/Acid PPE	<input type="checkbox"/> Overhead Hazards	<input type="checkbox"/> Muster Point/Medical Locations
		<input type="checkbox"/> Hearing Protection	<input type="checkbox"/> Fire Extinguisher	<input type="checkbox"/> Additional concerns or issues noted below	

**Comments**

Product/ Service Code	Description	Unit of Measure	Quantity	Net Amount
CP070	60/40/2 Pozmix	sack	140.00	\$1,401.40
CP100	Calcium Chloride	lb	363.00	\$209.63
CP120	Cello-flake	lb	36.00	\$48.51
M015	Light Equipment Mileage	mi	25.00	\$38.50
M010	Heavy Equipment Mileage	mi	25.00	\$77.00
M020	Ton Mileage	tm	151.00	\$174.41
C010	Cement Pump Service	ea	1.00	\$577.50
	PPP DISCOUNT			(\$750.00)

<b>Customer Section:</b> On the following scale how would you rate Hurricane Services Inc.?		Net:	\$1,776.95
<b>Based on this job, how likely is it you would recommend HSI to a colleague?</b> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Unlikely 1 2 3 4 5 6 7 8 9 10 Extremely Likely		Total Taxable \$ - Tax Rate: State tax laws deem certain products and services used on new wells to be sales tax exempt. Hurricane Services relies on the customer provided well information above to make a determination if services and/or products are tax exempt.	Sale Tax: \$ - Total: \$ 1,776.95
		HSI Representative: <i>Mike Mattal</i>	

**TERMS:** Cash in advance unless Hurricane Services Inc. (HSI) has approved credit prior to sale. Credit terms of sale for approved accounts are total invoice due on or before the 30th day from the date of invoice. Past due accounts shall pay interest on the balance past due at the rate of 1 1/2% per month or the maximum allowable by applicable state or federal laws. In the event it is necessary to employ an agency and/or attorney to affect the collection, Customer hereby agrees to pay all fees directly or indirectly incurred for such collection. In the event that Customer's account with HSI becomes delinquent, HSI has the right to revoke any discounts previously applied in arriving at net invoice price. Upon revocation, the full invoice price without discount is immediately due and subject to collection. Prices quoted are estimates only and are good for 30 days from the date of issue. Pricing does not include federal, state, or local taxes, or royalties and stated price adjustments. Actual charges may vary depending upon time, equipment, and material ultimately required to perform these services. Any discount is based on 30 days net payment terms or cash. **DISCLAIMER NOTICE:** Technical data is presented in good faith, but no warranty is stated or implied. HSI assumes no liability for advice or recommendations made concerning the results from the use of any product or service. The information presented is a best estimate of the actual results that may be achieved and should be used for comparison purposes and HSI makes no guarantee of future production performance. Customer represents and warrants that well and all associated equipment in acceptable condition to receive services by HSI. Likewise, the customer guarantees proper operational care of all customer owned equipment and property while HSI is on location performing services. The authorization below acknowledges the receipt and acceptance of all terms/conditions stated above, and Hurricane has been provided accurate well information in determining taxable services.

X \_\_\_\_\_ **CUSTOMER AUTHORIZATION SIGNATURE**



CHARGE TO: T&E  
 ADDRESS:  
 CITY, STATE, ZIP CODE:

TICKET 033156

PAGE 1 OF

SERVICE LOCATIONS  
 1. Hays Ks WELL/PROJECT NO. #2 LEASE HART COUNTY/PARISH Ellis STATE Ks CITY DATE 5-10-2020 OWNER  
 2. Ness City Ks TICKET TYPE  SERVICE  SALES CONTRACTOR Southwind RIG NAME/NO. SHIPPED VIA CT DELIVERED TO location ORDER NO.  
 3. WELL TYPE Oil WELL CATEGORY Development JOB PURPOSE 2 stage WELL PERMIT NO. WELL LOCATION  
 4. REFERRAL LOCATION INVOICE INSTRUCTIONS

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING			DESCRIPTION	QTY.		U/M		UNIT PRICE	AMOUNT
		LOC	ACCT	DF							
575		1			MILEAGE Trk # 111	10				5.00	50.00
579		1			Pump Charge- 2 stage	1		EA		1900.00	1900.00
290		1			D-Air	4		Gal		42.00	168.00
281		1			Mod Flush	500		Gal		1.50	750.00
221		1			Liquis Kcl	4		Gal		25.00	100.00
403		1			Cement Basket	2		EA	5/2	275.00	550.00
407		1			Insert Float shoe w/ Auto Fill	1		EA		325.00	325.00
408		1			Dr. Tool & Plug set	1		EA		3375.00	3375.00
409		1			Turbolizer	10		EA		90.00	900.00
417		1			D.V. LATCH Down plug & Barrel	1		EA		200.00	200.00

**LEGAL TERMS:** Customer hereby acknowledges and agrees to the terms and conditions on the reverse side hereof which include, but are not limited to, **PAYMENT, RELEASE, INDEMNITY, and LIMITED WARRANTY** provisions.

MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS.

**X**  
 DATE SIGNED TIME SIGNED  A.M.  P.M.

REMIT PAYMENT TO:  
 SWIFT SERVICES, INC.  
 P.O. BOX 466  
 NESS CITY, KS 67560  
 785-798-2300

SURVEY	AGREE	UNDECIDED	DISAGREE		
OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?				PAGE TOTAL	8318.00
WE UNDERSTOOD AND MET YOUR NEEDS?				P.2	8211.70
OUR SERVICE WAS PERFORMED WITHOUT DELAY?				TOTAL	16529.70
WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?				15% Disc	-2479.46
ARE YOU SATISFIED WITH OUR SERVICE? <input type="checkbox"/> YES <input type="checkbox"/> NO				S&T TAX	14050.24
<input type="checkbox"/> CUSTOMER DID NOT WISH TO RESPOND				Ellis	741.62
				TOTAL	14791.86

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

SWIFT OPERATOR David Edgerton

APPROVAL

Thank You!





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

TICKET CONTINUATION

TICKET No. 33158

CUSTOMER  
TAY

WELL  
HART # 2

DATE

PAGE 2 OF 3

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING			TIME	DESCRIPTION	WELL		DATE	UNIT PRICE	AMOUNT
		LOC	ACCT	DF			QTY	U/M			
330		2				Swift Molt. Density	800	sk		17 00	3400 00
325		2				Standard Cement	150	sk		13 50	2025 00
284		2				Calstar	8	sk		46 00	288 00
283		2				SALT	800	lbs		25 00	200 00
292		2				Hydrex 520	100	lbs		8 50	850 00
276		2				Floerle	100	lbs		3 00	300 00
581		2									
583		2									
SERVICE CHARGE											
MILEAGE CHARGE											
Cement											
TOTAL UNLOADED MILES							350	sk		85	642 50
TOTAL MILES							536			95	509 20

CONTINUATION TOTAL 8211 70

JOB LOG

SWIFT Services, Inc.

CUSTOMER TDE		WELL NO. #2		LEASE Hart		JOB TYPE 2 stage L.S		TICKET NO.	
CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS	
				T	C	TUBING	CASING		
	330								on location
									RTD - 3860 Centracizers - 1, 3, 4, 6, 8, 10, 13 16, 18, 57 Baskets - 2, 58 D.V. TOOL - # 58 @ 1478
	600								START Running Csg
	750								Circ on Bottom
	900	5.5	12			300			pump mud flush - 500 gal
		5.5	20			300			pump KCL spacer
		5.5	36			300			pump EA - 2 cmt - 150 sks Drop plug wash P&L
		6.5	0			300			START Disp
		5.5	92			900/600			Land plug - lift psi - 900 land-1600
	945								Release psi - Dry
		2.5	8			0			Drop D.V. opening tool plug rat hole - 30 sks
	955					750			open D.V. tool
		6.5	99			400			Mix SPD cmt - 180 sks @ 11.2
		6.5	0			300			Drop plug START Disp
			5						Circ Cmt - 50 sks to pit
	1030		35			600/1500			land plug - lift psi - 600 land psi - 1500
									Release psi - Dry
									JOB Complete
									Circulated - 50 sks cmt to pit
									Thanks David Zach & Isaac



## DRILL STEM TEST REPORT

Prepared For: **TDI Inc.**

1310 Bison Rd  
Hays KS 67601

ATTN: Herb Deines

### **Hart #2**

### **26-13S-19W Ellis,KS**

Start Date: 2020.06.07 @ 06:15:00

End Date: 2020.06.07 @ 12:48:30

Job Ticket #: 66870                      DST #: 1

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

Printed: 2020.06.10 @ 08:30:12

TDI Inc. 26-13S-19W Ellis,KS Hart #2 DST #1 LKC C - D 2020.06.07



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

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

**26-13S-19W Ellis, KS**  
**Hart #2**  
Job Ticket: 66870 **DST#: 1**  
Test Start: 2020.06.07 @ 06:15:00

## GENERAL INFORMATION:

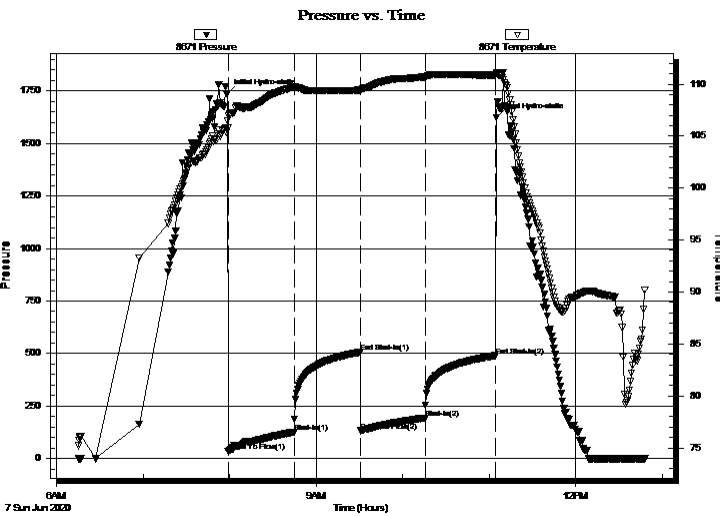
Formation: **LKC C - D**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 07:58:45  
Time Test Ended: 12:48:30  
Interval: **3448.00 ft (KB) To 3522.00 ft (KB) (TVD)**  
Total Depth: 3522.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Poor  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Royal Fisher  
Unit No: 77  
Reference Elevations: 2162.00 ft (KB)  
2152.00 ft (CF)  
KB to GR/CF: 10.00 ft

## Serial #: 8671

Outside

Press@RunDepth: 193.49 psig @ 3449.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2020.06.07 End Date: 2020.06.07 Last Calib.: 2020.06.07  
Start Time: 06:15:05 End Time: 12:48:29 Time On Btm: 2020.06.07 @ 07:58:30  
Time Off Btm: 2020.06.07 @ 11:05:15

TEST COMMENT: 45 - IFP - Blow built to bottom of Bucket in 17 mins. then built to 18"  
45 - ISI - No Return  
45 - FFP - Blow built up to 8 1/4"  
45 - FSI - No Return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1738.63	106.47	Initial Hydro-static
1	34.81	105.81	Open To Flow (1)
47	126.26	109.75	Shut-In(1)
92	505.73	109.42	End Shut-In(1)
93	132.29	109.28	Open To Flow (2)
137	193.49	110.70	Shut-In(2)
187	488.38	110.86	End Shut-In(2)
187	1624.55	111.13	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
126.00	OSWM - Oil Spots - 40%w - 60%m	1.29
252.00	OSMW - Oil Spots - 15% m - 85%w	2.59

## 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  
ATTN: Herb Deines

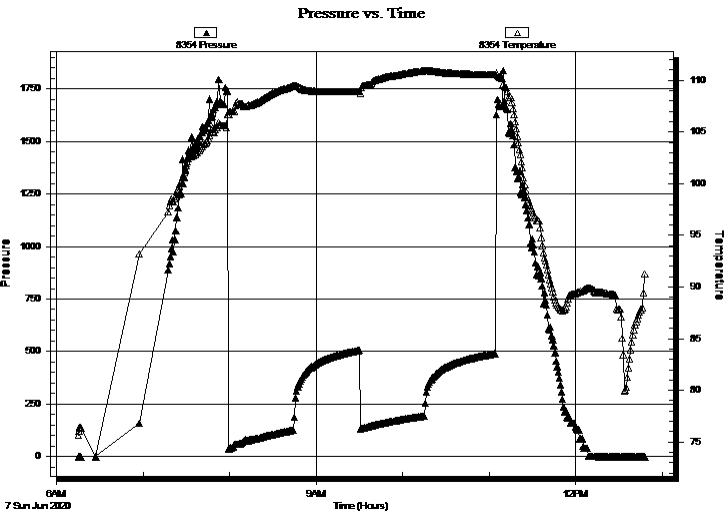
**26-13S-19W Ellis, KS**  
**Hart #2**  
Job Ticket: 66870 **DST#: 1**  
Test Start: 2020.06.07 @ 06:15:00

## GENERAL INFORMATION:

Formation: **LKC C - D**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 07:58:45  
Time Test Ended: 12:48:30  
Interval: **3448.00 ft (KB) To 3522.00 ft (KB) (TVD)**  
Total Depth: 3522.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Poor  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Royal Fisher  
Unit No: 77  
Reference Elevations: 2162.00 ft (KB)  
2152.00 ft (CF)  
KB to GR/CF: 10.00 ft

**Serial #: 8354 Inside**  
Press@RunDepth: psig @ 3449.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2020.06.07 End Date: 2020.06.07 Last Calib.: 2020.06.07  
Start Time: 06:15:05 End Time: 12:48:29 Time On Btm:  
Time Off Btm:

**TEST COMMENT:** 45 - IFP - Blow built to bottom of Bucket in 17 mins. then built to 18"  
45 - ISI - No Return  
45 - FFP - Blow built up to 8 1/4"  
45 - FSI - No Return



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
126.00	OSWM - Oil Spots - 40%w - 60%m	1.29
252.00	OSMW - Oil Spots - 15% m - 85%w	2.59

## Gas Rates

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

TDI Inc.

**26-13S-19W Ellis,KS**

1310 Bison Rd  
Hays KS 67601

**Hart #2**

Job Ticket: 66870

**DST#: 1**

ATTN: Herb Deines

Test Start: 2020.06.07 @ 06:15:00

## Tool Information

Drill Pipe:	Length: 3430.75 ft	Diameter: 3.25 inches	Volume: 35.20 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 52000.00 lb
			<u>Total Volume: 35.20 bbl</u>	Tool Chased 6.00 ft
Drill Pipe Above KB:	7.75 ft			String Weight: Initial 40000.00 lb
Depth to Top Packer:	3448.00 ft			Final 45000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	74.00 ft			
Tool Length:	99.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

**Length (ft) Serial No. Position Depth (ft) Accum. Lengths**

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3428.00	
Hydraulic tool	5.00			3433.00	
EM Tool	5.00			3438.00	
Packer	5.00			3443.00	25.00 Bottom Of Top Packer
Packer	5.00			3448.00	
Stubb	1.00			3449.00	
Recorder	0.00	8354	Inside	3449.00	
Recorder	0.00	8671	Outside	3449.00	
perforations	5.00			3454.00	
Change Over Sub	1.00			3455.00	
Drill Pipe	63.00			3518.00	
Change Over Sub	1.00			3519.00	
Bullnose	3.00			3522.00	74.00 Bottom Packers & Anchor

**Total Tool Length: 99.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

TDI Inc. **26-13S-19W Ellis, KS**  
 1310 Bison Rd **Hart #2**  
 Hays KS 67601 Job Ticket: 66870 **DST#: 1**  
 ATTN: Herb Deines Test Start: 2020.06.07 @ 06:15:00

### Mud and Cushion Information

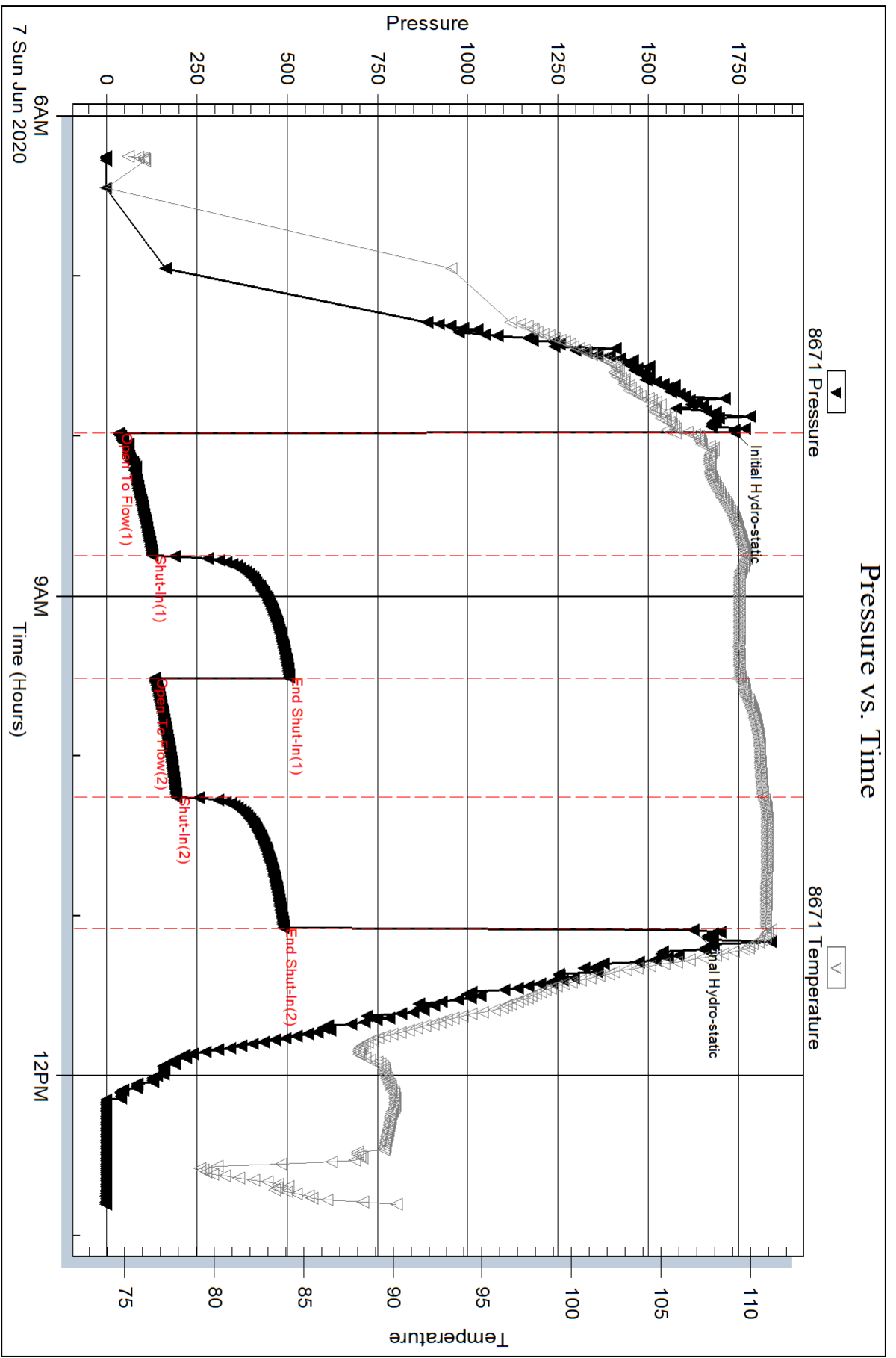
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	72000 ppm
Viscosity: 53.00 sec/qt	Cushion Volume: bbl		
Water Loss: 5.99 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 2900.00 ppm			
Filter Cake: 1.00 inches			

### Recovery Information

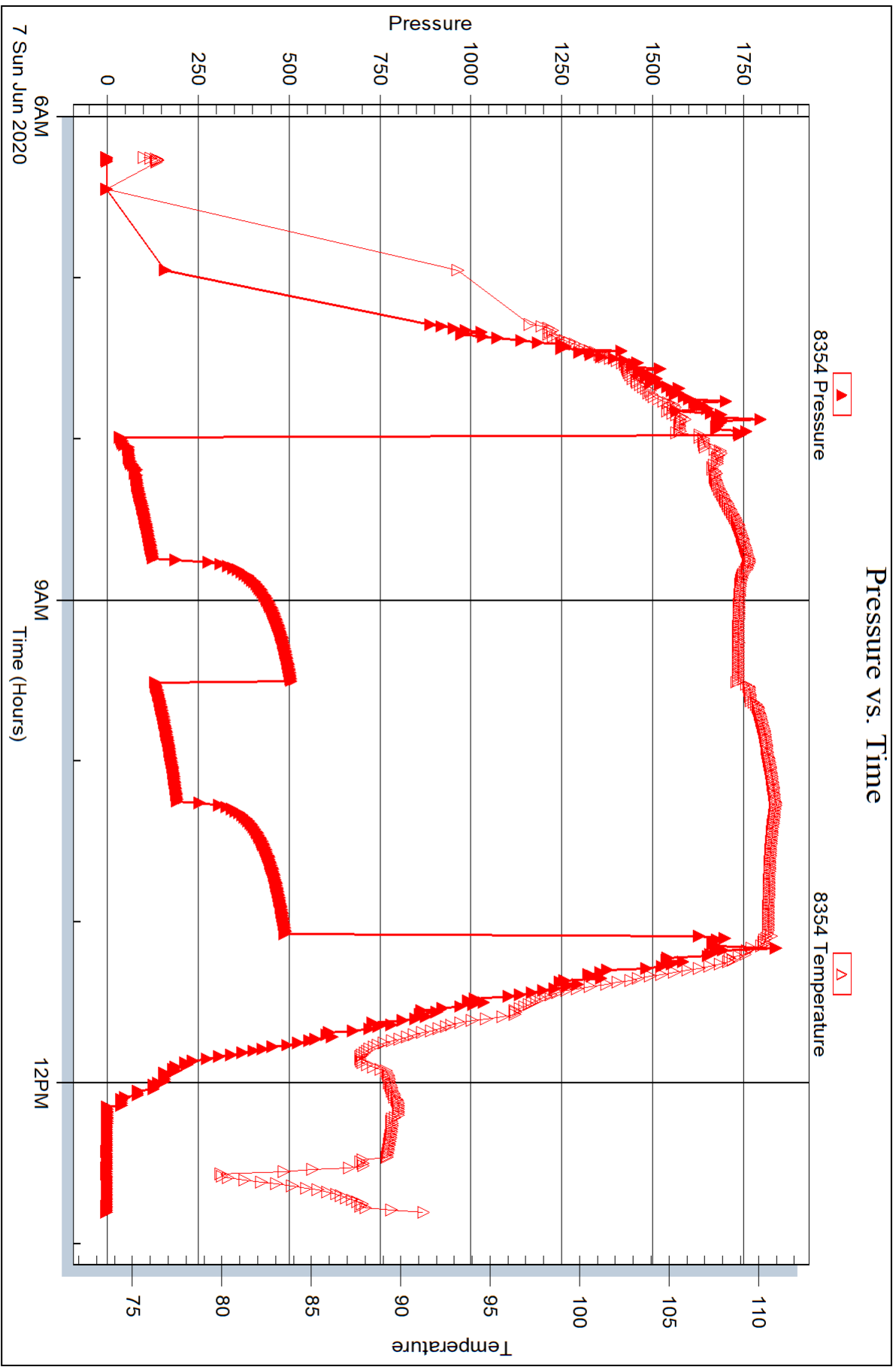
Recovery Table

Length ft	Description	Volume bbl
126.00	OSWM - Oil Spots - 40%w - 60%m	1.293
252.00	OSMW - Oil Spots - 15% m - 85%w	2.586

Total Length: 378.00 ft      Total Volume: 3.879 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments: .103 @ 69 deg.









## DRILL STEM TEST REPORT

Prepared For: **TDI Inc.**

1310 Bison Rd  
Hays KS 67601

ATTN: Herb Deines

**Hart #2**

**26-13S-19W Ellis,KS**

Start Date: 2020.06.08 @ 02:28:00

End Date: 2020.06.08 @ 09:17:30

Job Ticket #: 66871                      DST #: 2

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

Printed: 2020.06.10 @ 08:29:41



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

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

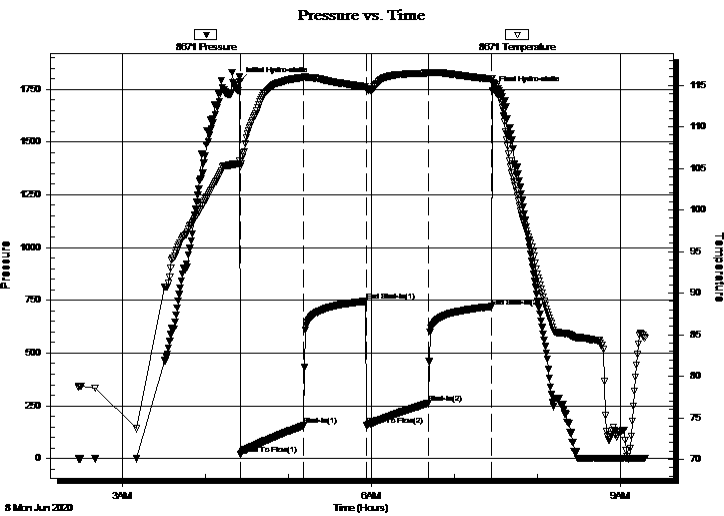
**26-13S-19W Ellis,KS**  
**Hart #2**  
Job Ticket: 66871 **DST#: 2**  
Test Start: 2020.06.08 @ 02:28:00

## GENERAL INFORMATION:

Formation: **LKC J - K**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 04:25:00  
 Time Test Ended: 09:17:30  
 Interval: **3624.00 ft (KB) To 3685.00 ft (KB) (TVD)**  
 Total Depth: 3685.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Poor  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Royal Fisher  
 Unit No: 77  
 Reference Elevations: 2162.00 ft (KB)  
 2152.00 ft (CF)  
 KB to GR/CF: 10.00 ft

**Serial #: 8671 Outside**  
 Press@RunDepth: 260.80 psig @ 3625.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2020.06.08 End Date: 2020.06.08 Last Calib.: 2020.06.08  
 Start Time: 02:28:05 End Time: 09:17:29 Time On Btm: 2020.06.08 @ 04:24:45  
 Time Off Btm: 2020.06.08 @ 07:27:15

**TEST COMMENT:** 45 - IFP - Blow built to B.o.B. in 24 mins and built up to 14"  
 45 - ISI - No Return  
 45 - FFP - Surface blow slowly built up to 7"  
 45 - FSI - No Return



## PRESSURE SUMMARY

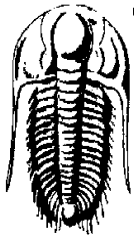
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1785.83	105.96	Initial Hydro-static
1	19.82	105.25	Open To Flow (1)
47	155.74	115.93	Shut-In(1)
92	745.35	114.80	End Shut-In(1)
92	157.19	114.53	Open To Flow (2)
137	260.80	116.45	Shut-In(2)
182	719.90	115.73	End Shut-In(2)
183	1741.69	115.79	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
189.00	OSMW - Oil Spots - 40% m - 60% w	1.94
378.00	OSMW - Oil Spots - 5% m - 95% w	3.88

## 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  
 ATTN: Herb Deines

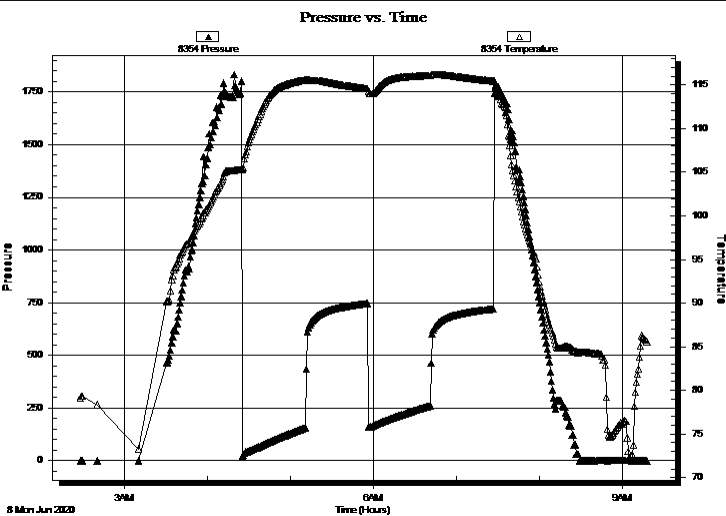
**26-13S-19W Ellis,KS**  
**Hart #2**  
 Job Ticket: 66871 **DST#: 2**  
 Test Start: 2020.06.08 @ 02:28:00

**GENERAL INFORMATION:**

Formation: **LKC J - K**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 04:25:00  
 Time Test Ended: 09:17:30  
 Interval: **3624.00 ft (KB) To 3685.00 ft (KB) (TVD)**  
 Total Depth: 3685.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Poor  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Royal Fisher  
 Unit No: 77  
 Reference Elevations: 2162.00 ft (KB)  
 2152.00 ft (CF)  
 KB to GR/CF: 10.00 ft

**Serial #: 8354 Inside**  
 Press@RunDepth: psig @ 3625.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2020.06.08 End Date: 2020.06.08 Last Calib.: 2020.06.08  
 Start Time: 02:28:05 End Time: 09:17:29 Time On Btm:  
 Time Off Btm:

**TEST COMMENT:** 45 - IFP - Blow built to B.o.B. in 24 mins and built up to 14"  
 45 - ISI - No Return  
 45 - FFP - Surface blow slowly built up to 7"  
 45 - FSI - No Return



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

Recovery		
Length (ft)	Description	Volume (bbl)
189.00	OSMW - Oil Spots - 40% m - 60% w	1.94
378.00	OSMW - Oil Spots - 5% m - 95% w	3.88

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



**TRILOBITE  
TESTING, INC.**

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

TDI Inc.

**26-13S-19W Ellis, KS**

1310 Bison Rd  
Hays KS 67601

**Hart #2**

Job Ticket: 66871

**DST#: 2**

ATTN: Herb Deines

Test Start: 2020.06.08 @ 02:28:00

### Tool Information

Drill Pipe:	Length: 3621.31 ft	Diameter: 3.25 inches	Volume: 37.16 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 54000.00 lb
			<u>Total Volume: 37.16 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	22.31 ft			String Weight: Initial 43000.00 lb
Depth to Top Packer:	3624.00 ft			Final 48000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	61.00 ft			
Tool Length:	86.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

### Tool Description

**Length (ft) Serial No. Position Depth (ft) Accum. Lengths**

Shut In Tool	5.00			3604.00	
Hydraulic tool	5.00			3609.00	
EM Tool	5.00			3614.00	
Packer	5.00			3619.00	25.00 Bottom Of Top Packer
Packer	5.00			3624.00	
Stubb	1.00			3625.00	
Recorder	0.00	8354	Inside	3625.00	
Recorder	0.00	8671	Outside	3625.00	
perforations	24.00			3649.00	
Change Over Sub	1.00			3650.00	
Drill Pipe	31.00			3681.00	
Change Over Sub	1.00			3682.00	
Bullnose	3.00			3685.00	61.00 Bottom Packers & Anchor

**Total Tool Length: 86.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

TDI Inc. **26-13S-19W Ellis,KS**  
 1310 Bison Rd **Hart #2**  
 Hays KS 67601 Job Ticket: 66871 **DST#: 2**  
 ATTN: Herb Deines Test Start: 2020.06.08 @ 02:28:00

## Mud and Cushion Information

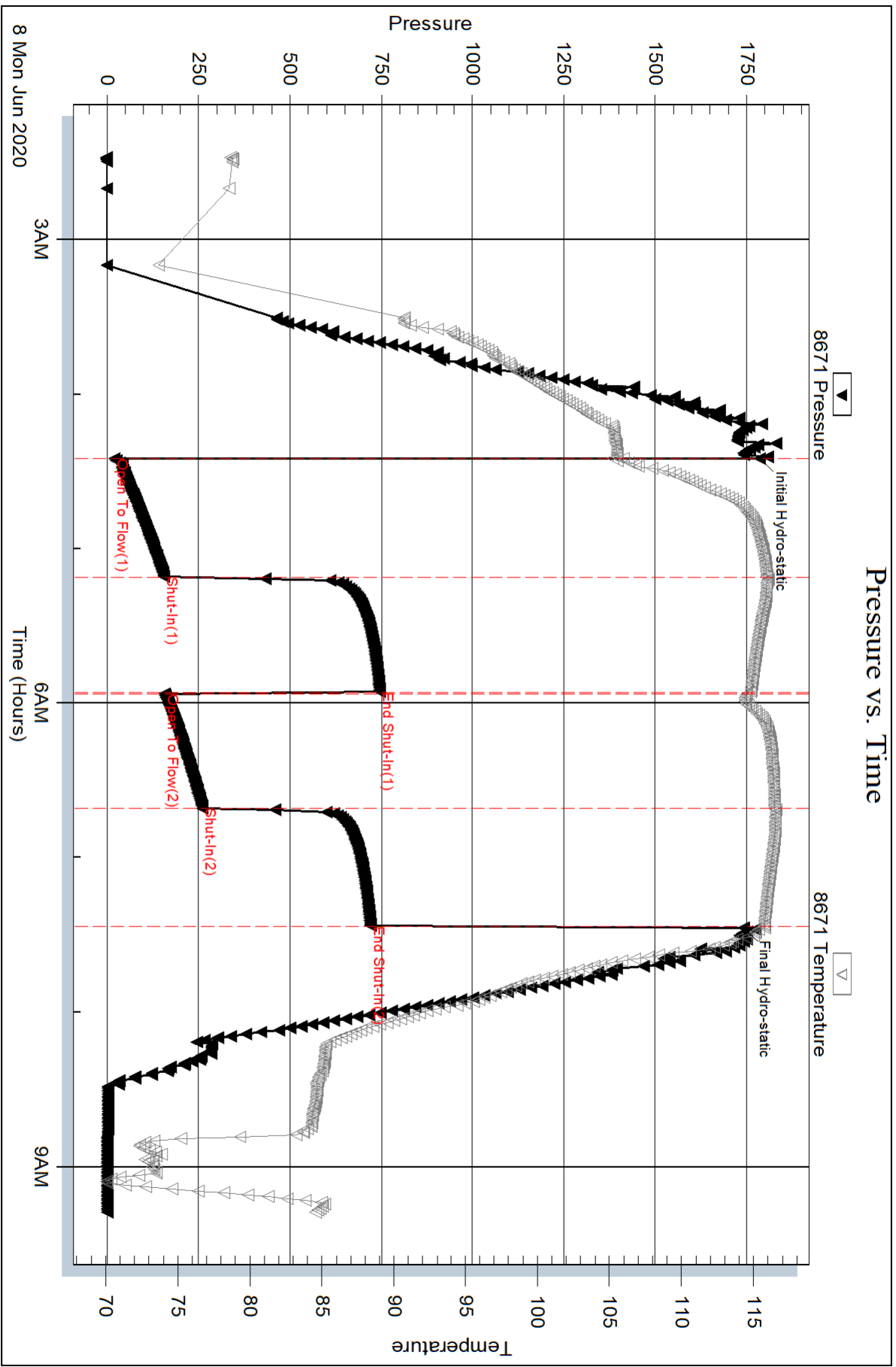
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	85000 ppm
Viscosity: 53.00 sec/qt	Cushion Volume: bbl		
Water Loss: 5.99 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 2900.00 ppm			
Filter Cake: 1.00 inches			

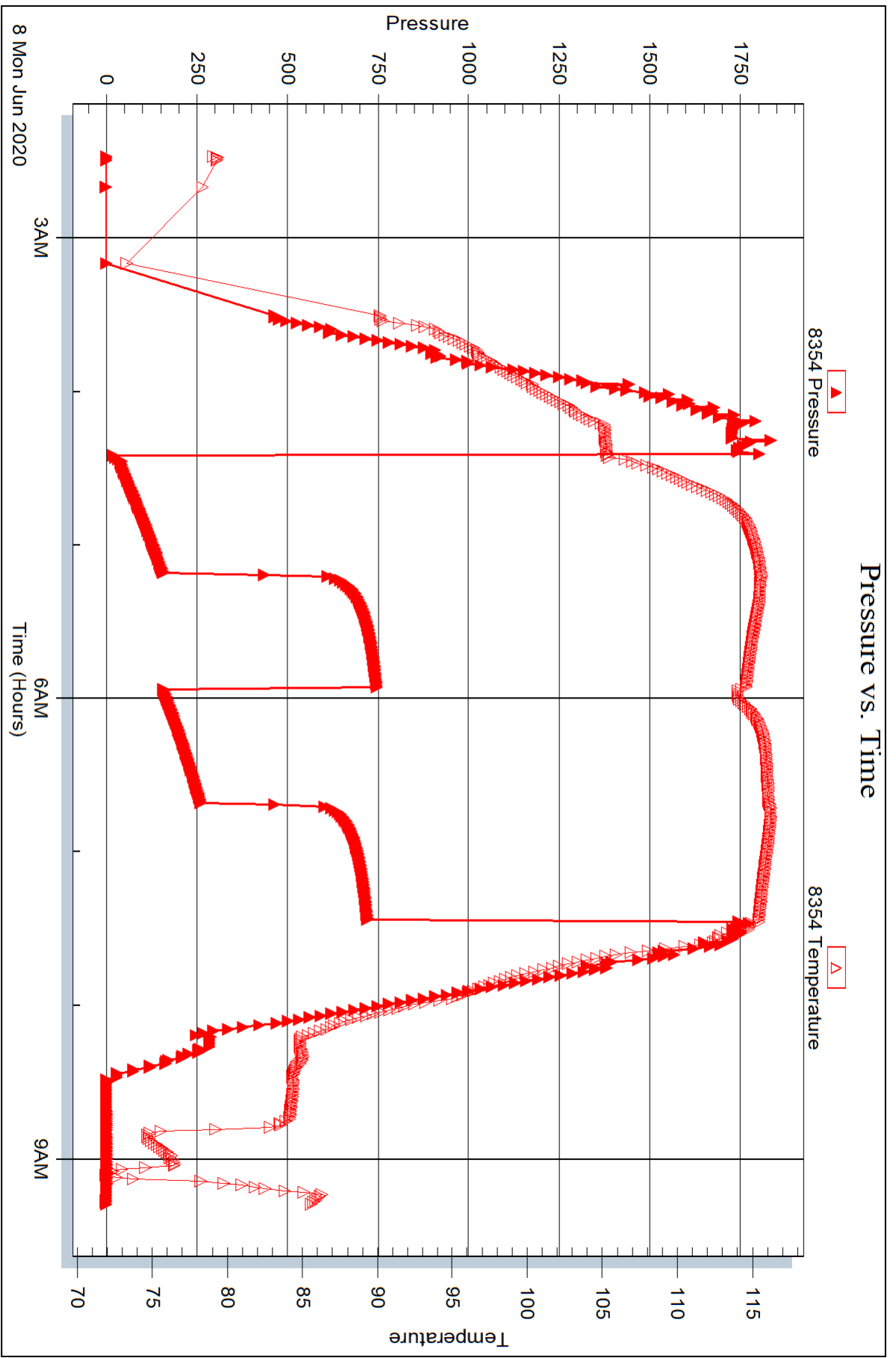
## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
189.00	OSMW - Oil Spots - 40%m - 60%w	1.939
378.00	OSMW - Oil Spots - 5%m - 95%w	3.879

Total Length: 567.00 ft      Total Volume: 5.818 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments: .104 @ 62 deg.









## DRILL STEM TEST REPORT

Prepared For: **TDI Inc.**

1310 Bison Rd  
Hays KS 67601

ATTN: Herb Deines

**Hart #2**

**26-13S-19W Ellis,KS**

Start Date: 2020.06.08 @ 10:30:00

End Date: 2020.06.08 @ 17:09:45

Job Ticket #: 66872                      DST #: 3

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

Printed: 2020.06.10 @ 08:28:44

TDI Inc. 26-13S-19W Ellis,KS Hart #2 DST # 3 Topoka - Oread 2020.06.08



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

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

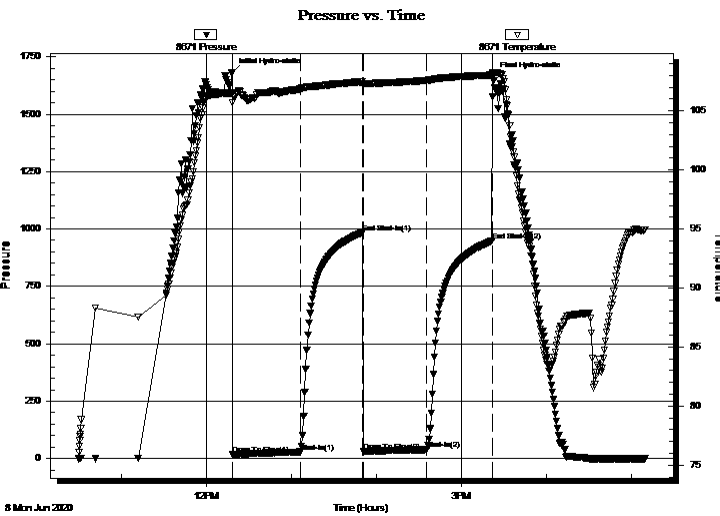
**26-13S-19W Ellis,KS**  
**Hart #2**  
Job Ticket: 66872      **DST#: 3**  
Test Start: 2020.06.08 @ 10:30:00

## GENERAL INFORMATION:

Formation: **Topeka - Oread**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 12:18:45  
 Time Test Ended: 17:09:45  
 Interval: **3360.00 ft (KB) To 3410.00 ft (KB) (TVD)**  
 Total Depth: 3685.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Poor  
 Test Type: Conventional Straddle (Initial)  
 Tester: Royal Fisher  
 Unit No: #77  
 Reference Elevations: 2162.00 ft (KB)  
 2152.00 ft (CF)  
 KB to GR/CF: 10.00 ft

**Serial #: 8671**      **Inside**  
 Press@RunDepth: 39.95 psig @ 3361.00 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2020.06.08      End Date: 2020.06.08      Last Calib.: 2020.06.08  
 Start Time: 10:30:05      End Time: 17:09:44      Time On Btm: 2020.06.08 @ 12:18:30  
 Time Off Btm: 2020.06.08 @ 15:22:45

**TEST COMMENT:** 45 - IFP - Surface blow built up to 1/2" and stayed  
 45 - ISI - No Return  
 45 - FFP - Blow started at a weak blow and stayed  
 45 - FSI - No Return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1681.66	106.51	Initial Hydro-static
1	17.40	105.68	Open To Flow (1)
49	28.83	106.86	Shut-In(1)
92	984.00	107.46	End Shut-In(1)
93	31.09	107.13	Open To Flow (2)
138	39.95	107.58	Shut-In(2)
184	947.64	108.03	End Shut-In(2)
185	1662.85	108.25	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
53.00	OSM - Oil Spots - 100%m	0.54

## 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  
ATTN: Herb Deines

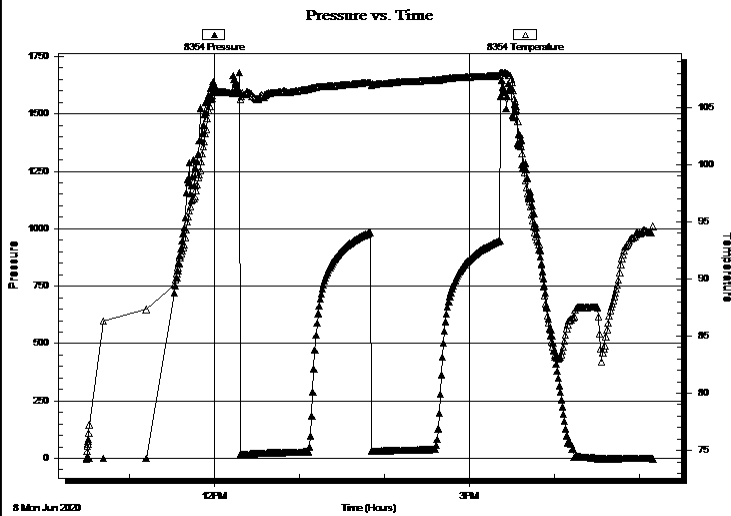
**26-13S-19W Ellis,KS**  
**Hart #2**  
Job Ticket: 66872      **DST#: 3**  
Test Start: 2020.06.08 @ 10:30:00

**GENERAL INFORMATION:**

Formation: **Topeka - Oread**  
 Deviated: No Whipstock: ft (KB)      Test Type: Conventional Straddle (Initial)  
 Time Tool Opened: 12:18:45      Tester: Royal Fisher  
 Time Test Ended: 17:09:45      Unit No: #77  
 Interval: **3360.00 ft (KB) To 3410.00 ft (KB) (TVD)**      Reference Elevations: 2162.00 ft (KB)  
 Total Depth: 3685.00 ft (KB) (TVD)      2152.00 ft (CF)  
 Hole Diameter: 7.88 inches Hole Condition: Poor      KB to GR/CF: 10.00 ft

**Serial #: 8354      Outside**  
 Press@RunDepth:      psig @      3361.00 ft (KB)      Capacity:      8000.00 psig  
 Start Date:      2020.06.08      End Date:      2020.06.08      Last Calib.:      2020.06.08  
 Start Time:      10:30:05      End Time:      17:09:44      Time On Btm:  
                                                                                                                          Time Off Btm:

**TEST COMMENT:** 45 - IFP - Surface blow built up to 1/2" and stayed  
 45 - ISI - No Return  
 45 - FFP - Blow started at a weak blow and stayed  
 45 - FSI - No Return



**PRESSURE SUMMARY**

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

**Recovery**

Length (ft)	Description	Volume (bbl)
53.00	OSM - Oil Spots - 100% <sub>m</sub>	0.54

**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  
ATTN: Herb Deines

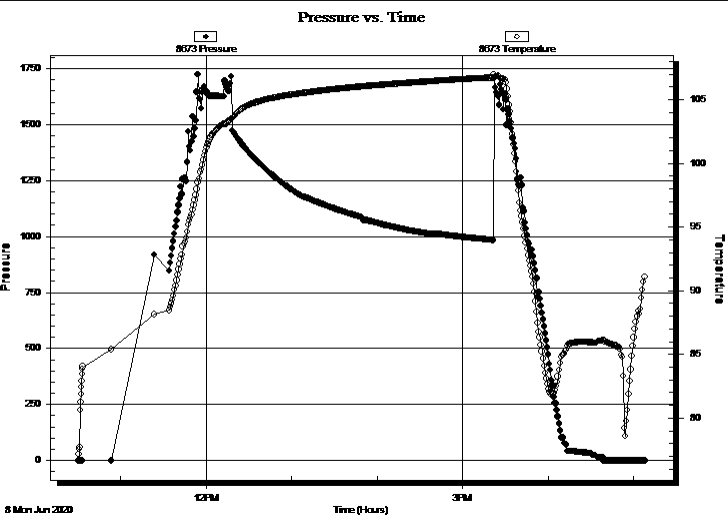
**26-13S-19W Ellis, KS**  
**Hart #2**  
Job Ticket: 66872      **DST#: 3**  
Test Start: 2020.06.08 @ 10:30:00

**GENERAL INFORMATION:**

Formation: **Topeka - Oread**  
Deviated: No Whipstock:                      ft (KB)  
Time Tool Opened: 12:18:45  
Time Test Ended: 17:09:45  
**Interval: 3360.00 ft (KB) To 3410.00 ft (KB) (TVD)**  
Total Depth: 3685.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Poor  
Test Type: Conventional Straddle (Initial)  
Tester: Royal Fisher  
Unit No: #77  
Reference Elevations: 2162.00 ft (KB)  
2152.00 ft (CF)  
KB to GR/CF: 10.00 ft

**Serial #: 8673      Below (Straddle)**  
Press@RunDepth:                      psig @ 3431.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2020.06.08      End Date: 2020.06.08      Last Calib.: 2020.06.08  
Start Time: 10:30:23      End Time: 17:07:46      Time On Btm:  
Time Off Btm:

**TEST COMMENT:** 45 - IFP - Surface blow built up to 1/2" and stayed  
45 - ISI - No Return  
45 - FFP - Blow started at a weak blow and stayed  
45 - FSI - No Return



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

Recovery		
Length (ft)	Description	Volume (bbl)
53.00	OSM - Oil Spots - 100% m	0.54

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  
ATTN: Herb Deines

**26-13S-19W Ellis,KS**  
**Hart #2**  
Job Ticket: 66872      **DST#: 3**  
Test Start: 2020.06.08 @ 10:30:00

**Tool Information**

Drill Pipe:	Length: 3367.12 ft	Diameter: 3.25 inches	Volume: 34.55 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 52000.00 lb
			<u>Total Volume: 34.55 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	32.12 ft			String Weight: Initial 45000.00 lb
Depth to Top Packer:	3360.00 ft			Final 45000.00 lb
Depth to Bottom Packer:	3690.00 ft			
Interval between Packers:	330.00 ft			
Tool Length:	355.00 ft			
Number of Packers:	3	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>
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

Shut In Tool	5.00			3340.00	
Hydraulic tool	5.00			3345.00	
EM Tool	5.00			3350.00	
Packer	5.00		Inside	3355.00	25.00      Bottom Of Top Packer
Packer	5.00			3360.00	
Stubb	1.00			3361.00	
Recorder	0.00	8354	Outside	3361.00	
Recorder	0.00	8671	Inside	3361.00	
Perforations	12.00			3373.00	
Change Over Sub	1.00			3374.00	
Drill Pipe	31.00			3405.00	
Change Over Sub	1.00			3406.00	
Blank Off Sub	1.00			3407.00	
Stubb	3.00		Outside	3410.00	
Packer - Shale	5.00		Outside	3415.00	
Stubb	1.00			3416.00	
Perforations	14.00			3430.00	
Change Over Sub	1.00			3431.00	
Recorder	0.00	8673	Below	3431.00	
Drill Pipe	254.00		Below	3685.00	
Change Over Sub	1.00			3686.00	
Perforations	1.00			3687.00	
Bullnose	3.00			3690.00	330.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>355.00</b>				



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

TDI Inc. **26-13S-19W Ellis,KS**  
 1310 Bison Rd **Hart #2**  
 Hays KS 67601 Job Ticket: 66872 **DST#: 3**  
 ATTN: Herb Deines Test Start: 2020.06.08 @ 10:30:00

## Mud and Cushion Information

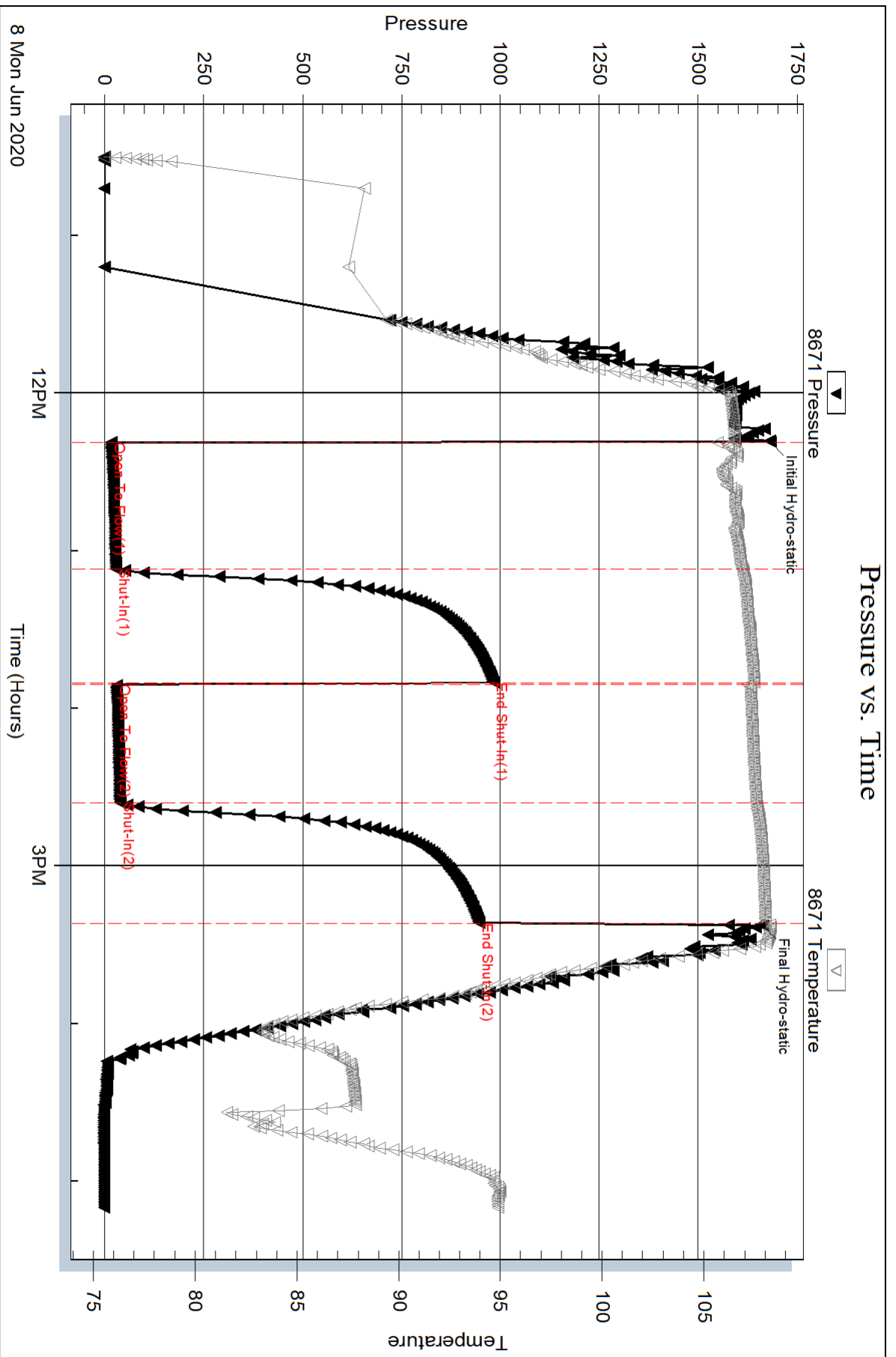
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 59.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.39 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 9800.00 ppm			
Filter Cake: 1.00 inches			

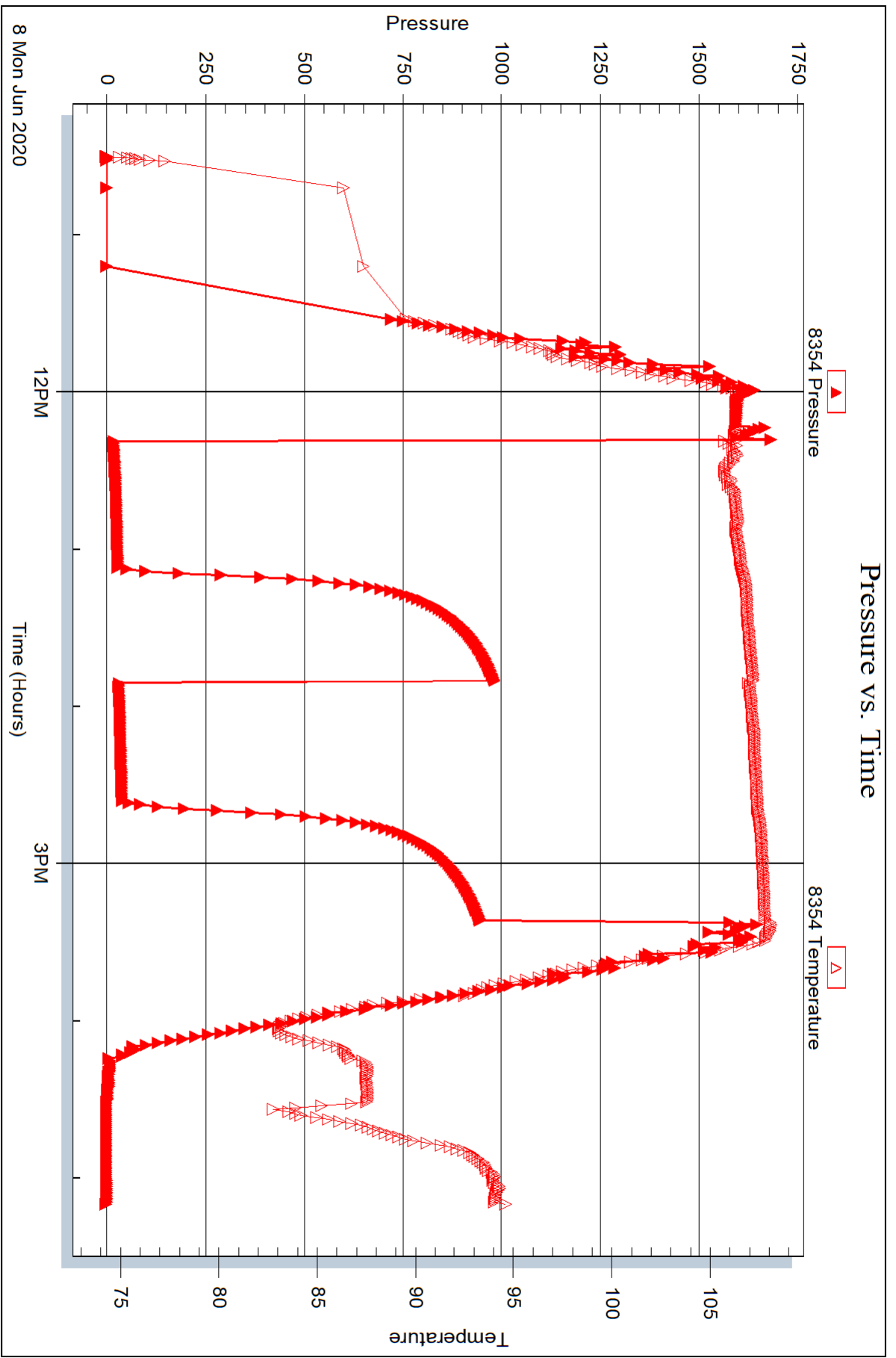
## Recovery Information

Recovery Table

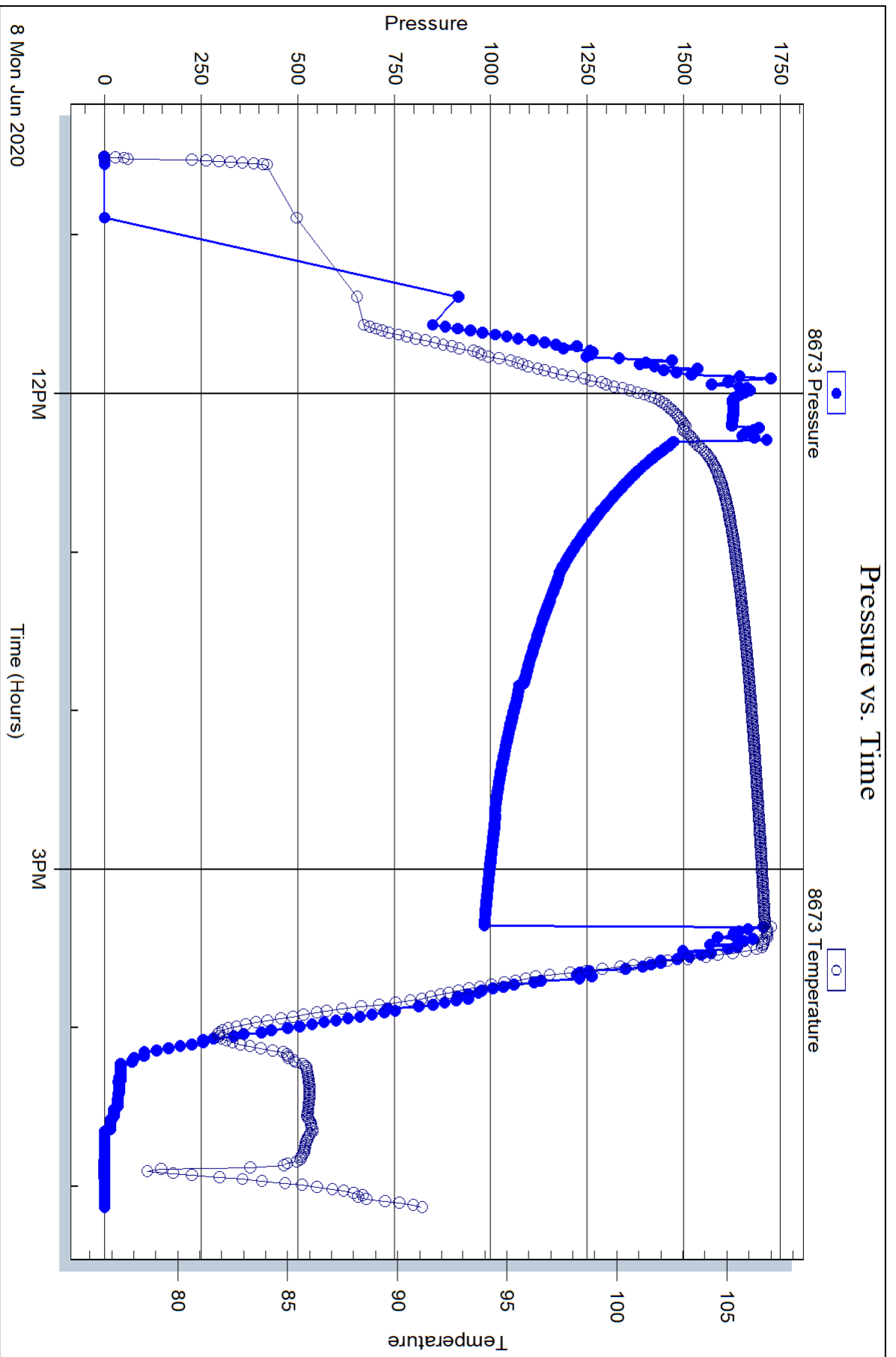
Length ft	Description	Volume bbl
53.00	OSM - Oil Spots - 100%m	0.544

Total Length: 53.00 ft      Total Volume: 0.544 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:











## DRILL STEM TEST REPORT

Prepared For: **TDI Inc.**

1310 Bison Rd  
Hays KS 67601

ATTN: Herb Deines

**Hart #2**

**26-13S-19W Ellis,KS**

Start Date: 2020.06.09 @ 11:43:00

End Date: 2020.06.09 @ 18:40:00

Job Ticket #: 66873                      DST #: 4

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

Printed: 2020.06.10 @ 08:27:38



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

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

**26-13S-19W Ellis, KS**  
**Hart #2**  
Job Ticket: 66873      **DST#: 4**  
Test Start: 2020.06.09 @ 11:43:00

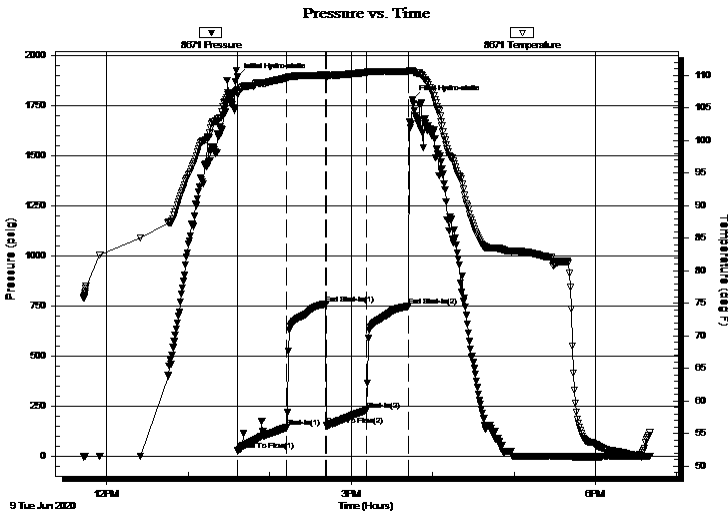
## GENERAL INFORMATION:

Formation: **LKC G - J**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 13:36:30  
Time Test Ended: 18:40:00  
Interval: **3545.00 ft (KB) To 3650.00 ft (KB) (TVD)**  
Total Depth: 3860.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Poor  
Test Type: Conventional Straddle (Initial)  
Tester: Royal Fisher  
Unit No: 77  
Reference Elevations: 2162.00 ft (KB)  
2152.00 ft (CF)  
KB to GR/CF: 10.00 ft

**Serial #: 8671**      **Inside**  
Press@RunDepth: 231.74 psig @ 3546.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2020.06.09      End Date: 2020.06.09      Last Calib.: 2020.06.09  
Start Time: 11:43:05      End Time: 18:39:59      Time On Btm: 2020.06.09 @ 13:36:15  
Time Off Btm: 2020.06.09 @ 15:45:15

**TEST COMMENT:** 35 - IFP - Blow built to B.o.B. in 10 mins and built up to 13"  
30 - ISI - Started with a faint return then died off in 10 mins  
30 - FFP - Blow built to B.o.B. in 15 mins and built up to 12 3/4"  
30 - FSI - Return started right away and built up to 1/2"

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1894.15	107.75	Initial Hydro-static
1	28.58	107.10	Open To Flow (1)
37	144.09	109.57	Shut-In(1)
66	760.87	110.01	End Shut-In(1)
66	153.75	109.77	Open To Flow (2)
96	231.74	110.44	Shut-In(2)
126	749.03	110.56	End Shut-In(2)
129	1779.48	110.71	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
116.00	GOCWM - 15%g - 5%o - 40%w - 40%m	1.19
126.00	GOCWM - 5%g - 20%o - 25%w - 50%m	1.29
252.00	GOCMW - 20%g - 30%o - 20%m - 30%w	2.59
0.00	252 - GIP	0.00

## 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  
ATTN: Herb Deines

**26-13S-19W Ellis,KS**  
**Hart #2**  
Job Ticket: 66873      **DST#: 4**  
Test Start: 2020.06.09 @ 11:43:00

**Tool Information**

Drill Pipe:	Length: 3530.98 ft	Diameter: 3.25 inches	Volume: 36.23 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 53000.00 lb
		Total Volume: 36.23 bbl		Tool Chased 0.00 ft
Drill Pipe Above KB:	5.98 ft			String Weight: Initial 43000.00 lb
Depth to Top Packer:	3545.00 ft			Final 48000.00 lb
Depth to Bottom Packer:	3885.00 ft			
Interval between Packers:	340.00 ft			
Tool Length:	360.00 ft			
Number of Packers:	3	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3530.00	
Hydraulic tool	5.00			3535.00	
Packer	5.00		Inside	3540.00	20.00      Bottom Of Top Packer
Packer	5.00			3545.00	
Stubb	1.00			3546.00	
Recorder	0.00	8354	Outside	3546.00	
Recorder	0.00	8671	Inside	3546.00	
Perforations	34.00			3580.00	
Change Over Sub	1.00			3581.00	
Drill Pipe	63.00			3644.00	
Change Over Sub	1.00			3645.00	
Blank Off Sub	1.00			3646.00	
Stubb	4.00		Outside	3650.00	
Packer - Shale	5.00		Outside	3655.00	
Stubb	1.00			3656.00	
Perforations	34.00			3690.00	
Change Over Sub	1.00			3691.00	
Recorder	0.00	8673	Below	3691.00	
Drill Pipe	189.00		Below	3880.00	
Change Over Sub	1.00			3881.00	
Perforations	1.00			3882.00	
Bullnose	3.00			3885.00	340.00      Bottom Packers & Anchor

**Total Tool Length: 360.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

TDI Inc. **26-13S-19W Ellis,KS**  
 1310 Bison Rd **Hart #2**  
 Hays KS 67601 Job Ticket: 66873 **DST#: 4**  
 ATTN: Herb Deines Test Start: 2020.06.09 @ 11:43:00

## Mud and Cushion Information

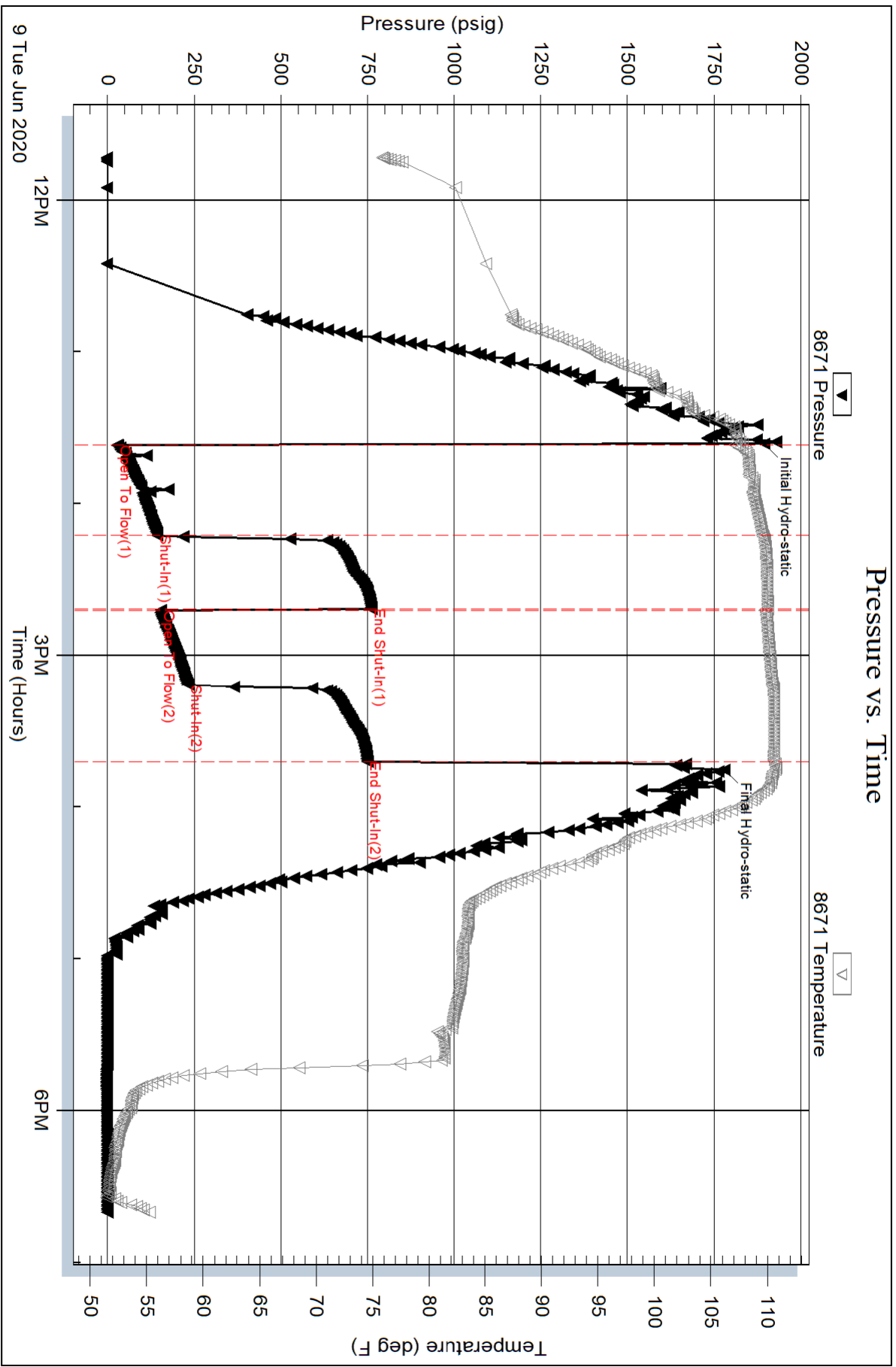
Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	ppm
Viscosity: 52.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.19 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 9700.00 ppm			
Filter Cake: 1.00 inches			

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
116.00	GOCWM - 15%g - 5%o - 40%w - 40%m	1.190
126.00	GOCWM - 5%g - 20%o - 25%w - 50%m	1.293
252.00	GOCMW - 20%g - 30%o - 20%m - 30%w	2.586
0.00	252 - GIP	0.000

Total Length: 494.00 ft Total Volume: 5.069 bbl  
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:  
 Laboratory Name: Laboratory Location:  
 Recovery Comments:



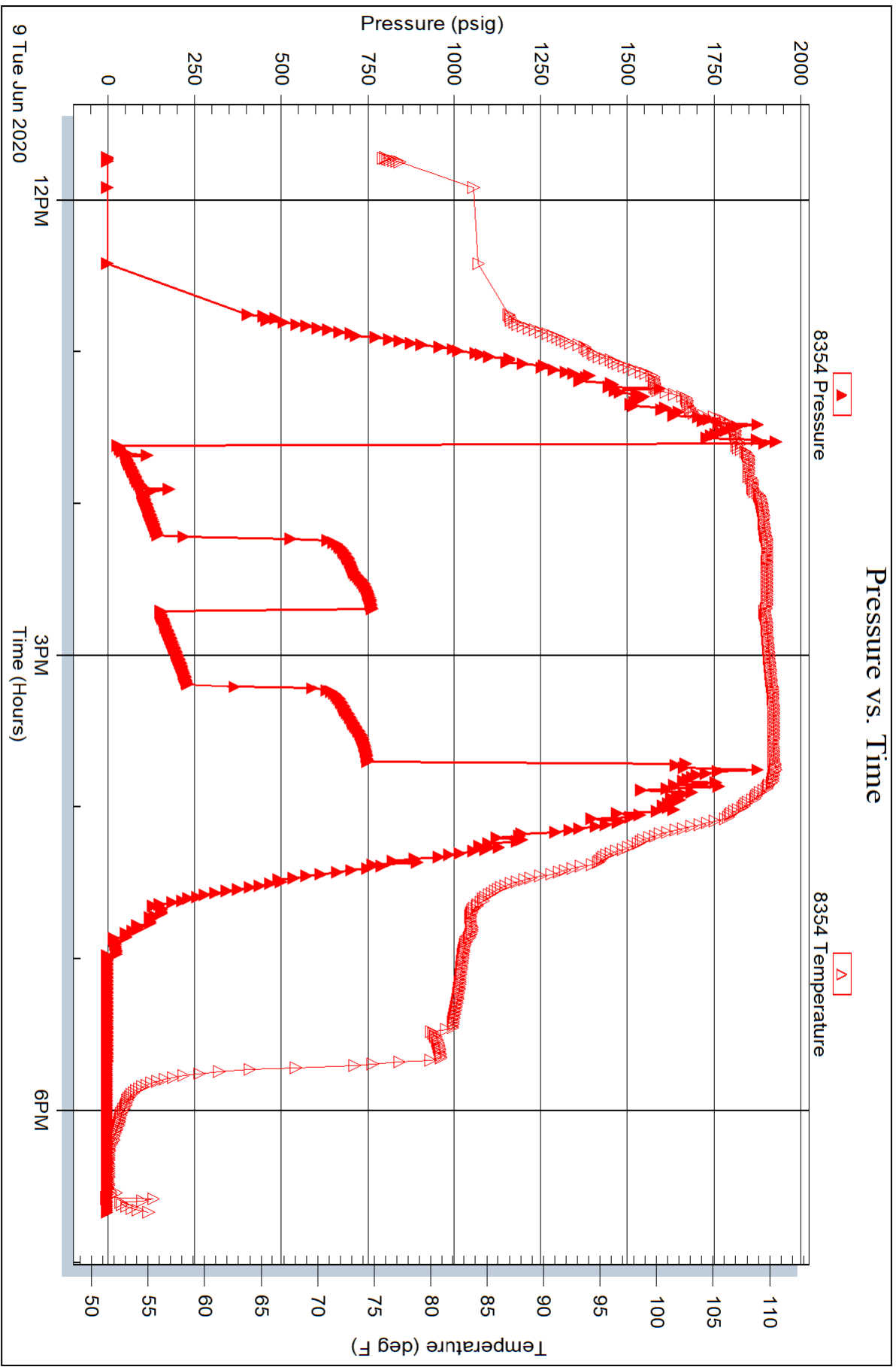


Serial #: 8354

Outside TDI Inc.

Hart #2

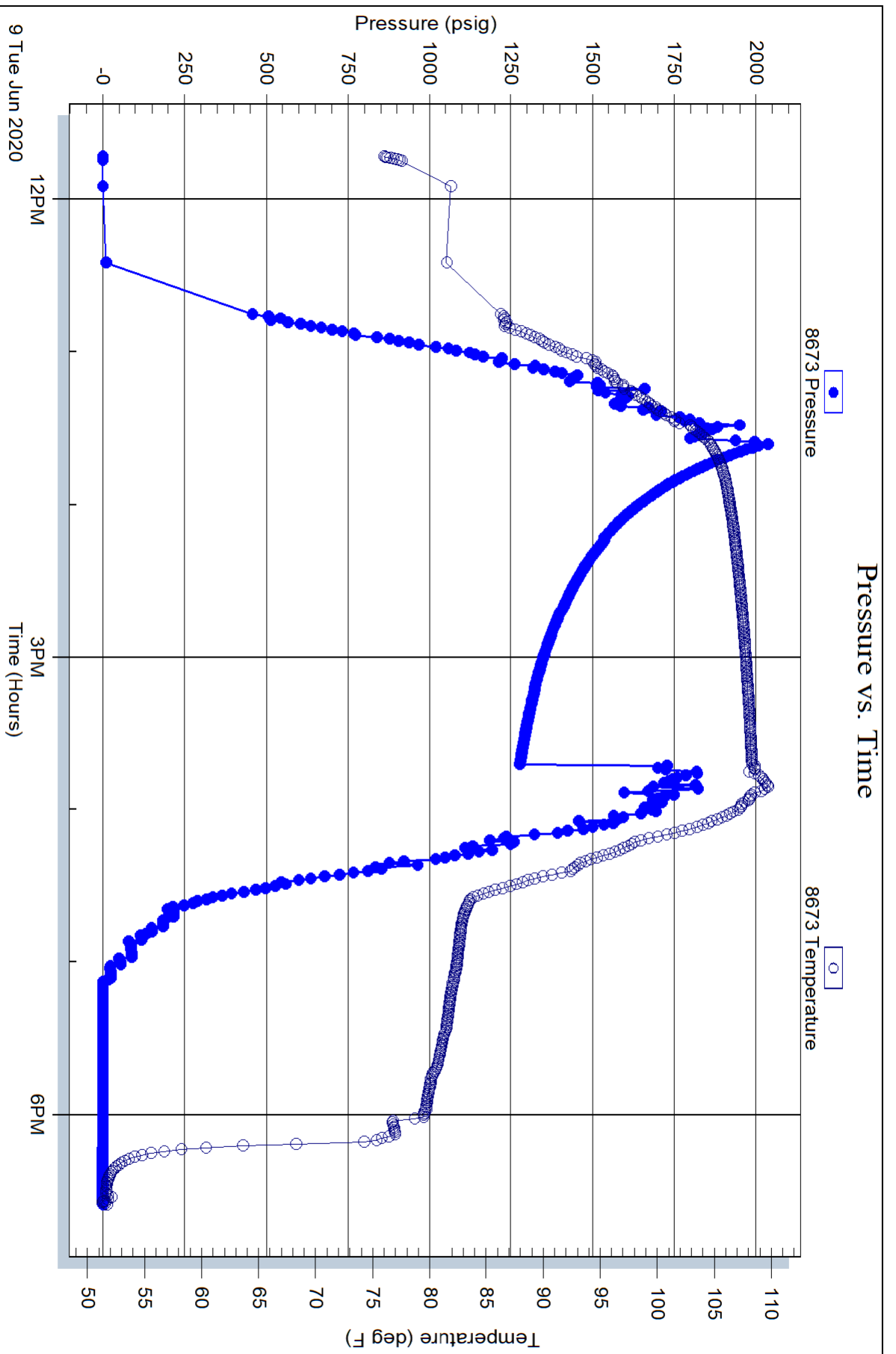
DST Test Number: 4

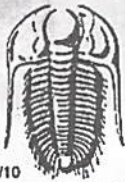


Trilobite Testing, Inc

Ref. No: 66873

Printed: 2020.06.10 @ 08:27:39





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 66870

Well Name & No. Hart #2 Test No. 1 Date 6-7-2020  
 Company TDI Inc. Elevation 2162 KB 2152 GL  
 Address 130 Bison Rd. Hays KS 67601  
 Co. Rep / Geo. Herb Daines Rig Southwind #8  
 Location: Sec. 26 Twp 133 Rge. 19 W Co. Ellis State ks

Interval Tested 3448-3522' Zone Tested Lansing C+D  
 Anchor Length 74' Drift Pipe Run 3430.75' Mud Wt. 9.1  
 Top Packer Depth 3443' Drill Collars Run 0 Vis 53  
 Bottom Packer Depth 3448' Wt. Pipe Run 0 WL 6.0  
 Total Depth 3522' Chlorides 2900 ppm System LCM 2#

Blow Description FF - Blow built to B.O.B in 17 mins & built to 18"  
ISI - No Return  
FF - Blow built up to 8 1/4"  
FBI - No Return

Rec	Feet of	%gas	spots	%oil	%water	%mud
<u>126'</u>	<u>QSWM</u>			<u>40</u>	<u>60</u>	
<u>252'</u>	<u>QSMW</u>			<u>85</u>	<u>15</u>	
Rec	Feet of	%gas		%oil	%water	%mud
Rec	Feet of	%gas		%oil	%water	%mud
Rec	Feet of	%gas		%oil	%water	%mud

Rec Total 378' BHT 111°F Gravity \_\_\_\_\_ API RW 103 @ 67 °F Chlorides 72,000 ppm  
 (A) Initial Hydrostatic 1739  Test 1200 T-On Location 5:02 am  
 (B) First Initial Flow 35  Jars \_\_\_\_\_ T-Started 6:15 am  
 (C) First Final Flow 126  Safety Joint \_\_\_\_\_ T-Open 7:59 am  
 (D) Initial Shut-In 506  Circ Sub \_\_\_\_\_ T-Pulled 10:59 am  
 (E) Second Initial Flow 132  Hourly Standby \_\_\_\_\_ T-Out 12:49 pm  
 (F) Second Final Flow 193  Mileage 18 RT 18 Comments \_\_\_\_\_  
 (G) Final Shut-In 488  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1625  Straddle \_\_\_\_\_  EM Tool 350  
 Shale Packer \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Day Standby \_\_\_\_\_ Sub Total 0  
 Accessibility \_\_\_\_\_ Total 1218  
 Sub Total 1218 MP/DST Disc't \_\_\_\_\_

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

Approved By \_\_\_\_\_ Our Representative Royal Fisher 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.

# 785-656-0157



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. **66871**

Well Name & No. Hart #2 Test No. 2 Date 6-8-2020  
 Company TDI, Inc. Elevation 2162 KB 2152 GL  
 Address 1310 Bison Rd. Hays KS 67101  
 Co. Rep / Geo. Herb Deines Rig Southwind #8  
 Location: Sec. 26 Twp 13S Rge. 19W Co. Ellis State Ks

Interval Tested 3624-3685 Zone Tested Lansing J+K  
 Anchor Length 61' Drill Pipe Run 3621.31' Mud Wt. 9.1  
 Top Packer Depth 3619' Drill Collars Run 0 Vis 53  
 Bottom Packer Depth 3624' Wt. Pipe Run 0 WL 6.0  
 Total Depth 3685 Chlorides 2900 ppm System LCM 2#

Blow Description IFP - Blow built to B.O.B. in 24 mins & built to 14"  
ISI - No Return  
FFP - Blow built up to 7"  
ESI - No Return

Rec	Feet of	%gas	Spots	%oil	%water	%mud
<u>189'</u>	<u>OSMW</u>			<u>60</u>	<u>40</u>	
<u>378'</u>	<u>OSMW</u>			<u>95</u>	<u>5</u>	
Rec	Feet of	%gas		%oil	%water	%mud
Rec	Feet of	%gas		%oil	%water	%mud
Rec	Feet of	%gas		%oil	%water	%mud

Rec Total 567' BHT 116°F Gravity \_\_\_\_\_ API RW 104 @ 62 °F Chlorides 85,000 ppm  
 (A) Initial Hydrostatic 1786  Test 1200 T-On Location 1:28am  
 (B) First Initial Flow 20  Jars \_\_\_\_\_ T-Started 2:28am  
 (C) First Final Flow 156  Safety Joint \_\_\_\_\_ T-Open 4:23am  
 (D) Initial Shut-In 745  Circ Sub \_\_\_\_\_ T-Pulled 7:23am  
 (E) Second Initial Flow 157  Hourly Standby \_\_\_\_\_ T-Out 9:15am  
 (F) Second Final Flow 261  Mileage 18 R/T 18 Comments \_\_\_\_\_  
 (G) Final Shut-In 720  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1742  Straddle \_\_\_\_\_  EM Tool 350  
 Shale Packer \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Day Standby \_\_\_\_\_ Sub Total 0  
 Accessibility \_\_\_\_\_ Total 1218  
 Sub Total 1218 MP/DST Disc't \_\_\_\_\_

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

Approved By \_\_\_\_\_

Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 66872

Well Name & No. Hart #2 Test No. 3 Date 6-8-2020  
 Company TDI, Inc. Elevation 2162 KB 2152 GL  
 Address 310 Bison Rd. Hays KS 67601  
 Co. Rep / Geo. Herb Deines Rig Southwind #8  
 Location: Sec. 21e Twp 13S Rge. 19W Co. Ellis State Ks

Interval Tested 3310'-3410' Zone Tested Topeka / Orpad  
 Anchor Length 50' Drill Pipe Run 3307.12 Mud Wt. 9.3  
 Top Packer Depth 3355' Drill Collars Run Ø Vis 59  
 Bottom Packer Depth 3310 Wt. Pipe Run Ø WL 6.4  
 Total Depth 3685 Chlorides 9800 ppm System LCM Tr

Blow Description FFP-Surface blow built up to 1/2" and stayed  
ISI-No Return  
FFP-Blow started at a weak blow and stayed  
FSI-No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>53'</u>	<u>QSM</u>	<u>Spots</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 53' BHT 108°F Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 1082  Test 1200 T-On Location 1:28am  
 (B) First Initial Flow 17  Jars \_\_\_\_\_ T-Started 10:30am  
 (C) First Final Flow 29  Safety Joint \_\_\_\_\_ T-Open 12:19pm  
 (D) Initial Shut-In 984  Circ Sub \_\_\_\_\_ T-Pulled 3:19pm  
 (E) Second Initial Flow 31  Hourly Standby \_\_\_\_\_ T-Out 5:09pm  
 (F) Second Final Flow 40  Mileage 18 RT Comments \_\_\_\_\_  
 (G) Final Shut-In 948  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1163  Straddle 600  EM Tool 0

Initial Open 45  Shale Packer \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Initial Shut-In 45  Extra Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Final Flow 45  Extra Recorder \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Final Shut-In 45  Day Standby \_\_\_\_\_ Sub Total 0  
 Accessibility \_\_\_\_\_ Total 1800  
 Sub Total 1800 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Royal Yoder

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.



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 66873

Well Name & No. Hart #2 Test No. 4 Date 6-9-2020  
 Company TDI Inc. Elevation 2162 KB 2152 GL  
 Address 1310 Bison Rd. Hays Ks 67601  
 Co. Rep / Geo. Herb Deines Rig Southwind #8  
 Location: Sec. 26 Twp 13S Rge. 19W Co. Ellis State Ks

Interval Tested 3545' - 3650' Zone Tested "6" - "5"  
 Anchor Length 105' Drill Pipe Run 3530.98' Mud Wt. 9.4  
 Top Packer Depth 3540' Drill Collars Run Ø Vis 52  
 Bottom Packer Depth 3545' Wt. Pipe Run Ø WL 7.2  
 Total Depth 3860' Chlorides 9700 ppm System LCM 2#

Blow Description IFP - Blow built to B.O.B in 10 mins & built to 13"  
ISI - started with a faint return then died in 10 mins  
FF - Blow built to B.O.B. in 15 mins & built to 12 3/4"  
ESI - return started right away and built up to

Rec	Feet of	%gas	%oil	%water	%mud
<u>116</u>	<u>60CWM</u>	<u>15</u>	<u>5</u>	<u>40</u>	<u>40</u>
<u>126</u>	<u>60CWM</u>	<u>5</u>	<u>20</u>	<u>25</u>	<u>50</u>
<u>252</u>	<u>60CMW</u>	<u>20</u>	<u>30</u>	<u>30</u>	<u>20</u>
<u>    </u>	<u>252' - GIP</u>	<u>100</u>	<u>    </u>	<u>    </u>	<u>    </u>
<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>

Rec Total 494' BHT 111°F Gravity      API RW      @      °F Chlorides      ppm

(A) Initial Hydrostatic 1894  Test 1200 T-On Location 10:40am  
 (B) First Initial Flow 29  Jars      T-Started 11:43am  
 (C) First Final Flow 144  Safety Joint      T-Open 1:37pm  
 (D) Initial Shut-In 761  Circ Sub      T-Pulled 3:42pm  
 (E) Second Initial Flow 154  Hourly Standby      T-Out 6:43pm  
 (F) Second Final Flow 232  Mileage 18 R/T 18 Comments       
 (G) Final Shut-In 749  Sampler       
 (H) Final Hydrostatic 1779  Straddle 600  EM Tool 350

Initial Open 35  Shale Packer       Ruined Shale Packer       
 Initial Shut-In 30  Extra Packer       Ruined Packer       
 Final Flow 30  Extra Recorder       Extra Copies       
 Final Shut-In 30  Day Standby      Sub Total 0  
 Accessibility      Total 1818  
 Sub Total 1818 MP/DST Disc't     

Approved By      Our Representative Royal Fisher  
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Thanks