

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

Form must be Typed

Form must be Signed

All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

New Well Re-Entry Workover

Oil WSW SWD

Gas DH EOR

OG GSW

CM (Coal Bed Methane)

Cathodic Other (Core, Expl., etc.): _____

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

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

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

Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

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

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

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

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

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

County: _____ Permit #: _____

AFFIDAVIT

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

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

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

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

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

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

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

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone				

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

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

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5) (Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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OPERATOR

Company: TDI, INC.
 Address: 1310 BISON ROAD
 HAYS, KANSAS 67601-9696

Contact Geologist: TOM DENNING
 Contact Phone Nbr: 785-628-2593
 Well Name: ENGEL NORTH # 3
 Location: SW NE NW NE SEC.21-T15S-R18W
 API: 15-051-26,880-00-00
 Pool: IN FIELD
 State: KANSAS

Field: SCHOENCHEN
 Country: USA



Scale 1:240 Imperial

Well Name: ENGEL NORTH # 3
 Surface Location: SW NE NW NE SEC.21-T15S-R18W
 Bottom Location:
 API: 15-051-26,880-00-00
 License Number: 4787
 Spud Date: 7/18/2017 Time: 2:00 PM
 Region: ELLIS COUNTY
 Drilling Completed: 7/23/2017 Time: 4:40 PM
 Surface Coordinates: 530' FNL & 1970' FEL
 Bottom Hole Coordinates:
 Ground Elevation: 2027.00ft
 K.B. Elevation: 2037.00ft
 Logged Interval: 2800.00ft To: 3640.00ft
 Total Depth: 3640.00ft
 Formation: ARBUCKLE
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

SURFACE CO-ORDINATES

Well Type: Vertical
 Longitude: -99.3262318
 Latitude: 38.7389806
 N/S Co-ord: 530' FNL
 E/W Co-ord: 1970' 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: 7/18/2017 Time: 2:00 PM
 TD Date: 7/23/2017 Time: 4:40 PM

ELEVATIONS

K.B. Elevation: 2037.00ft
 K.B. to Ground: 10.00ft

Ground Elevation: 2027.00ft

NOTES

RECOMMENDATION TO PLUG AND ABANDON WELL BASED ON NEGATIVE RESULTS OF THREE DSTS.

OPEN HOLE LOGGING 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 ONE (1) STRADDLE TEST.

ENGEL NORTH #3	ENGEL NORTH #2	ENGEL # 2
SW NE NW NE	NE SW SW NE	NW NW NE
SEC.21-15S-18W	SEC.21-15-18W	SEC.21-15-18W
2037'KB	KB 2031'	KB 2039'

<u>FORMATION</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>
Anhydrite	1186 +851	+ 840	+ 847
B-Anhydrite	1224 +813	+ 804	
Topeka	3004 - 967	- 978	
Heebner Sh.	3268-1231	-1242	-1233
Toronto	3288-1251	-1263	-1255
LKC	3316-1279	-1292	-1280
BKC	3542-1505	-1515	-1505
Arbuckle	3629-1592	-1591	-1585
RTD	3640-1603	-1690	-1592

SUMMARY OF DAILY ACTIVITY

- 7-18-17 RU, Spud 2:00 PM,
- 7-19-17 1101', drilling, set 8 5/8" surface casing to 1189' w/ 375 sxs SMD, WOC 12 hrs, slope 1 degree @1190'.
- 7-20-17 1290', drill plug at 4:15 AM
- 7-21-17 2415', drilling, displaced 2942'-2973'
- 7-22-17 3195', drilling, CFS 3300', short trip 23 stands, drilling CFS 3370', DST # 1 3321'-3370'
- 7-23-17 3428' TIWB, drilling, CFS 3640', DST # 2 3590' to 3640', RTD 4:40PM
- 7-24-17 3640', logs, straddle DST # 3 3420' to 3506', P&A



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TDI, Inc
1310 Bison Rd
Hays Ks 67601-9696
ATTN: Tom Denning, Herb D

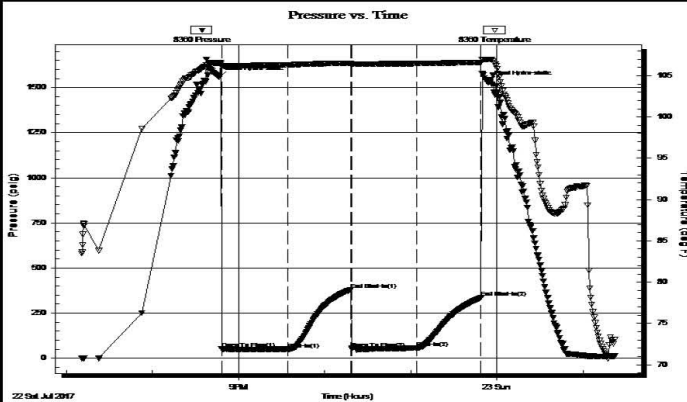
21-15s-18w Ellis
Engel North #3
Job Ticket: 63003 **DST#: 1**
Test Start: 2017.07.22 @ 19:10:45

GENERAL INFORMATION:

Formation: **LKC A-D**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:48:10
Time Test Ended: 01:21:54
Test Type: Conventional Bottom Hole (Initial)
Tester: Ray Schwager
Unit No: 77
Interval: **3321.00 ft (KB) To 3370.00 ft (KB) (TVD)**
Total Depth: 3370.00 ft (KB) (TVD)
Reference Elevations: 2037.00 ft (KB)
2027.00 ft (CF)
Hole Diameter: 7.85 inches Hole Condition: Fair
KB to GR/CF: 10.00 ft

Serial #: 8360 Inside
Press@RunDepth: 57.41 psig @ 3334.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2017.07.22 End Date: 2017.07.23 Last Calib.: 2017.07.23
Start Time: 19:10:45 End Time: 01:21:54 Time On Btm: 2017.07.22 @ 20:46:25
Time Off Btm: 2017.07.22 @ 23:53:39

TEST COMMENT: 45-IFP-w k to a gd bl 1/2" to 9" bl
45-ISIP-no bl bk
45-FFP-w k to a fr bl surface to 5" bl
45-FSIP-no bl bk



PRESSURE SUMMARY

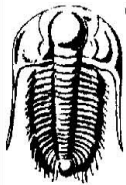
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1558.79	106.55	Initial Hydro-static
2	52.29	106.10	Open To Flow (1)
48	50.85	106.32	Shut-In(1)
92	380.72	106.51	End Shut-In(1)
93	54.42	106.42	Open To Flow (2)
138	57.41	106.47	Shut-In(2)
183	335.51	106.60	End Shut-In(2)
188	1530.98	106.98	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	260' GIP	0.00
30.00	O&GCM 20% G20% O60% M	0.42
20.00	O&GCM 10% G30% O60% M	0.28

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: Tom Denning, Herb D

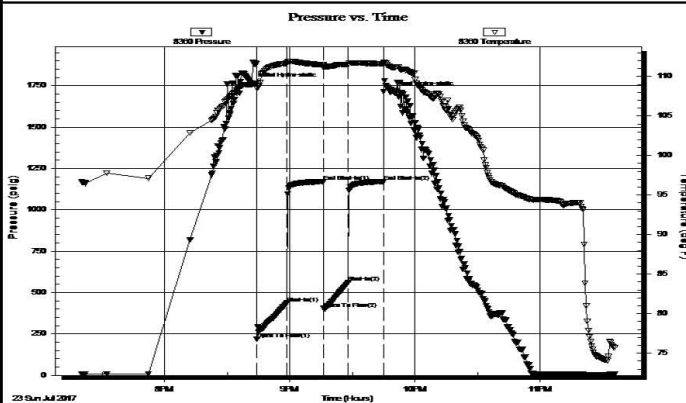
21-15s-18w Ellis
Engel North #3
Job Ticket: 63004 **DST#: 2**
Test Start: 2017.07.23 @ 19:20:21

GENERAL INFORMATION:

Formation: **Arbuckle**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:44:16
Time Test Ended: 23:35:46
Test Type: Conventional Bottom Hole (Reset)
Tester: Ray Schwager
Unit No: 77
Interval: **3590.00 ft (KB) To 3640.00 ft (KB) (TVD)**
Reference Elevations: 2037.00 ft (KB)
Total Depth: 3640.00 ft (KB) (TVD) 2027.00 ft (CF)
Hole Diameter: 7.85 inches Hole Condition: Fair KB to GR/CF: 10.00 ft

Serial #: 8360 Inside
Press@RunDepth: 560.39 psig @ 3604.00 ft (KB) Capacity: 8000.00 psig
Start Date: 2017.07.23 End Date: 2017.07.23 Last Calib.: 2017.07.23
Start Time: 19:20:21 End Time: 23:35:46 Time On Btm: 2017.07.23 @ 20:41:46
Time Off Btm: 2017.07.23 @ 21:48:16

TEST COMMENT: 15-IFP-BOB in 2min
15-ISIP-no bl bk
15-FFP-BOB in 2 min
15-FSP-no bl bk



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1763.48	109.00	Initial Hydro-static
3	218.33	108.51	Open To Flow (1)
17	436.86	111.65	Shut-In(1)
35	1171.55	111.46	End Shut-In(1)
35	403.76	111.12	Open To Flow (2)
47	560.39	111.54	Shut-In(2)
63	1171.30	111.57	End Shut-In(2)
67	1710.46	111.19	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	Mud	0.42
1054.00	Water	14.78

* Recovery from multiple tests

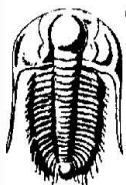
Gas Rates

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

Trilobite Testing, Inc

Ref. No: 63004

Printed: 2017.07.23 @ 23:56:12



**TRILOBITE
TESTING, INC.**

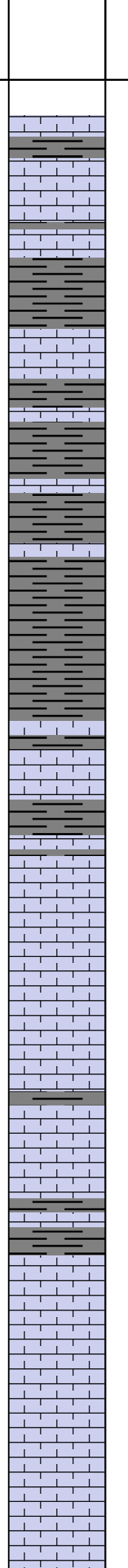
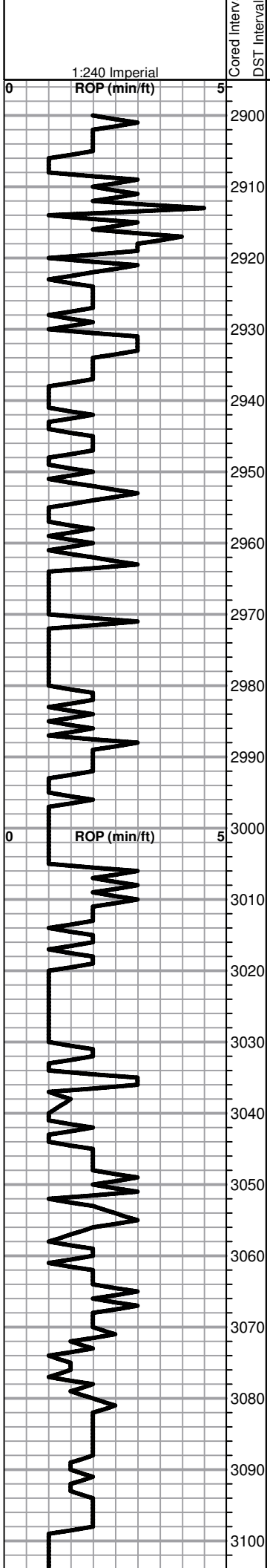
DRILL STEM TEST REPORT

TDI, Inc
1310 Bison Rd
Hays Ks 67601-9696
ATTN: Tom Denning, Herb D

21-15s-18w Ellis
Engel North #3
Job Ticket: 63005 **DST#: 3**
Test Start: 2017.07.24 @ 03:41:03

GENERAL INFORMATION:

Formation: **LKC H-J**
Deviated: No Whipstock: ft (KB)
Test Type: Conventional Straddle (Reset)



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

ANHYDRITE TOP 1186+851
ANHYDRITE BASE 1224+813

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

Shale, lt gray, soft sticky

Lime, lt-med brn, fnxln

TOPEKA 3004-967
 Lime, crm-lt brn, fnxln, crinoid segments

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

Lime, lt-med brn, fnxln, bedded chalk with gray shaley lime in part

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

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

Lime, lt-med brn-med grayish brn, fn-vfxln

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

Lime, lt-med brn-med grayish brn, fn-vfxln

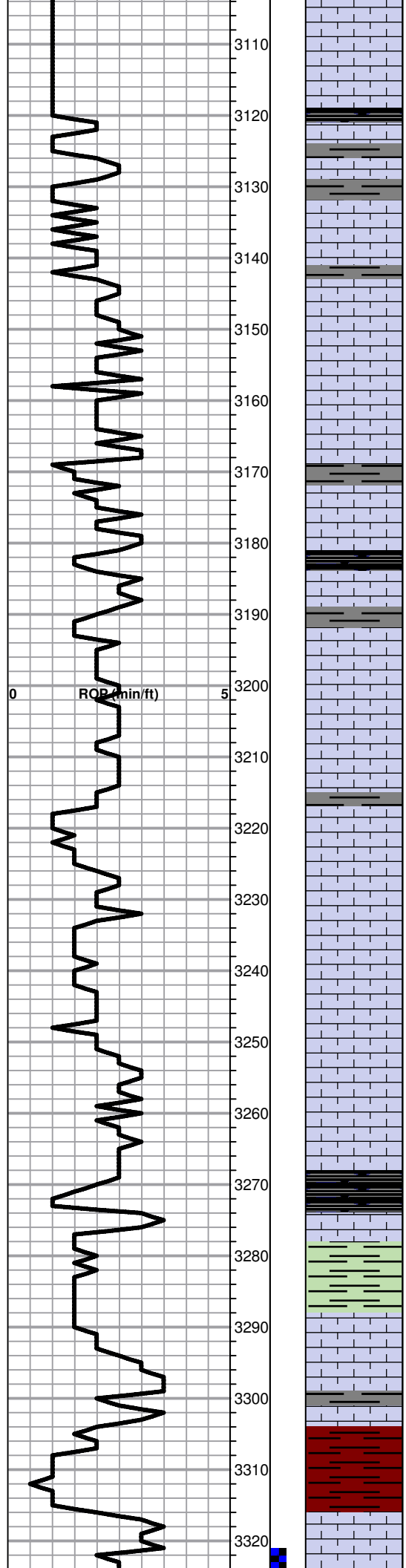
Lime, lt-med brn, fn-vfxln, slightly fossiliferous

Lime, lt brn-light grayish brn, fnxln with increasing bedded chalk and granular chips

1:240 Imperial

8 5/8" SURFACE CASING SET TO 1189' W/ 375 SXS SMD

SLOPE 1 DEGREE @1190'



Lime, lt-med brn, fnxln-granular, slightly fossiliferous with fusulinids

Lime, lt brn, fnxln-granular

Shale, black carbonaceous, blocky

Lime, crm-lt brn, fn-vfxln slightly fossiliferous in part

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

Lime, crm-lt brn, fnxln, bedded chalk with scattered dark mottling in part

Shale, med gray, firm blocky, calcareous and fossiliferous

Lime, lt grayish brn, fn-vfxln

Shale, black carbonaceous, fissile, blocky

Lime, lt grayish brn, vfxln

* Lime, lt brn, fnxln-granular, lt odor, NFO or staining. light wet cut

Lime, crm-lt brn, fnxln with increased chalk content

Lime, lt-med brn, fnxln

○ Lime, lt brn, fine oomoldic/fossil fragment with scattered vugs, lt odor, scattered to saturated staining, NFO

Lime, crm-lt brn, fnxln with bedded chalk

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

Lime, lt-med brn, fnxln, slight bedded chalk

HEEBNER SHALE 3268-1231

Shale, black carbonaceous, fissile, blocky

Lime, med brn, fn-micro xln

Shale, dove gray-lime green, soft mud, sticky

TORONTO 3288-1251

Lime, white-crm, fnxln with firm bedded chalk, NS, white chalk wash

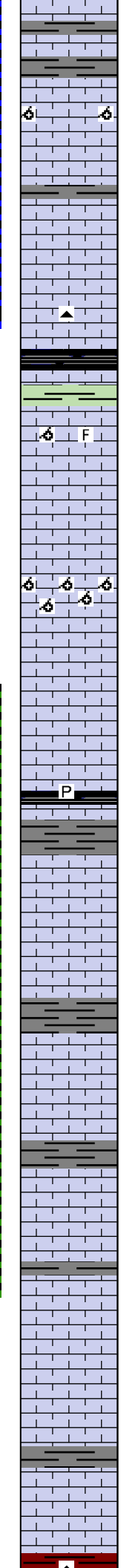
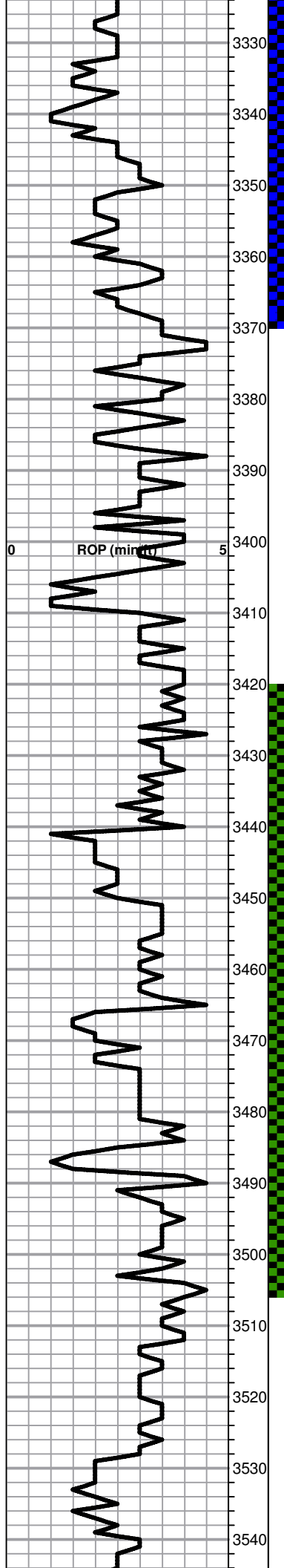
Lime, crm-lt brn, fn-vfxln

Shale, red-reddish brn, soft mud-soft blocky

LKC 3316-1279

○ Lime, lt-med brn, fn-micro xln, 3 chips with trace of staining, NFO, no odor. Does not appear well developed

CFS 3300'
SHORT TRIP 23 STANDS



Shale, red-reddish brn-gray, soft blocky
Lime, med brn, fn-micro xln

○ Lime, crm, fnxln, few oomoldic chips with spotty stain, NFO, very lt odor

Lime, crm-lt brn, fn-micro xln

○ Lime, crm-lt brn, fnxln, bed of mixed fossil fragments and oolites with scattered vugs, fair odor and scattered staining in mold casts and vugs

Lime, crm-lt brn, fn-micro xln

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

○ Lime, crm-tan, fnxln with bed of fossil fragments and oolites, scattered light stain, NFO

Lime, white-crm, fnxln

○ Lime, crm-lt brn, fnxln-granular, slightly oomoldic with trace of lt spotty staining in molds, NFO, no odor

Lime, white-crm, fn-vfxln, slightly fossiliferous

Lime, crm-med-dark brn, fn-vfxln

Shale, gray-black carbonaceous, blocky, pyrite clusters

○ Lime, crm, mostly fn-vfxln, thin zone with oolites and fossil fragments, spotty staining in voids and casts with few saturated stain chips, NFO, very lite odor

○ Lime, white-crm,fnxln, fossil fragments with spotty to saturated staining in voids and casts, NFO, very lt odor

Lime, crm, fn-micro xln

○ Lime, white-crm, fnxln, thin bed of fossil fragments and oolites with scattered vugs, spotty stain in vugs and cast, NFO with very lt detectable odor

Lime, white-crm, fnxln with lt chalk wash

Lime, white, fnxln-granular, NS, no odor, no wet cut

Lime, white-crm, fn-micro xln, slight bed chalk

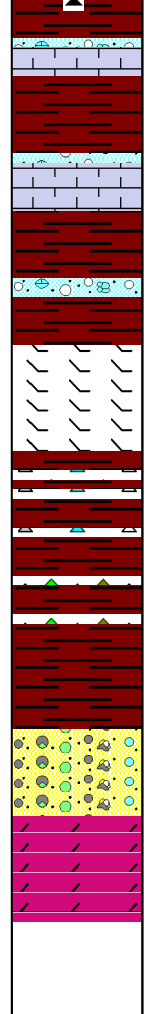
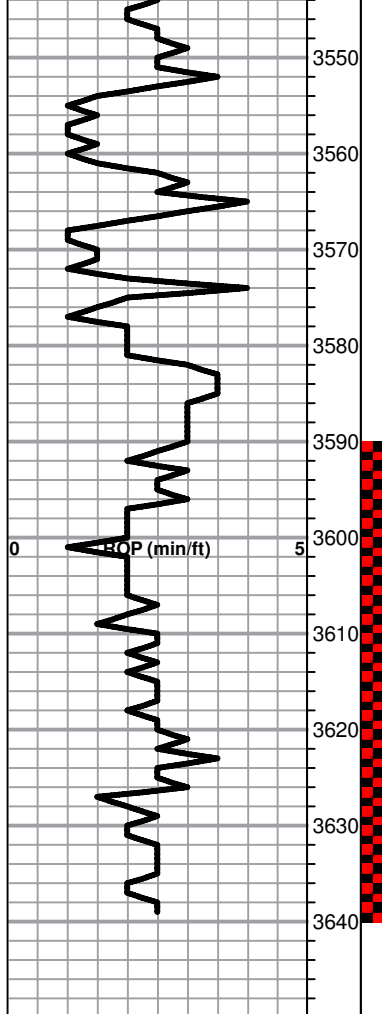
○ Lime white-crm, fn-vfxln, chips chips with scattered vugs with light spotty staining, NFO, no odor

BKC 3542-1505

Chalk, red-reddish brn, soft blocky with short fragments, lt

DST # 1 3321' TO 3370' SEE HEADER FOR TEST SUMMARY

STRADDLE TEST 3420' TO 3506' SEE HEADER FOR TEST SUMMARY



Shale, re-reddish brn, soft blocky with chert fragments, lt red wash

Lime, crm, fnxln

Shale, red-reddish brn, soft with red wash

Lime, crm-lt brn, fn-vflxn, some clastic with red shale staining

Shale, red-reddish brn, soft blocky with red wash

Lime, white-crm, fn-micro xln, slightly dolomitic, orange chert fragments

Chert, vari colored with dry flaky gilsonite in part

Shale, red with red wash with vari colored chert fragments

Shale, red-reddish brn, soft blocky with light red wash

Chert, vari colored, oolitic chert in part with mix of dolomite

ARBUCKLE 3629-1592

Dolomite, white-ivory-lt brn, fnxln-granular with interxln porosity. It scattered to saturated staining, good odor and VMSFO on crush

RTD 3640-1687 LTD 3639-1686

DST # 2 3590' TO 3640' SEE
HEADER FOR TEST
SUMMARY

JOB LOG

SWIFT Services, Inc.

DATE

7-19-17

PAGE NO.

1

CUSTOMER

TDI

WELL NO.

#3

LEASE

Engel North

JOB TYPE

Deep Surface

TICKET NO.

30440

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	1230							On location
								Csg - 8 5/8
								RTD - 1190
								Baffle Plate - 1149'
								CENTRALIZERS - 1, 5, & 18
	1320							Start Running Csg
	1450							Break Circ on Bottom
	1520	6	0			200		Start Cmt @ 11.2 ppq
		6	110			200		Raise weight to 12.5 ppq
		6	150			200		Raise weight to 13.5 ppq
		6	165			200		Raise weight to 14.5 ppq
		6	170			200		End Cmt
								Drop plug
	1600	6	0					Start Disp
		6	46					Circ cmt to Surf.
	1615	5	73			600		Land plug lift psi - 400 *
								Land psi - 600 *
								Circulated Socks cmt to pit
								Thanks
								David, Austin & Kirby

JOB LOG

SWIFT Services, Inc.

DATE

7-24-17

PAGE NO.

CUSTOMER

TJI

WELL NO.

3

LEASE

Engel North

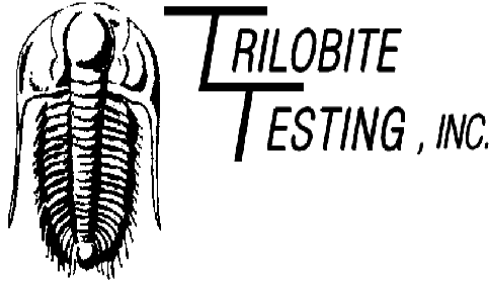
JOB TYPE

PTA

TICKET NO.

30443

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
								On location
								1st plug @ 3640' 50 sks cmt
	1425	5	10			400		pump wtr spacer
	1430	5	13			400		pump cmt
	1435	5	4			400		pump wtr behind cmt
	1440	8	46					Disp w/ mud pump
								2nd plug @ 1250' 50 sks cmt
	1600	5	5			100		Pump wtr spacer
		5	13			100		pump cmt
	1605	0	2			100		Disp w/ wtr
								3rd plug @ 500' 100 sks cmt
	1625	5	5			100		pump wtr spacer
		5	26			100		pump cmt
	1635	0	1			100		Disp
								T.O.O.H
	1700	2	2.5			0		Top off 8 5/8 - 10 sks cmt
	1705	2	8			0		plug rat hole - 30 sks cmt
	1710	2	5			0		plug mouse hole - 20 sks cmt
	1715							Job Complete
								Thank David, Austin & Isaac



DRILL STEM TEST REPORT

Prepared For: **TDI, Inc**

1310 Bison Rd
Hays KS 67601-9696

ATTN: Tom Denning , Herb D

Engel North #3

21-15s-18w Ellis,KS

Start Date: 2017.07.22 @ 19:10:45

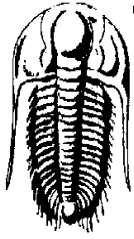
End Date: 2017.07.23 @ 01:21:54

Job Ticket #: 63003 DST #: 1

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

Printed: 2017.07.24 @ 14:48:47

TDI, Inc
21-15s-18w Ellis,KS
Engel North #3
DST # 1
LKC A-D
2017.07.22



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc
 1310 Bison Rd
 Hays KS 67601-9696
 ATTN: Tom Denning, Herb D

21-15s-18w Ellis, KS
Engel North #3
 Job Ticket: 63003 **DST#: 1**
 Test Start: 2017.07.22 @ 19:10:45

GENERAL INFORMATION:

Formation: **LKC A-D**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 20:48:10
 Time Test Ended: 01:21:54
 Interval: **3321.00 ft (KB) To 3370.00 ft (KB) (TVD)**
 Total Depth: 3370.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Ray Schwager
 Unit No: 77
 Reference Elevations: 2037.00 ft (KB)
 2027.00 ft (CF)
 KB to GR/CF: 10.00 ft

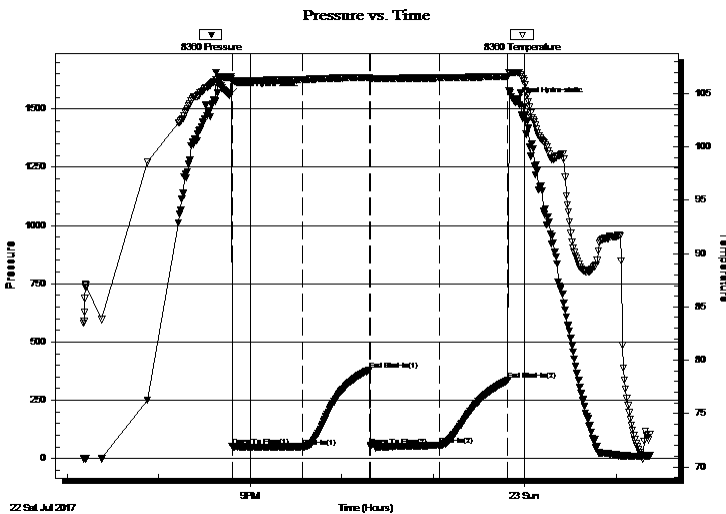
Serial #: 8360

Inside

Press@RunDepth: 57.41 psig @ 3334.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.07.22 End Date: 2017.07.23 Last Calib.: 2017.07.23
 Start Time: 19:10:45 End Time: 01:21:54 Time On Btm: 2017.07.22 @ 20:46:25
 Time Off Btm: 2017.07.22 @ 23:53:39

TEST COMMENT: 45-IFP-w k to a gd bl 1/2" to 9" bl
 45-ISIP-no bl bk
 45-FFP-w k to a fr bl surface to 5" bl
 45-FSIP-no bl bk

PRESSURE SUMMARY



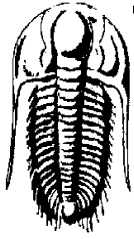
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1558.79	106.55	Initial Hydro-static
2	52.29	106.10	Open To Flow (1)
48	50.85	106.32	Shut-In(1)
92	380.72	106.51	End Shut-In(1)
93	54.42	106.42	Open To Flow (2)
138	57.41	106.47	Shut-In(2)
183	335.51	106.60	End Shut-In(2)
188	1530.98	106.98	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	260' GIP	0.00
30.00	O&GCM 20%G20%O60%M	0.42
20.00	O&GCM 10%G30%O60%M	0.28

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: Tom Denning, Herb D

21-15s-18w Ellis, KS
Engel North #3
Job Ticket: 63003 **DST#: 1**
Test Start: 2017.07.22 @ 19:10:45

Tool Information

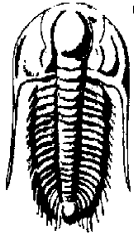
Drill Pipe:	Length: 3328.00 ft	Diameter: 3.80 inches	Volume: 46.68 bbl	Tool Weight:	2200.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose:	60000.00 lb
			<u>Total Volume: 46.68 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial	46000.00 lb
Depth to Top Packer:	3321.00 ft			Final	46000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	49.00 ft				
Tool Length:	70.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

Change Over Sub	1.00			3301.00	
Shut In Tool	5.00			3306.00	
Hydraulic tool	5.00			3311.00	
Packer	5.00			3316.00	21.00 Bottom Of Top Packer
Packer	5.00			3321.00	
Stubb	1.00			3322.00	
Perforations	12.00			3334.00	
Recorder	0.00	8360	Inside	3334.00	
Recorder	0.00	6751	Outside	3334.00	
Blank Spacing	33.00			3367.00	
Bullnose	3.00			3370.00	49.00 Bottom Packers & Anchor

Total Tool Length: 70.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI, Inc
 1310 Bison Rd
 Hays KS 67601-9696
 ATTN: Tom Denning, Herb D

21-15s-18w Ellis,KS
Engel North #3
 Job Ticket: 63003
 Test Start: 2017.07.22 @ 19:10:45

DST#: 1

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: 53.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.37 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 3400.00 ppm			
Filter Cake: 1.00 inches			

Recovery Information

Recovery Table

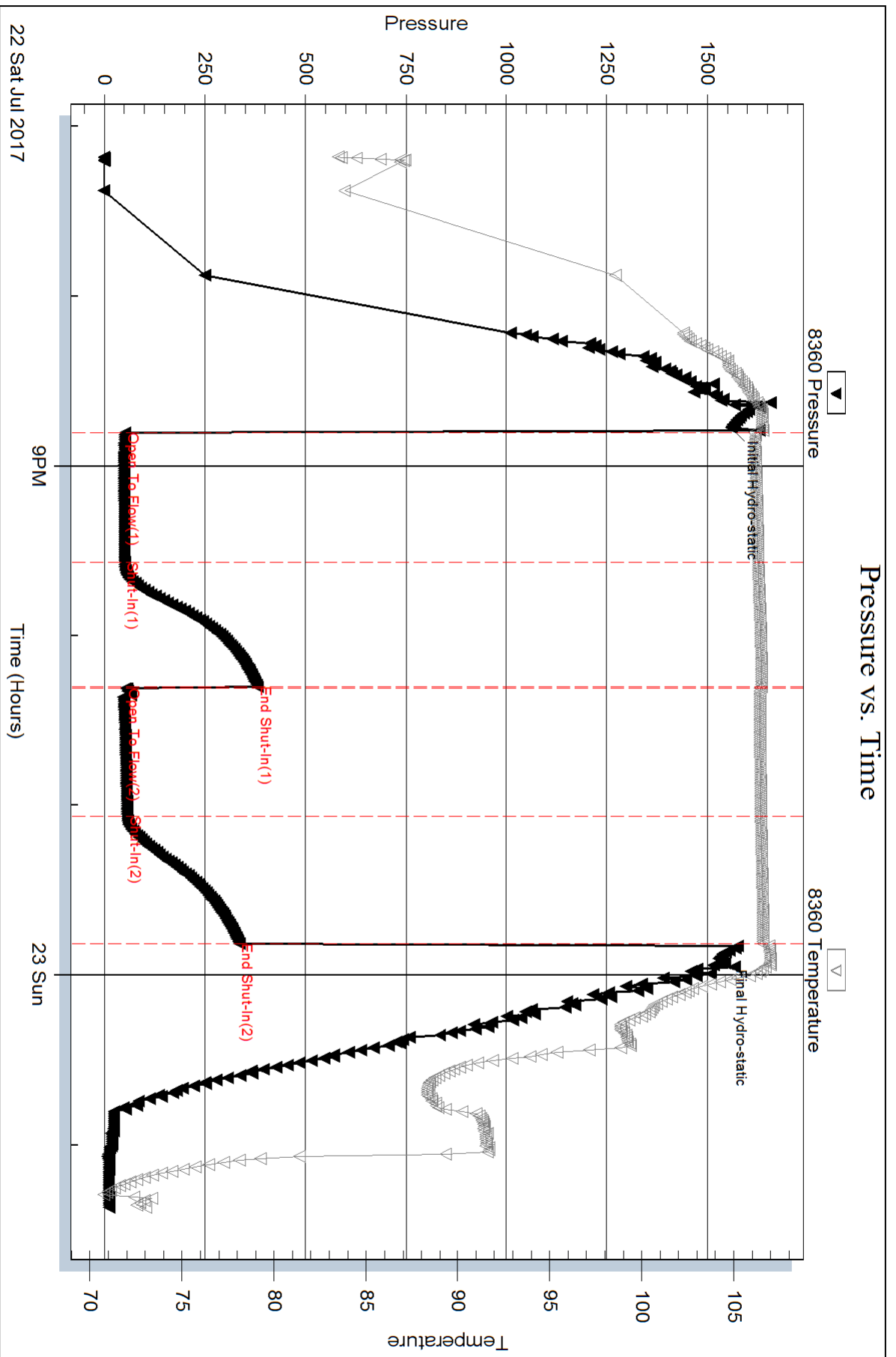
Length ft	Description	Volume bbl
0.00	260' GIP	0.000
30.00	O&GCM 20%G20%O60%M	0.421
20.00	O&GCM 10%G30%O60%M	0.281

Total Length: 50.00 ft Total Volume: 0.702 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments:

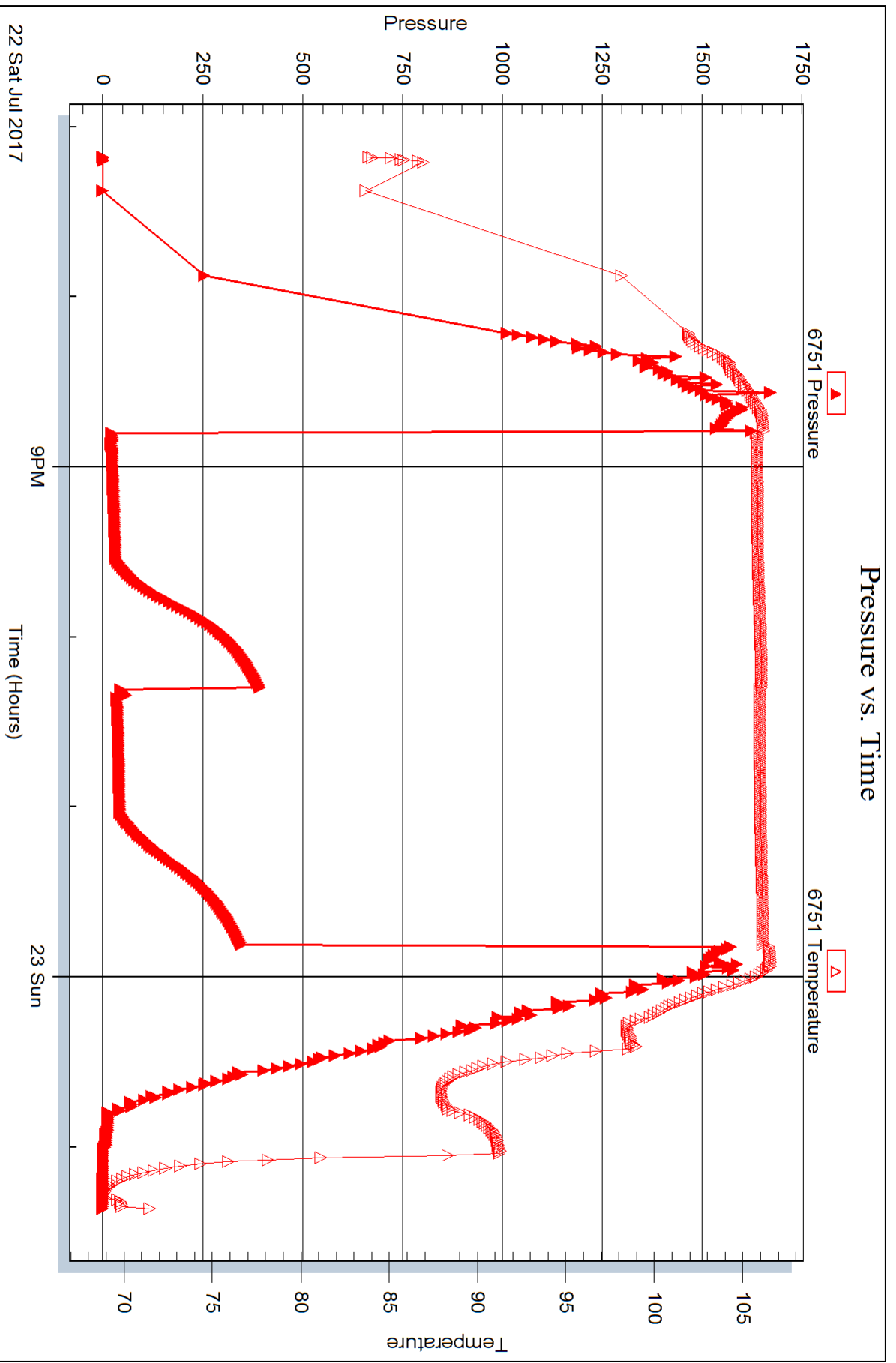


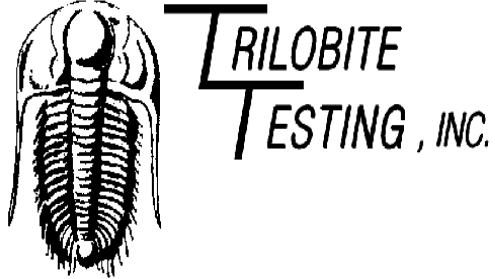
Serial #: 6751

Outside TDI, Inc

Engel North #3

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **TDI, Inc**

1310 Bison Rd
Hays KS 67601-9696

ATTN: Tom Denning , Herb D

Engel North #3

21-15s-18w Ellis,KS

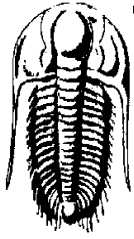
Start Date: 2017.07.23 @ 19:20:21

End Date: 2017.07.23 @ 23:35:46

Job Ticket #: 63004 DST #: 2

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

Printed: 2017.07.24 @ 14:48:22



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc
 1310 Bison Rd
 Hays KS 67601-9696
 ATTN: Tom Denning, Herb D

21-15s-18w Ellis, KS
Engel North #3
 Job Ticket: 63004 **DST#: 2**
 Test Start: 2017.07.23 @ 19:20:21

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 20:44:16
 Time Test Ended: 23:35:46
 Interval: **3590.00 ft (KB) To 3640.00 ft (KB) (TVD)**
 Total Depth: 3640.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Bottom Hole (Reset)
 Tester: Ray Schwager
 Unit No: 77
 Reference Elevations: 2037.00 ft (KB)
 2027.00 ft (CF)
 KB to GR/CF: 10.00 ft

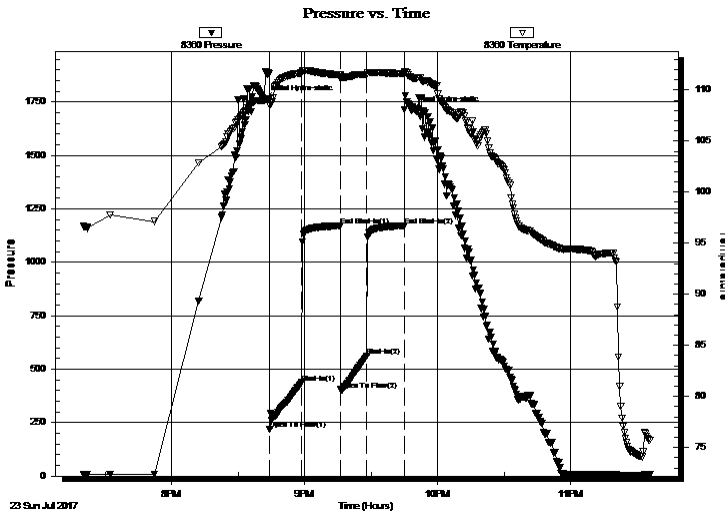
Serial #: 8360

Inside

Press@RunDepth: 560.39 psig @ 3604.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.07.23 End Date: 2017.07.23 Last Calib.: 2017.07.23
 Start Time: 19:20:21 End Time: 23:35:46 Time On Btm: 2017.07.23 @ 20:41:46
 Time Off Btm: 2017.07.23 @ 21:48:16

TEST COMMENT: 15-IFP-BOB in 2 min
 15-ISIP-no bl bk
 15-FFP-BOB in 2 min
 15-FSIP-no bl bk

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1763.48	109.00	Initial Hydro-static
3	218.33	108.51	Open To Flow (1)
17	436.86	111.65	Shut-In(1)
35	1171.55	111.46	End Shut-In(1)
35	403.76	111.12	Open To Flow (2)
47	560.39	111.54	Shut-In(2)
63	1171.30	111.57	End Shut-In(2)
67	1710.46	111.19	Final Hydro-static

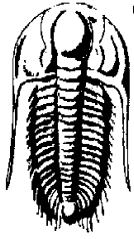
Recovery

Length (ft)	Description	Volume (bbl)
30.00	Mud	0.42
1054.00	Water	14.78

* 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: Tom Denning, Herb D

21-15s-18w Ellis, KS
Engel North #3
Job Ticket: 63004 **DST#: 2**
Test Start: 2017.07.23 @ 19:20:21

Tool Information

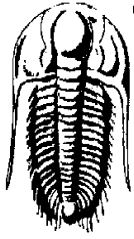
Drill Pipe:	Length: 3584.00 ft	Diameter: 3.80 inches	Volume: 50.27 bbl	Tool Weight: 2200.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 65000.00 lb
			<u>Total Volume: 50.27 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3590.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	50.00 ft			
Tool Length:	71.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

Change Over Sub	1.00			3570.00	
Shut In Tool	5.00			3575.00	
Hydraulic tool	5.00			3580.00	
Packer	5.00			3585.00	21.00 Bottom Of Top Packer
Packer	5.00			3590.00	
Stubb	1.00			3591.00	
Perforations	13.00			3604.00	
Recorder	0.00	8360	Inside	3604.00	
Recorder	0.00	8678	Outside	3604.00	
Blank Spacing	33.00			3637.00	
Bullnose	3.00			3640.00	50.00 Bottom Packers & Anchor

Total Tool Length: 71.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI, Inc
 1310 Bison Rd
 Hays KS 67601-9696
 ATTN: Tom Denning, Herb D

21-15s-18w Ellis,KS
Engel North #3
 Job Ticket: 63004
 Test Start: 2017.07.23 @ 19:20:21

DST#: 2

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:	30000 ppm
Viscosity: 50.00 sec/qt	Cushion Volume: bbl		
Water Loss: 6.78 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 4800.00 ppm			
Filter Cake: 1.00 inches			

Recovery Information

Recovery Table

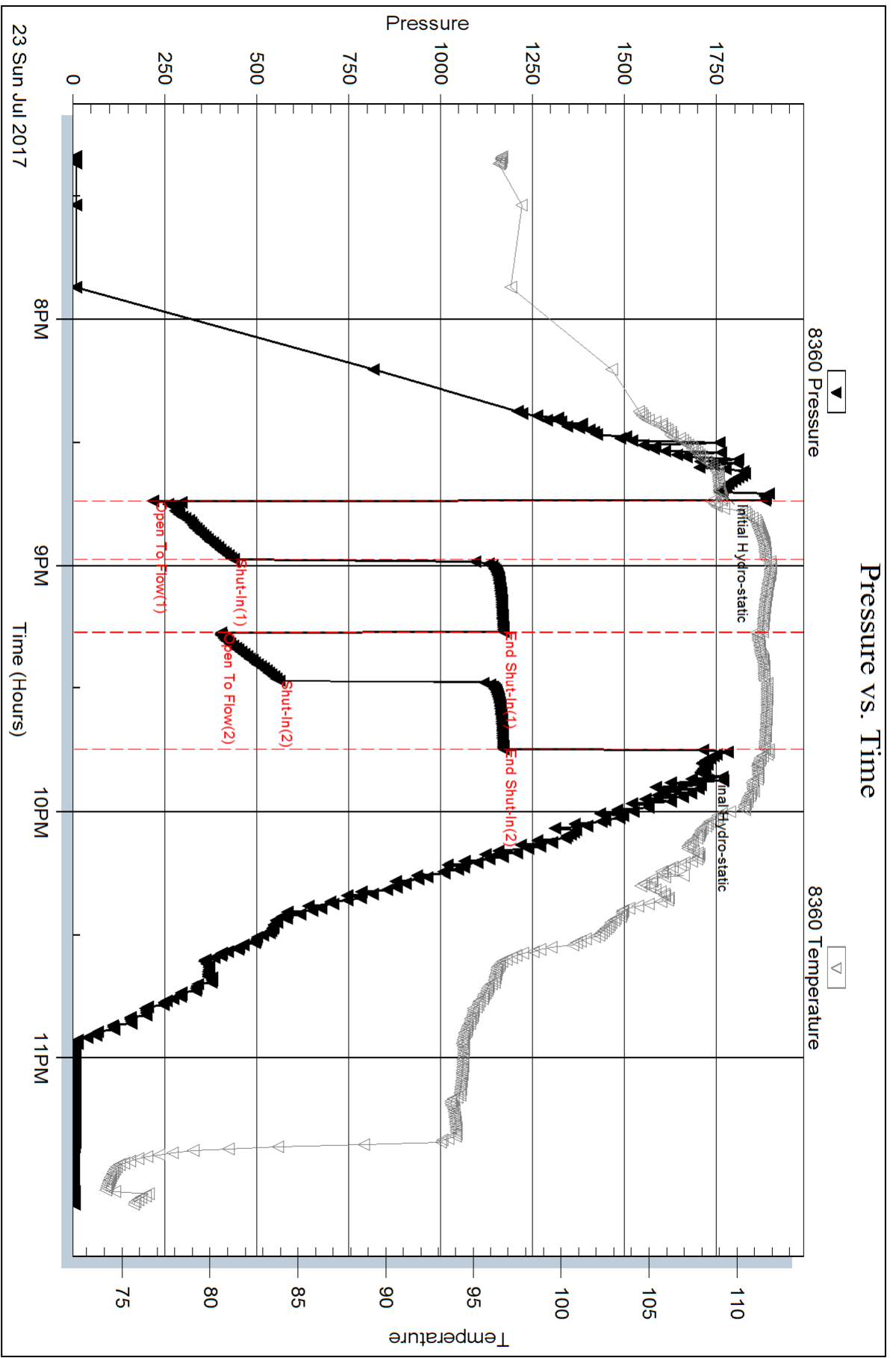
Length ft	Description	Volume bbl
30.00	Mud	0.421
1054.00	Water	14.785

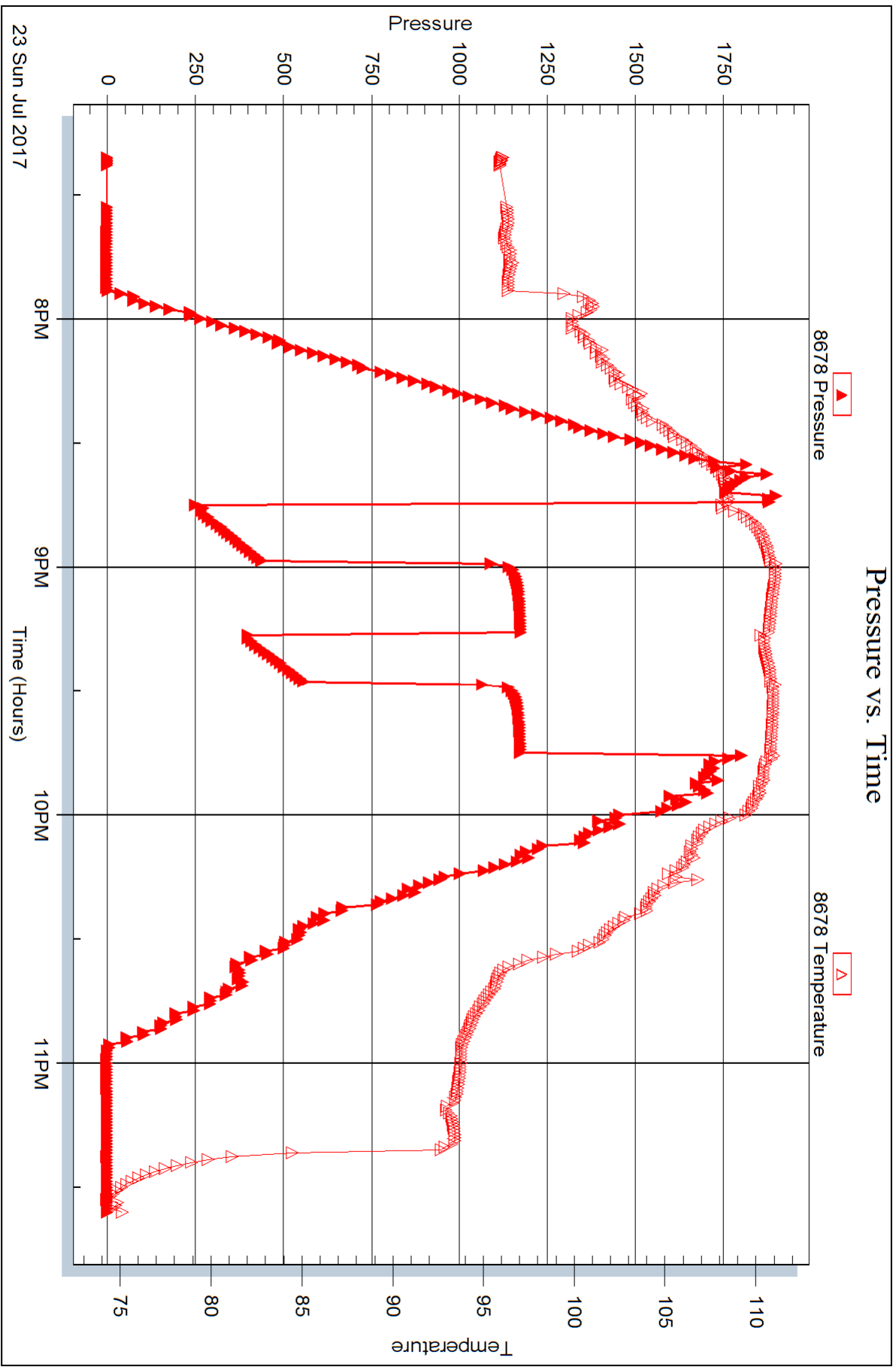
Total Length: 1084.00 ft Total Volume: 15.206 bbl

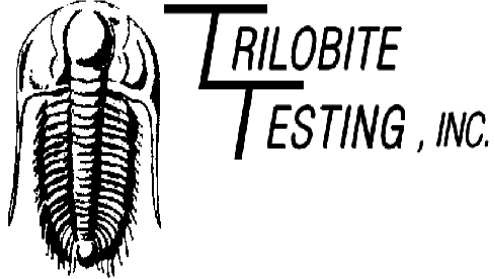
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments: RW .21@75F







DRILL STEM TEST REPORT

Prepared For: **TDI, Inc**

1310 Bison Rd
Hays KS 67601-9696

ATTN: Tom Denning , Herb D

Engel North #3

21-15s-18w Ellis,KS

Start Date: 2017.07.24 @ 03:41:03

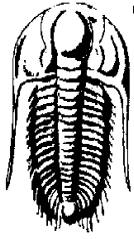
End Date: 2017.07.24 @ 09:55:42

Job Ticket #: 63005 DST #: 3

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

Printed: 2017.07.24 @ 14:47:57

TDI, Inc
21-15s-18w Ellis, KS
Engel North #3
DST # 3
LKC H-J
2017.07.24



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc
 1310 Bison Rd
 Hays KS 67601-9696
 ATTN: Tom Denning, Herb D

21-15s-18w Ellis, KS
Engel North #3
 Job Ticket: 63005 **DST#: 3**
 Test Start: 2017.07.24 @ 03:41:03

GENERAL INFORMATION:

Formation: **LKC H-J**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 05:30:28
 Time Test Ended: 09:55:42
 Interval: **3420.00 ft (KB) To 3506.00 ft (KB) (TVD)**
 Total Depth: 3641.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Straddle (Reset)
 Tester: Ray Schwager
 Unit No: 77
 Reference Elevations: 2037.00 ft (KB)
 2027.00 ft (CF)
 KB to GR/CF: 10.00 ft

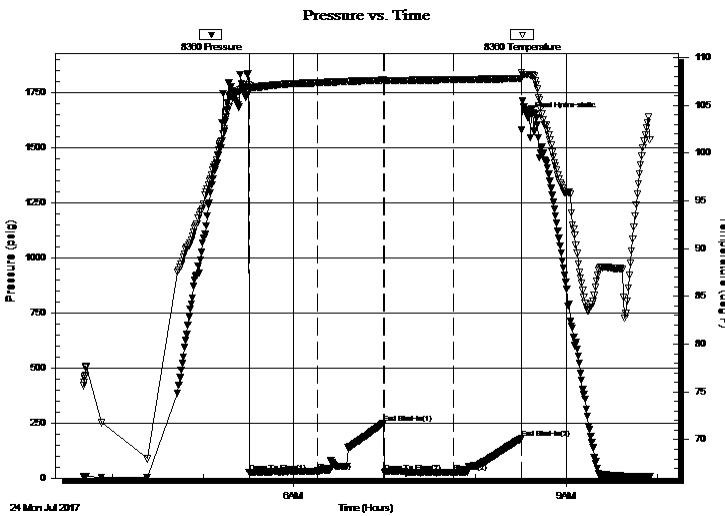
Serial #: 8360

Inside

Press@RunDepth: 25.27 psig @ 3424.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2017.07.24 End Date: 2017.07.24 Last Calib.: 2017.07.24
 Start Time: 03:41:03 End Time: 09:55:42 Time On Btm: 2017.07.24 @ 05:28:13
 Time Off Btm: 2017.07.24 @ 08:34:42

TEST COMMENT: 45-IFP-w k bl thru-out 1/2" to 1 1/2" bl
 45-ISIP-no bl
 45-FFP-no bl
 45-FSIP-no bl

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1730.82	106.82	Initial Hydro-static
3	25.22	106.74	Open To Flow (1)
48	33.36	107.36	Shut-In(1)
91	249.22	107.61	End Shut-In(1)
92	27.57	107.54	Open To Flow (2)
138	25.27	107.67	Shut-In(2)
182	180.07	107.77	End Shut-In(2)
187	1640.03	108.17	Final Hydro-static

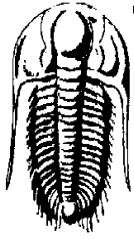
Recovery

Length (ft)	Description	Volume (bbl)
20.00	Mud	0.28

* 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: Tom Denning, Herb D

21-15s-18w Ellis, KS
Engel North #3
Job Ticket: 63005 **DST#: 3**
Test Start: 2017.07.24 @ 03:41:03

Tool Information

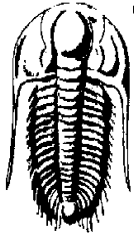
Drill Pipe:	Length: 3421.00 ft	Diameter: 3.80 inches	Volume: 47.99 bbl	Tool Weight: 2200.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight to Pull Loose: 55000.00 lb
			Total Volume: 47.99 bbl	Tool Chased 0.00 ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial 46000.00 lb
Depth to Top Packer:	3420.00 ft			Final 46000.00 lb
Depth to Bottom Packer:	3506.00 ft			
Interval between Packers:	86.00 ft			
Tool Length:	245.00 ft			
Number of Packers:	3	Diameter:	6.75 inches	

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Change Over Sub	1.00			3400.00	
Shut In Tool	5.00			3405.00	
Hydraulic tool	5.00			3410.00	
Packer	5.00			3415.00	21.00 Bottom Of Top Packer
Packer	5.00			3420.00	
Stubb	1.00			3421.00	
Perforations	3.00			3424.00	
Recorder	0.00	8360	Inside	3424.00	
Recorder	0.00	6751	Outside	3424.00	
Blank Spacing	65.00			3489.00	
Perforations	13.00			3502.00	
Blank Off Sub	1.00			3503.00	
Blank Spacing	3.00			3506.00	86.00 Tool Interval
Packer	5.00			3511.00	
Stubb	1.00			3512.00	
Perforations	2.00			3514.00	
Recorder	0.00	8678	Below	3514.00	
Blank Spacing	127.00			3641.00	
Bullnose	3.00			3644.00	138.00 Bottom Packers & Anchor

Total Tool Length: 245.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI, Inc

21-15s-18w Ellis, KS

1310 Bison Rd
Hays KS 67601-9696

Engel North #3

Job Ticket: 63005

DST#: 3

ATTN: Tom Denning, Herb D

Test Start: 2017.07.24 @ 03:41:03

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: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4800.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
20.00	Mud	0.281

Total Length: 20.00 ft Total Volume: 0.281 bbl

Num Fluid Samples: 0

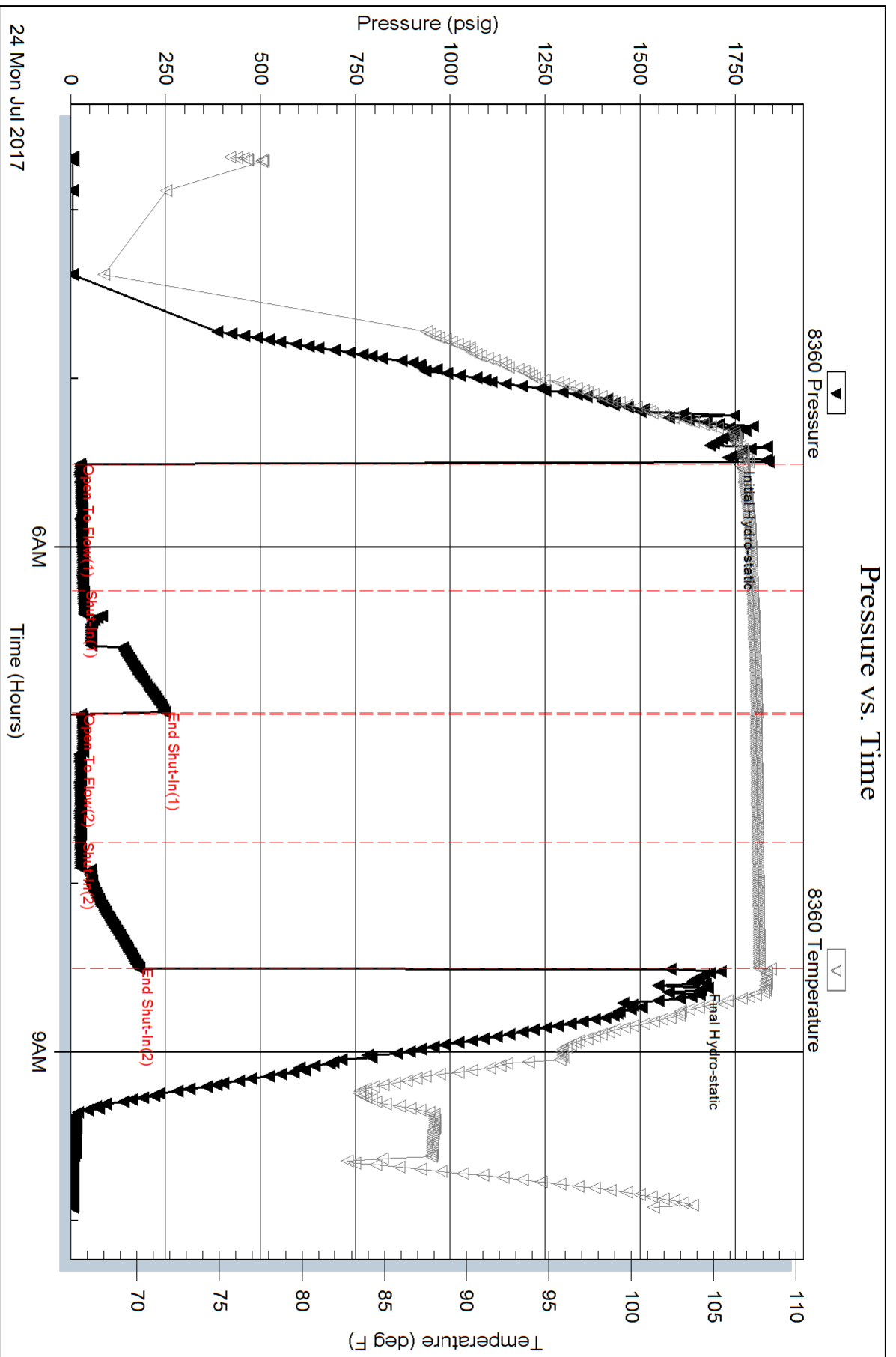
Num Gas Bombs: 0

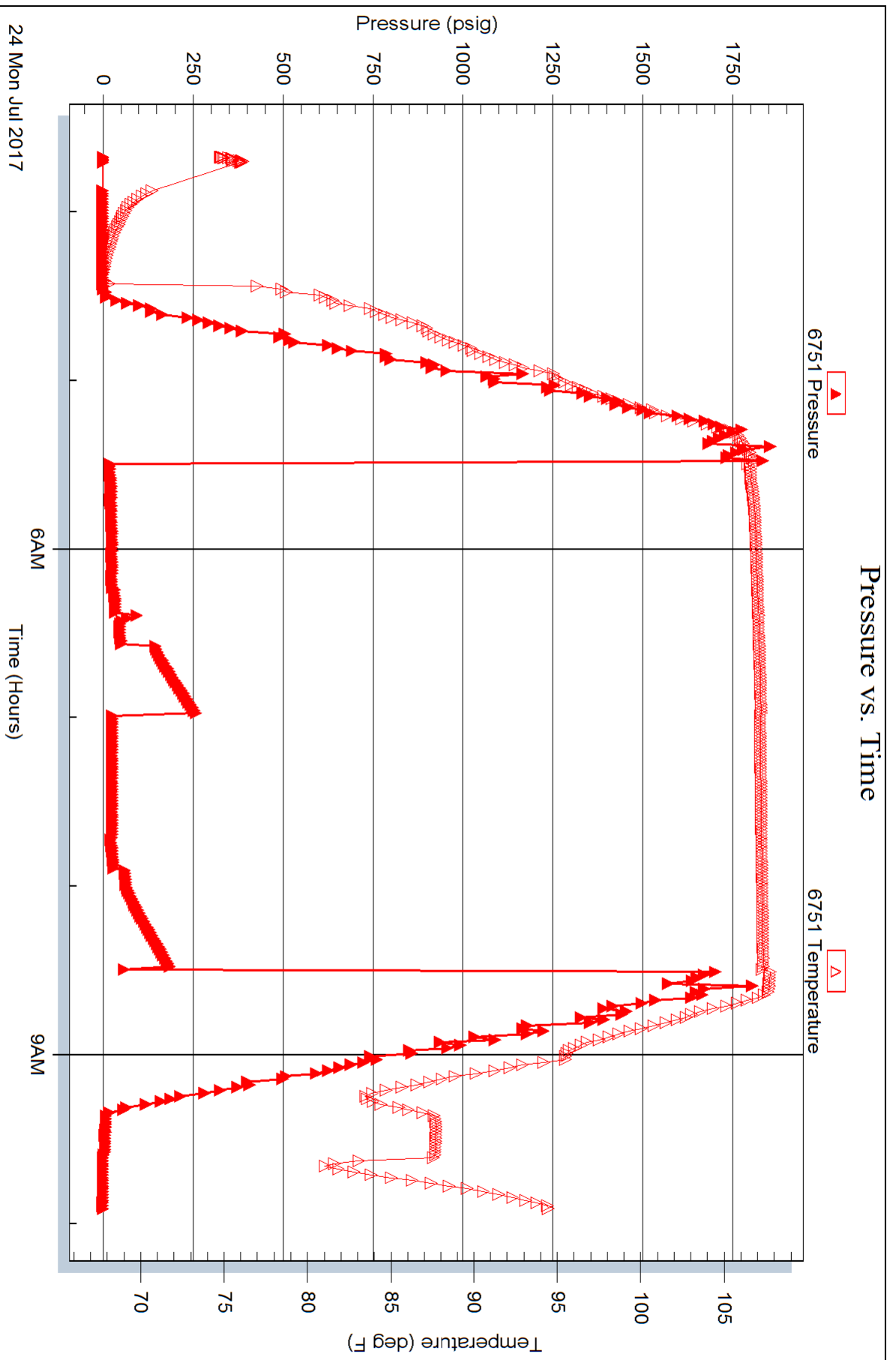
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



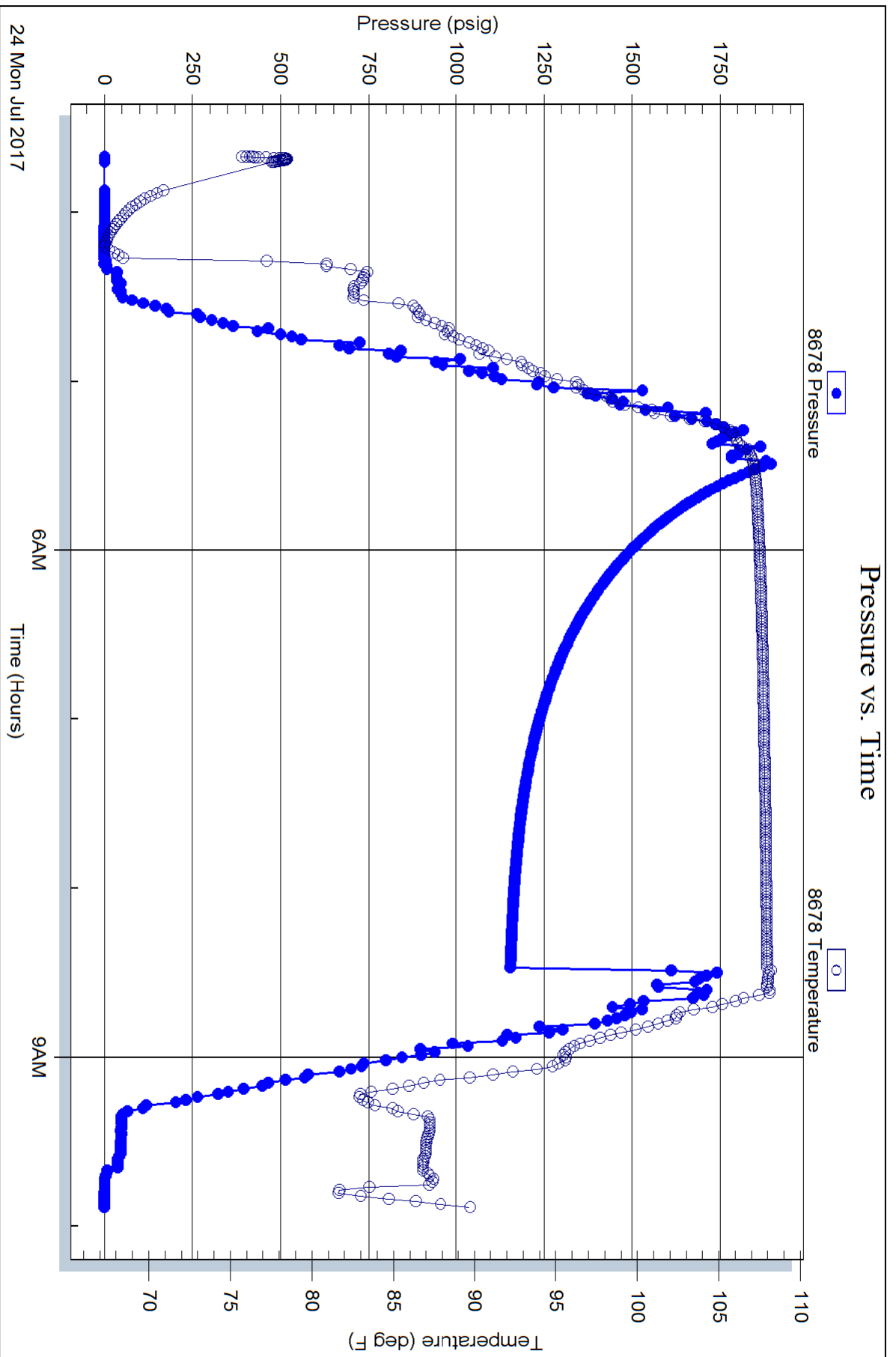


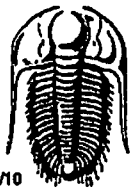
Serial #: 8678

Below (Stratall)ep

Engel North #3

DST Test Number: 3





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63003

Well Name & No. Engel North #3 Test No. 1 Date 7-22-17
 Company TOT, Inc Elevation 2037 KB 2027 GL
 Address 1310 Bison Rd Hays, Ks 67601-9696
 Co. Rep / Geo. Herb Deines Rig Southwindrig 1
 Location: Sec. 21 Twp. 15^s Rge. 18^w Co. ELLIS State K

Interval Tested 3321-3370 Zone Tested LKC A-0
 Anchor Length 49 Drill Pipe Run 3328 Mud Wt. 8.8
 Top Packer Depth 3316 Drill Collars Run - Vis 53
 Bottom Packer Depth 3321 Wt. Pipe Run - WL 6.4
 Total Depth 3370 Chlorides 3400 ppm System LCM 2#
 Blow Description TFP - WEAK TO A GOOD BLOW 1/2" TO 9" BLOW
TSIP - NO BLOW
FFP - WEAK TO A FAIR BLOW SURFACE TO 5" BLOW
FSIP - NO BLOW

Rec	Feet of	%gas	%oil	%water	%mud
<u>260</u>	<u>GIP</u>				
<u>30</u>	<u>0+6CM</u>	<u>20</u>	<u>20</u>	<u>60</u>	<u>60</u>
<u>20</u>	<u>0+6CM</u>	<u>10</u>	<u>30</u>	<u>60</u>	<u>60</u>

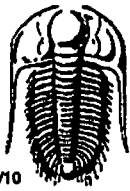
Rec Total 50 BHT 106 Gravity - API RW - @ - F Chlorides - ppm

(A) Initial Hydrostatic 1558 Test 1050 T-On Location 1805
 (B) First Initial Flow 52 Jars _____ T-Started 1910
 (C) First Final Flow 50 Safety Joint _____ T-Open 2050
 (D) Initial Shut-In 380 Circ Sub _____ T-Pulled 2350
 (E) Second Initial Flow 54 Hourly Standby _____ T-Out 0121
 (F) Second Final Flow 57 Mileage 26 RT 19.50 Comments _____
 (G) Final Shut-In 335 Sampler _____
 (H) Final Hydrostatic 1530 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1069.50

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

Sub Total 1069.50
 Total 1069.50
 MP/DST Disc't _____

Approved By _____ Our Representative RAY SCHWAGER Thank you



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63004

Well Name & No. Engel North #3 Test No. 2 Date 7-23-17
 Company TOI, Inc Elevation 2037 KB 2027 GL
 Address 1310 Bison Rd Hays, Ks 67601-9696
 Co. Rep / Geo. Herb Deines Rig Southwind rig
 Location: Sec. 21 Twp. 15^s Rge. 18^w Co. Ellis State K

Interval Tested 3590-3640 Zone Tested Arbuckle
 Anchor Length 50 Drill Pipe Run 3584 Mud Wt. 9.3
 Top Packer Depth 3585 Drill Collars Run - Vis 50
 Bottom Packer Depth 3590 Wt. Pipe Run - WL 6.8
 Total Depth 3640 Chlorides 4800 ppm System LCM 1#

Blow Description TFP - BOBIN 2min
ISIP. NO BLOW
FFP - BOBIN 2min
FSTP - NO BLOW

Rec	Feet of	%gas	%oil	%water	%mud
<u>36</u>	<u>Mud</u>				
<u>1054</u>	<u>Water</u>				
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 1084 BHT 111 Gravity - API RW .21 @ 75° F Chlorides 30000 ppm

- (A) Initial Hydrostatic 1763
- (B) First Initial Flow 218
- (C) First Final Flow 436
- (D) Initial Shut-In 1171
- (E) Second Initial Flow 403
- (F) Second Final Flow 360
- (G) Final Shut-In 1171
- (H) Final Hydrostatic 1710

- Test 1050
- Jars
- Safety Joint
- Circ Sub
- Hourly Standby
- Mileage 26 RT 19.50
- Sampler
- Straddle
- Shale Packer
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 1069.50

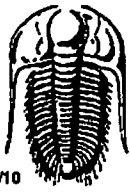
T-On Location 1825
 T-Started 1920
 T-Open 2045
 T-Pulled 2145
 T-Out 2335

Comments _____
 Ruined Shale Packer
 Ruined Packer
 Extra Copies
 Sub Total 0
 Total 1069.50
 MP/DST Disc't _____

Initial Open 15
 Initial Shut-In 15
 Final Flow 15
 Final Shut-In 15

Approved By _____

Our Representative Ray Schwager Thank you



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63005

Well Name & No. Engel North #3 Test No. 3 Date 7-24-12
 Company TOI, Inc Elevation 2037 KB 2027 GL
 Address 1310 Bison Rd. Hays, Ks 67601-9696
 Co. Rep / Geo. Herb Deines Rig Southwind rig 1
 Location: Sec. 21 Twp. 15^s Rge. 18^w Co. Ellis State Ks

Interval Tested 3420-3506 Zone Tested H-J LKC
 Anchor Length 86 Drill Pipe Run 3421 Mud Wt. 9.3
 Top Packer Depth 3420-3415 Drill Collars Run - Vis 50
 Bottom Packer Depth 3506 Wt. Pipe Run - WL 6.8
 Total Depth 3641 Chlorides 4800 ppm System LCM 1#
 Blow Description IFP - Weak Blow They-out 1/2" To 1/2" Blow
ISTP - NO Blow
FFP - NO Blow
FSIP - NO Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>20</u>	<u>Mud</u>				
_____	_____				
_____	_____				
_____	_____				
_____	_____				

Rec Total 20 BHT 107 Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic <u>1730</u>	<input checked="" type="checkbox"/> Test <u>1050</u>	T-On Location <u>0305</u>
(B) First Initial Flow <u>25</u>	<input type="checkbox"/> Jars _____	T-Started <u>0340</u>
(C) First Final Flow <u>33</u>	<input type="checkbox"/> Safety Joint _____	T-Open <u>0525</u>
(D) Initial Shut-In <u>249</u>	<input type="checkbox"/> Circ Sub _____	T-Pulled <u>0825</u>
(E) Second Initial Flow <u>27</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>0955</u>
(F) Second Final Flow <u>29</u>	<input checked="" type="checkbox"/> Mileage <u>26 RT</u> 19.50	Comments _____
(G) Final Shut-In <u>180</u>	<input type="checkbox"/> Sampler _____	_____
(H) Final Hydrostatic <u>1640</u>	<input checked="" type="checkbox"/> Straddle <u>600</u>	<input type="checkbox"/> Ruined Shale Packer _____
Initial Open <u>45</u>	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Ruined Packer _____
Initial Shut-In <u>45</u>	<input type="checkbox"/> Extra Packer _____	<input type="checkbox"/> Extra Copies _____
Final Flow <u>45</u>	<input type="checkbox"/> Extra Recorder _____	Sub Total <u>0</u>
Final Shut-In <u>45</u>	<input type="checkbox"/> Day Standby _____	Total <u>1669.50</u>
	<input type="checkbox"/> Accessibility _____	MP/DST Disc't _____
	Sub Total <u>1669.50</u>	

Approved By _____ Our Representative Ray Schwager *THANK YOU*