

ALT ☐ I ☐ II ☐ III Approved by: _____ Date: _____

Form	ACO1 - Well Completion
Operator	TDI, Inc.
Well Name	JOY UNIT 1
Doc ID	1313357

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Surface	12.25	8.625	20	212	70/30 Poz	150	3% cc, 2% gel

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025

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

No. 1867

Cell 785-324-1041

Date 6-17-16	Sec. 12	Twp. 12	Range 19	County Ellis	State KS	On Location	Finish 4:00pm
Lease Jay Unit				Well No. #1	Owner To Quality Oilwell Cementing, Inc.		
Contractor Southwind #3				You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.			
Type Job Surface				Charge To FBI TDI			
Hole Size 12 1/4	T.D. 212			Street			
Csg. 8 5/8	Depth 210			City			
Tbg. Size	Depth			State			
Tool	Depth			The above was done to satisfaction and supervision of owner agent or contractor.			
Cement Left in Csg.	Shoe Joint			Cement Amount Ordered 150 70/30 3% cc 2% Gr			
Meas Line	Displace 12 3/4 bbl						
EQUIPMENT							
Pumptrk 14	No.	Cementer Cray		Common 105			
Bulktrk 14	No.	Helper Doug		Poz. Mix 45			
Bulktrk PU	No.	Driver Brett		Gel. 3			
				Calcium 6			
JOB SERVICES & REMARKS				Hulls			
Remarks:				Salt			
Rat Hole				Flowseal			
Mouse Hole				Kol-Seal			
Centralizers				Mud CLR 48			
Baskets				CFL-117 or CD110 CAF 38			
D/V or Port Collar				Sand			
Cement Circulated				Handling 158			
				Mileage			
				FLOAT EQUIPMENT			
				Guide Shoe			
				Centralizer			
				Baskets			
				AFU Inserts			
				Float Shoe			
				Latch Down			
				Pumptrk Charge Surface			
				Mileage 11			
				Tax			
				Discount			
				Total Charge			
X Signature Jay Hrus							

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025

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

No. 1868

Cell 785-324-1041

Date	Sec.	Twp.	Range	County	State	On Location	Finish
6-23-16	12	12	19	Ellis	KS		5:45 AM

Location Hays N Buckeye Rd 4W 1N E into

Lease <u>Joy Unit</u>	Well No. <u>#1</u>	Owner
Contractor <u>Southwind #3</u>		To Quality Oilwell Cementing, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.
Type Job <u>Plug</u>		Charge To <u>TDI</u>
Hole Size <u>7 7/8</u>	T.D. <u>3813'</u>	
Csg. <u>Drill Pipe</u>	Depth	Street
Tbg. Size	Depth	City State
Tool	Depth	The above was done to satisfaction and supervision of owner agent or contractor.
Cement Left in Csg.	Shoe Joint	Cement Amount Ordered <u>240 60/40 41% Gel 1/4 fls</u>
Meas Line	Displace	

EQUIPMENT

Pumptrk <u>18</u> No.	Cementer	Common <u>144</u>
	Helper <u>Craig</u>	Poz. Mix <u>96</u>
Bulktrk <u>4</u> No.	Driver	Gel. <u>9</u>
	Driver <u>Doug</u>	Calcium
Bulktrk <u>Pu</u> No.	Driver	
	Driver <u>Brett</u>	

JOB SERVICES & REMARKS

Remarks:	Salt
Rat Hole <u>30 sk</u>	Flowseal <u>60#</u>
Mouse Hole	Kol-Seal
Centralizers	Mud CLR 48
Baskets	CFL-117 or CD110 CAF 38
D/V or Port Collar	Sand
	Handling <u>249</u>
<u>1st Plug @ 1590 w/ 50 sk</u>	Mileage

FLOAT EQUIPMENT

<u>2nd Plug @ 860 w/ 100 sk</u>	Guide Shoe
	Centralizer
<u>3rd Plug @ 280 w/ 50 sk</u>	Baskets
	AFU Inserts
<u>4th Plug @ 40 w/ 10 sk</u>	Float Shoe <u>858 Dry Hole plug</u>
	Latch Down

Pumptrk Charge <u>plug</u>	Tax
Mileage <u>11</u>	Discount
	Total Charge
X Signature <u>Joy Idrin</u>	

OPERATOR

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

Contact Geologist: TOM DENNING
Contact Phone Nbr: 785-628-2593
Well Name: JOY UNIT # 1
Location: NE NE SE SW SEC.12-T12S-R19W
API: 15-051-26,835-00-00
Pool: WILDCAT
State: KANSAS

Field: UNNAMED
Country: USA



Scale 1:240 Imperial

Well Name: JOY UNIT # 1
Surface Location: NE NE SE SW SEC.12-T12S-R19W
Bottom Location:
API: 15-051-26,835-00-00
License Number: 4787
Spud Date: 6/17/2016 Time: 12:00 PM
Region: ELLIS COUNTY
Drilling Completed: 6/22/2016 Time: 10:11 PM
Surface Coordinates: 1025' FSL & 2535' FWL
Bottom Hole Coordinates:
Ground Elevation: 2210.00ft
K.B. Elevation: 2218.00ft
Logged Interval: 0.00ft To: 0.00ft
Total Depth: 3813.00ft
Formation: LANSING-KANSAS CITY
Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

SURFACE CO-ORDINATES

Well Type: Vertical
Longitude: -99.3809039
Latitude: 39.0186021
N/S Co-ord: 1025' FSL
E/W Co-ord: 2535' FWL

LOGGED BY

Company: SOLUTIONS CONSULTING, INC.
Address: 108 W 35TH
HAYS, KS 67601

Phone Nbr: (785) 639-1337
Logged By: GEOLOGIST

Name: HERB DEINES

CONTRACTOR

Contractor: SOUTHWIND DRILLING INC.
Rig #: 3
Rig Type: MUD ROTARY
Spud Date: 6/17/2016
TD Date: 6/22/2016

Time: 12:00 PM
Time: 10:11 PM

ELEVATIONS

K.B. Elevation: 2218.00ft
K.B. to Ground: 8.00ft

Ground Elevation: 2210.00ft

NOTES

PRIMARY PRODUCTIVE ZONES WERE TESTED WITH NEGATIVE RESULTS. WELL RAN FLAT TO REFERENCE WELL WHICH HAD MINOR SHOWS IN PRIMARY ZONES BUT WAS PLUGGED DUE TO LACK OF STRUCTURE AND RESEVOIR DEVELOPMENT. THIS WELL LOOKED THE SAME AND RAN STRUCTURALLY FLAT TO THE REFERENCE WELL. RECOMMENDATION TO PLUG AND ABANDON.

NO OPEN HOLE LOGS WERE RAN ON THIS WELL.

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

JOY UNIT # 1

NE NE SE SW

SEC.12-12S-19W

2210'GL 2218'KB

STACKHOUSE RANCH 1

SW SE NE NE

SEC.13-12-19W

KB 2208'

KEITH # 1

S2 SW SW NE

SEC.12-12-19W

KB 2197'

FORMATIONSPL TOPSLOG TOPSLOG TOPS

Anhydrite	1564 +654	+ 674	+ 667
B-Anhydrite	1600 +621	+ 644	+ 627
Topeka	3247-1029	-1011	-1031
Heebner Sh.	3478-1260	-1241	-1261
Toronto	3498-1280	-1260	-1279
LKC	3521-1303	-1286	-1303
BKC	3755-1537	-1518	-1537
Arbuckle	NOT REACHED	-1610	NR
RTD	3813-1595	-1677	-1705

SUMMARY OF DAILY ACTIVITY

6-17-16 Spud 12:00 PM, set 8 5/8" surface casing to 212' w/150 sxs 70/30
Pos 2%Gel 3%CC, slope 1/4 degree, plug down 4:00PM

6-18-16 750', drill plug 12:00 AM

6-19-16 2380', drilling

6-20-16 3055', drilling, displaced 2901' to 2922'

6-21-16 3550', drilling, CFS 3510', CFS 3566', CFS 3590,' short trip, DST #1
3472' to 3590' Toronto to "D" LKC, TIWB, drilling

6-22-16 3710', drilling, CFS 3710', DST # 2 3688' to 3710' "J" LKC, TIWB, RTD
3813' @ 10:00PM, LDDP

6-23-16 3813', LDDP and finish plugging well, RD



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

12-12S-19W Ellis, KS

Joy Unit #1

Job Ticket: 58091

DST#: 1

Test Start: 2016.06.21 @ 14:08:46

GENERAL INFORMATION:

Formation: **Tor-LKC "D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:40:16

Time Test Ended: 20:11:16

Test Type: Conventional Bottom Hole (Initial)

Tester: Brannan Lonsdale

Unit No: 73

Interval: **3472.00 ft (KB) To 3590.00 ft (KB) (TVD)**

Total Depth: 3590.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2218.00 ft (KB)

2210.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6651 Inside

Press@RunDepth: 17.86 psig @ 3490.00 ft (KB)

Start Date: 2016.06.21

End Date: 2016.06.21

Capacity: 8000.00 psig

Last Calib.: 2016.06.21

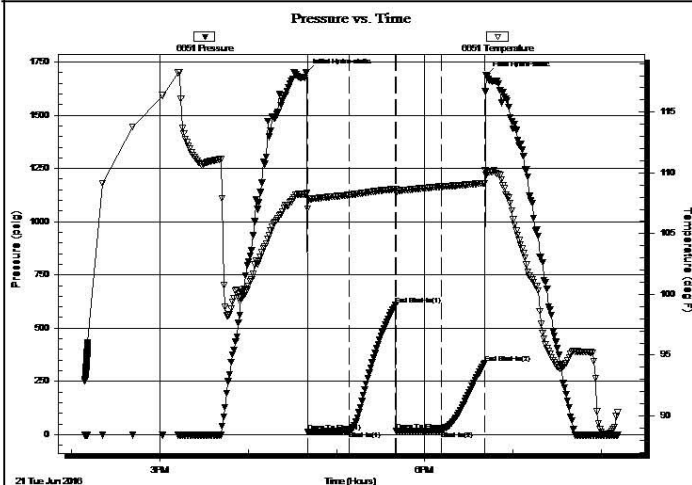
Start Time: 14:08:47

End Time: 20:11:16

Time On Btm: 2016.06.21 @ 16:39:46

Time Off Btm: 2016.06.21 @ 18:41:46

TEST COMMENT: 30- IF- Surface blow died 23mins
30- IS- No blow
30- FF- No blow
30- FS- No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1702.21	108.33	Initial Hydro-static
1	12.39	107.07	Open To Flow (1)
29	15.22	108.18	Shut-In(1)
61	609.09	108.66	End Shut-In(1)
61	15.85	108.33	Open To Flow (2)
92	17.86	108.86	Shut-In(2)
121	335.27	109.16	End Shut-In(2)
122	1686.56	109.84	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
15.00	Mw / oil spots	0.21

Gas Rates

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

Ref. No: 58091

Printed: 2016.06.22 @ 08:15:12



TRILOBITE
TESTING, INC

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

12-12S-19W Ellis, KS

Joy Unit #1

Job Ticket: 58092

DST#: 2

Test Start: 2016.06.22 @ 08:12:59

GENERAL INFORMATION:

Formation: **LKC "J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:46:29

Time Test Ended: 14:11:29

Interval: **3688.00 ft (KB) To 3710.00 ft (KB) (TVD)**

Total Depth: 3710.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 73

Reference Elevations: 2218.00 ft (KB)

2210.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6651

Inside

Press@RunDepth: 63.24 psig @ 3707.00 ft (KB)

Start Date: 2016.06.22

End Date:

2016.06.22

Start Time: 08:13:00

End Time:

14:11:29

Capacity: 8000.00 psig

Last Calib.: 2016.06.22

Time On Btm: 2016.06.22 @ 09:45:59

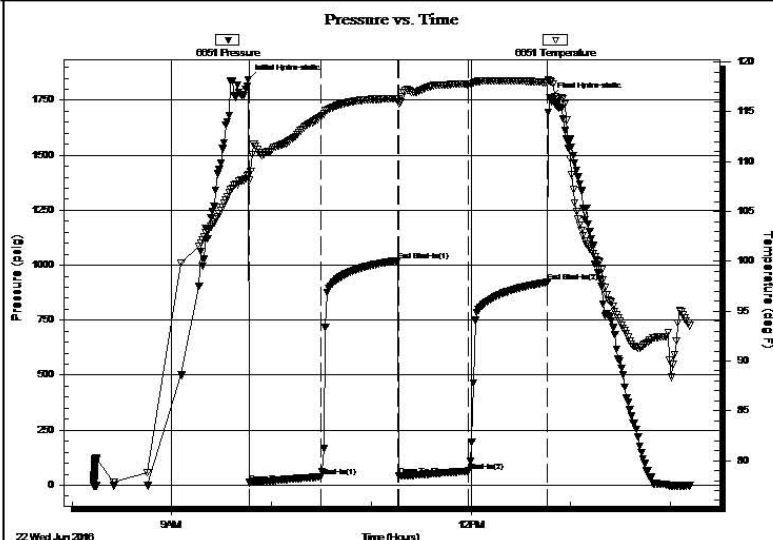
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TEST COMMENT: 45- IF- Slow ly built to 4.5"

45- IS- No blow

45- FF- Slow ly built to 2"

45- FS- No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1843.99	108.64	Initial Hydro-static
1	11.48	108.13	Open To Flow (1)
44	38.09	114.51	Shut-In(1)
90	1021.15	116.28	End Shut-In(1)
91	41.09	115.85	Open To Flow (2)
132	63.24	117.76	Shut-In(2)
180	922.59	117.91	End Shut-In(2)
182	1762.02	118.07	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)

Gas Rates

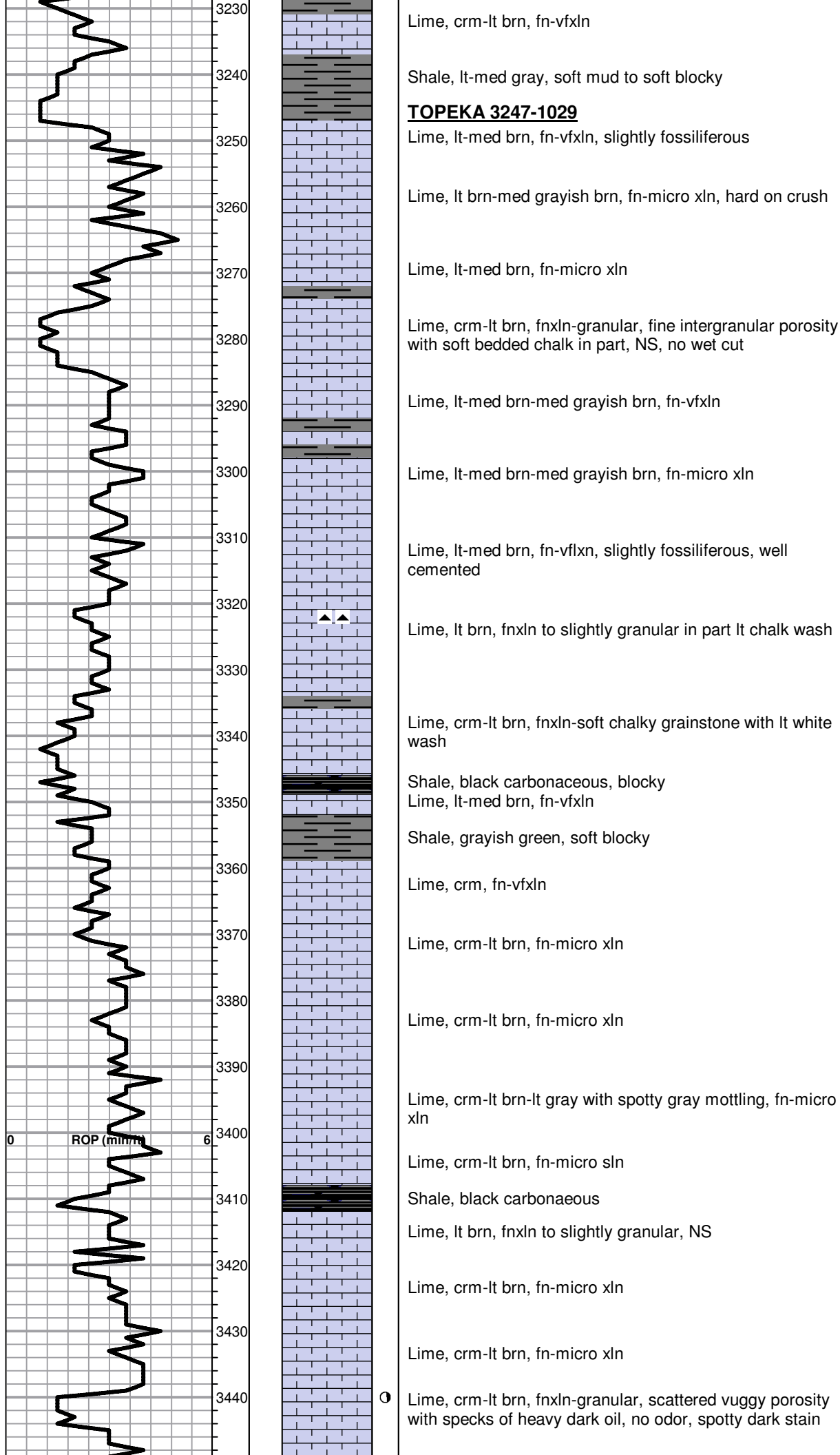
Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

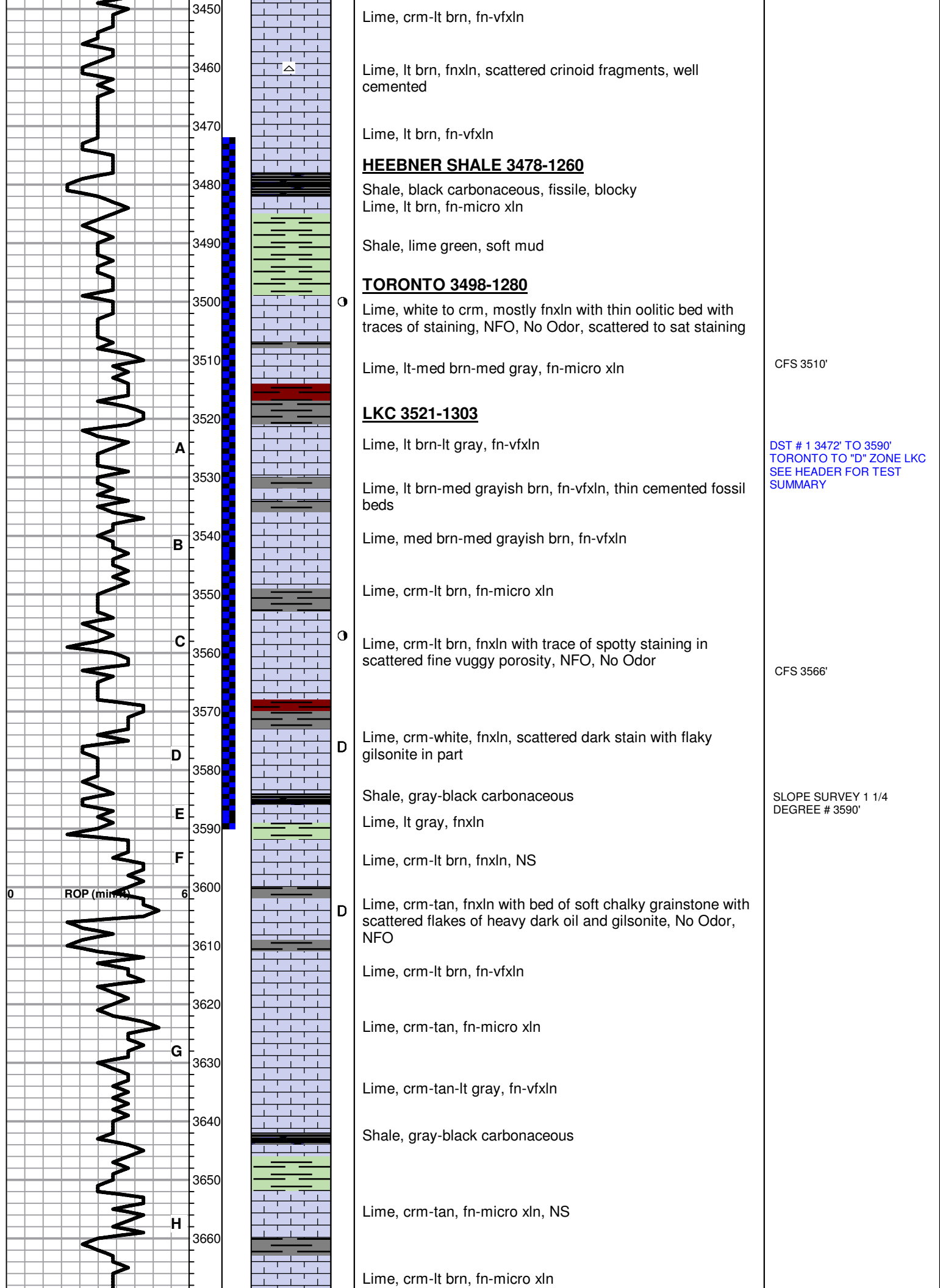
95.00	MW, 15%M 85%W	1.35

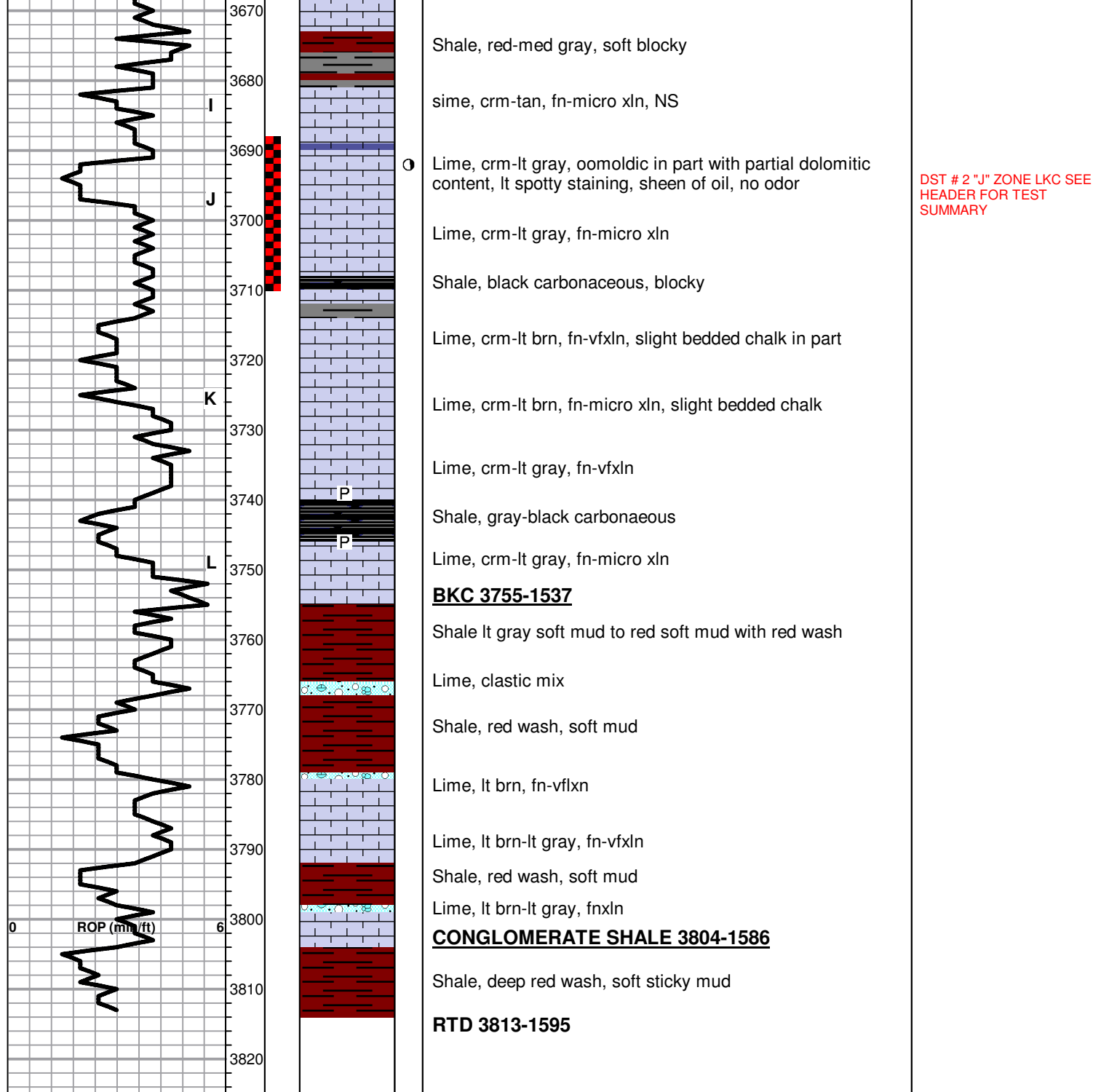
ROCK TYPES

ACCESSORIES

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









DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

Joy Unit #1

12-12S-19W Ellis, KS

Start Date: 2016.06.21 @ 14:08:46

End Date: 2016.06.21 @ 20:11:16

Job Ticket #: 58091 DST #: 1

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2016.06.23 @ 09:15:22



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

12-12S-19W Ellis, KS

Joy Unit #1

Job Ticket: 58091

DST#: 1

Test Start: 2016.06.21 @ 14:08:46

GENERAL INFORMATION:

Formation: **Tor-LKC "D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:40:16

Time Test Ended: 20:11:16

Test Type: Conventional Bottom Hole (Initial)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 3472.00 ft (KB) To 3590.00 ft (KB) (TVD)

Total Depth: 3590.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2218.00 ft (KB)

2210.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6651 Inside

Press@RunDepth: 17.86 psig @ 3490.00 ft (KB)

Start Date: 2016.06.21

End Date:

2016.06.21

Start Time: 14:08:47

End Time:

20:11:16

Capacity: 8000.00 psig

Last Calib.: 2016.06.21

Time On Btm: 2016.06.21 @ 16:39:46

Time Off Btm: 2016.06.21 @ 18:41:46

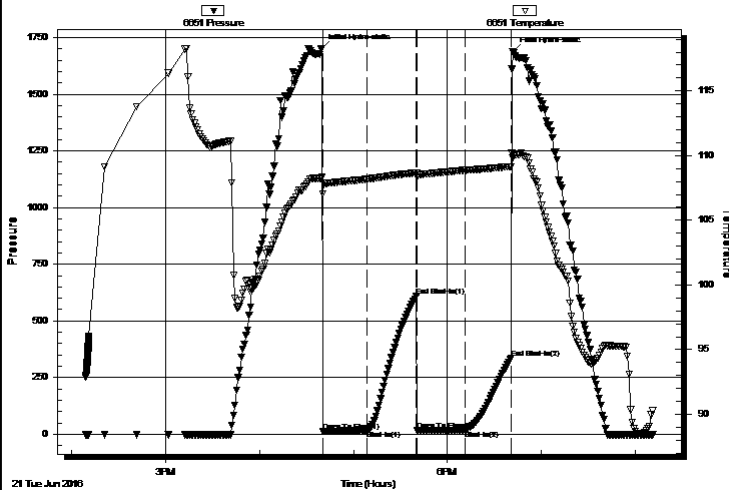
TEST COMMENT: 30- IF- Surface blow died 23mins

30- IS- No blow

30- FF- No blow

30- FSI- No blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1702.21	108.33	Initial Hydro-static
1	12.39	107.07	Open To Flow (1)
29	15.22	108.18	Shut-In(1)
61	609.09	108.66	End Shut-In(1)
61	15.85	108.33	Open To Flow (2)
92	17.86	108.86	Shut-In(2)
121	335.27	109.16	End Shut-In(2)
122	1686.56	109.84	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
15.00	M w / oil spots	0.21

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

12-12S-19W Ellis, KS

Joy Unit #1

Job Ticket: 58091

DST#: 1

Test Start: 2016.06.21 @ 14:08:46

GENERAL INFORMATION:

Formation: **Tor-LKC "D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:40:16

Time Test Ended: 20:11:16

Test Type: Conventional Bottom Hole (Initial)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 3472.00 ft (KB) To 3590.00 ft (KB) (TVD)

Total Depth: 3590.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2218.00 ft (KB)

2210.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6839 Outside

Press@RunDepth: psig @ 3490.00 ft (KB)

Start Date: 2016.06.21

End Date:

2016.06.21

Start Time: 14:08:39

End Time:

20:11:08

Capacity: 8000.00 psig

Last Calib.: 2016.06.21

Time On Btm:

Time Off Btm:

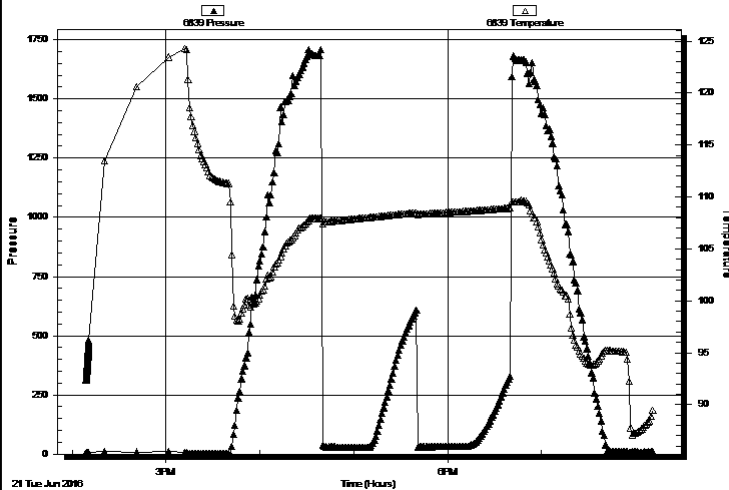
TEST COMMENT: 30- IF- Surface blow died 23mins

30- IS- No blow

30- FF- No blow

30- FSI- No blow

Pressure vs. Time



PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
15.00	M w / oil spots	0.21

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI, Inc.

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

12-12S-19W Ellis, KS

Joy Unit #1

Job Ticket: 58091

DST#: 1

Test Start: 2016.06.21 @ 14:08:46

Tool Information

Drill Pipe:	Length:	3484.00 ft	Diameter:	3.82 inches	Volume:	49.39 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length:	ft	Diameter:	inches	Volume:	- bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	2.25 inches	Volume:	0.00 bbl	Weight to Pull Loose:	56000.00 lb
					Total Volume:	- bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		32.00 ft					String Weight: Initial	42000.00 lb
Depth to Top Packer:		3472.00 ft					Final	42000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		118.00 ft						
Tool Length:		138.00 ft						
Number of Packers:		2	Diameter:	6.75 inches				
Tool Comments:								

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			3453.00	
Shut In Tool	5.00			3458.00	
Hydraulic tool	5.00			3463.00	
Packer	5.00			3468.00	20.00 Bottom Of Top Packer
Packer	4.00			3472.00	
Stubb	1.00			3473.00	
Perforations	17.00			3490.00	
Recorder	0.00	6651	Inside	3490.00	
Recorder	0.00	6839	Outside	3490.00	
Change Over Sub	1.00			3491.00	
Drill Pipe	95.00			3586.00	
Change Over Sub	1.00			3587.00	
Bullnose	3.00			3590.00	118.00 Bottom Packers & Anchor

Total Tool Length: 138.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI, Inc.

12-12S-19W Ellis, KS

1310 Bison Rd.
Hays, KS 67601

Joy Unit #1

Job Ticket: 58091

DST#: 1

ATTN: Herb Deines

Test Start: 2016.06.21 @ 14:08:46

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 50.00 sec/qt

Water Loss: 6.79 in³

Resistivity: ohm.m

Salinity: 3300.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

Oil API:

Water Salinity:

deg API

ppm

ft

bbl

psig

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	M w / oil spots	0.213

Total Length: 15.00 ft

Total Volume: 0.213 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

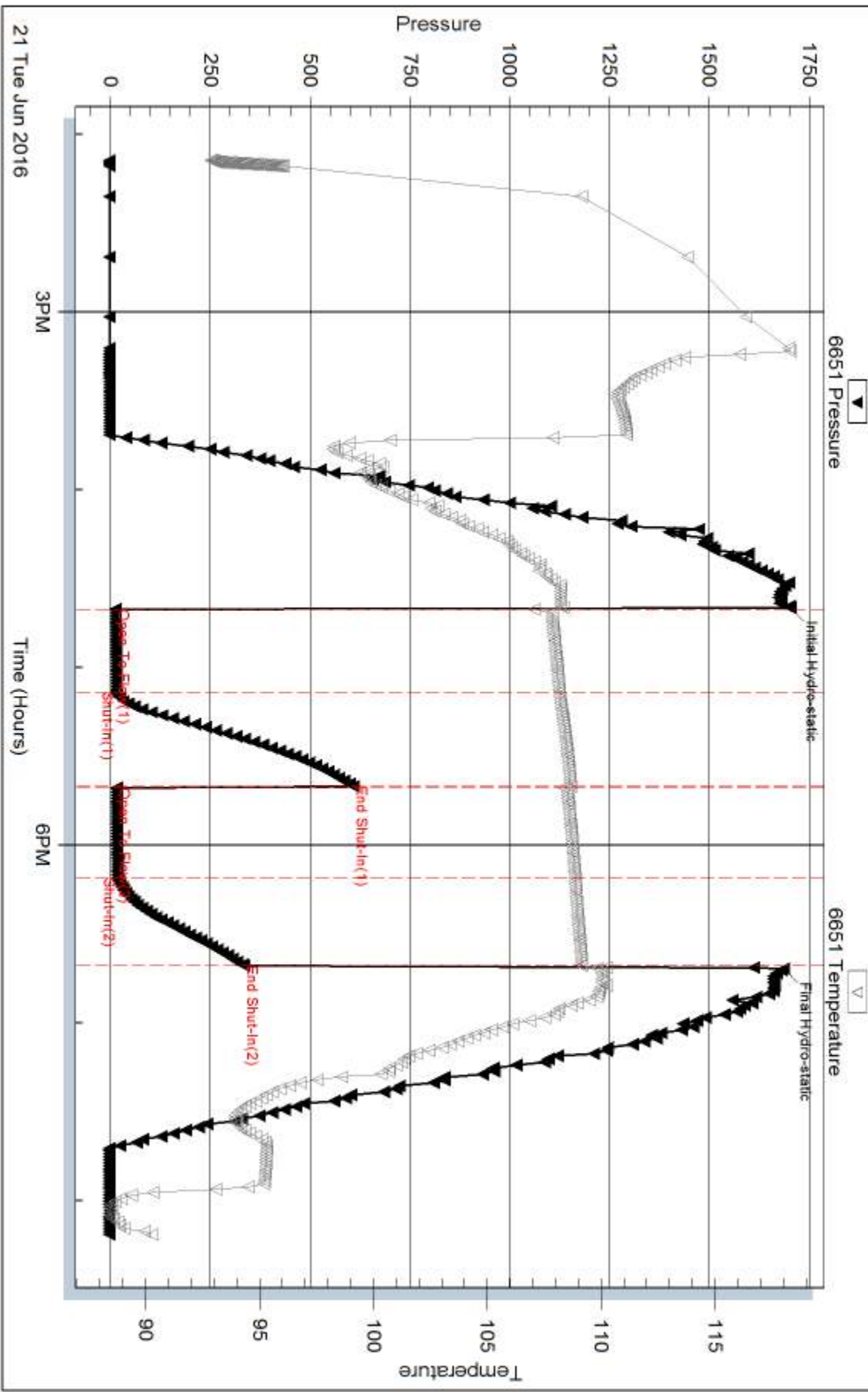
Serial #: 6651

Inside TDI, Inc.

Joy Unit #1

DST Test Number: 1

Pressure vs. Time

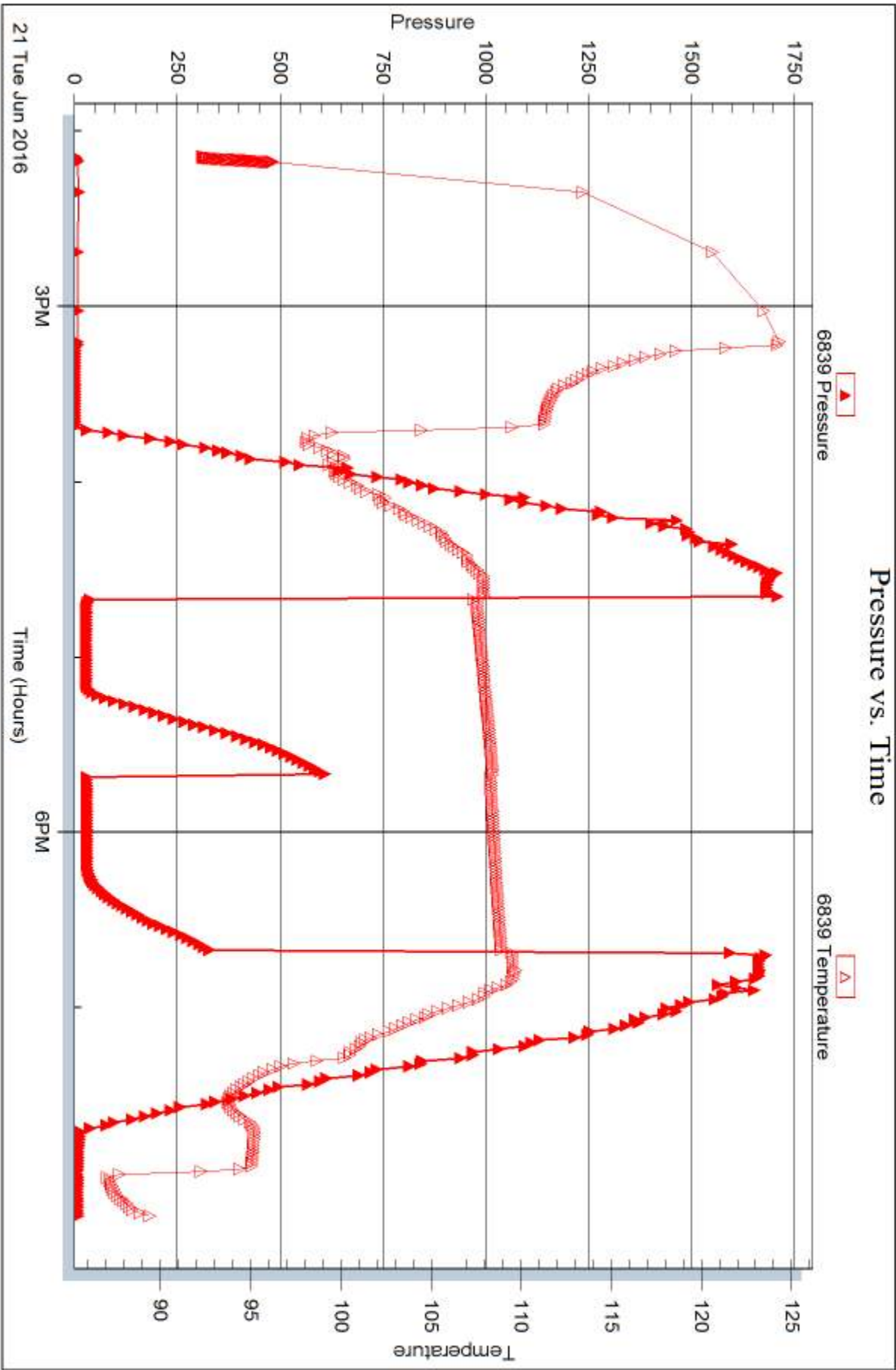


Serial #: 6839

Outside TD, Inc.

Joy Unit #1

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **TDI, Inc.**

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

Joy Unit #1

12-12S-19W Ellis, KS

Start Date: 2016.06.22 @ 08:12:59

End Date: 2016.06.22 @ 14:11:29

Job Ticket #: 58092 DST #: 2

Trilobite Testing, Inc
PO Box 362 Hays, KS 67601
ph: 785-625-4778 fax: 785-625-5620

Printed: 2016.06.23 @ 09:14:47



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

12-12S-19W Ellis, KS

Joy Unit #1

Job Ticket: 58092

DST#: 2

Test Start: 2016.06.22 @ 08:12:59

GENERAL INFORMATION:

Formation: **LKC "J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:46:29

Time Test Ended: 14:11:29

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 3688.00 ft (KB) To 3710.00 ft (KB) (TVD)

Total Depth: 3710.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2218.00 ft (KB)

2210.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6651 Inside

Press@RunDepth: 63.24 psig @ 3707.00 ft (KB)

Start Date: 2016.06.22

End Date:

2016.06.22

Start Time: 08:13:00

End Time:

14:11:29

Capacity: 8000.00 psig

Last Calib.: 2016.06.22

Time On Btm: 2016.06.22 @ 09:45:59

Time Off Btm: 2016.06.22 @ 12:47:29

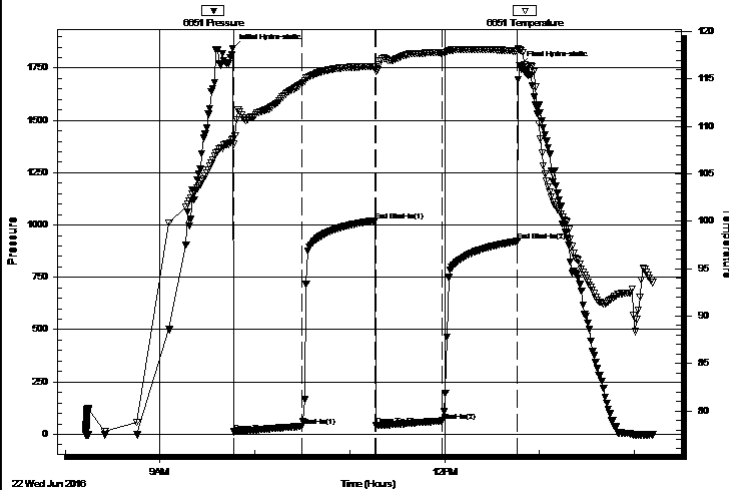
TEST COMMENT: 45- IF- Slow ly built to 4.5"

45- IS- No blow

45- FF- Slow ly built to 2"

45- FS- No blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1843.99	108.64	Initial Hydro-static
1	11.48	108.13	Open To Flow (1)
44	38.09	114.51	Shut-In(1)
90	1021.15	116.28	End Shut-In(1)
91	41.09	115.85	Open To Flow (2)
132	63.24	117.76	Shut-In(2)
180	922.59	117.91	End Shut-In(2)
182	1762.02	118.07	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
95.00	MW, 15%M 85%W	1.35

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TDI, Inc.

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

12-12S-19W Ellis, KS

Joy Unit #1

Job Ticket: 58092

DST#: 2

Test Start: 2016.06.22 @ 08:12:59

GENERAL INFORMATION:

Formation: **LKC "J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:46:29

Time Test Ended: 14:11:29

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 3688.00 ft (KB) To 3710.00 ft (KB) (TVD)

Total Depth: 3710.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2218.00 ft (KB)

2210.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6839 Outside

Press@RunDepth: psig @ 3707.00 ft (KB)

Start Date: 2016.06.22

End Date:

2016.06.22

Start Time: 08:12:23

End Time:

14:10:52

Capacity: 8000.00 psig

Last Calib.: 2016.06.22

Time On Btm:

Time Off Btm:

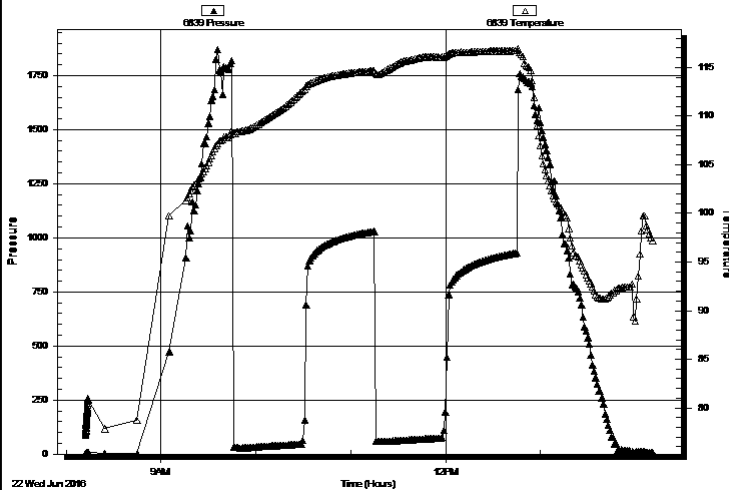
TEST COMMENT: 45- IF- Slow ly built to 4.5"

45- IS- No blow

45- FF- Slow ly built to 2"

45- FS- No blow

Pressure vs. Time



PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
95.00	MW, 15%M 85%W	1.35

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI, Inc.

1310 Bison Rd.
Hays, KS 67601

ATTN: Herb Deines

12-12S-19W Ellis, KS

Joy Unit #1

Job Ticket: 58092

DST#: 2

Test Start: 2016.06.22 @ 08:12:59

Tool Information

Drill Pipe:	Length:	3672.00 ft	Diameter:	3.82 inches	Volume:	52.05 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length:	ft	Diameter:	inches	Volume:	- bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	2.25 inches	Volume:	0.00 bbl	Weight to Pull Loose:	50000.00 lb
					Total Volume:	- bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		4.00 ft					String Weight: Initial	42000.00 lb
Depth to Top Packer:		3688.00 ft					Final	42000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		22.00 ft						
Tool Length:		42.00 ft						
Number of Packers:		2	Diameter:	6.75 inches				
Tool Comments:								

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			3669.00	
Shut In Tool	5.00			3674.00	
Hydraulic tool	5.00			3679.00	
Packer	5.00			3684.00	20.00 Bottom Of Top Packer
Packer	4.00			3688.00	
Stubb	1.00			3689.00	
Perforations	18.00			3707.00	
Recorder	0.00	6651	Inside	3707.00	
Recorder	0.00	6839	Outside	3707.00	
Bullnose	3.00			3710.00	22.00 Bottom Packers & Anchor
Total Tool Length:	42.00				



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI, Inc.

12-12S-19W Ellis, KS

1310 Bison Rd.
Hays, KS 67601

Joy Unit #1

Job Ticket: 58092

DST#: 2

ATTN: Herb Deines

Test Start: 2016.06.22 @ 08:12:59

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 50.00 sec/qt

Water Loss: 7.20 in³

Resistivity: ohm.m

Salinity: 3900.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

Oil API:

deg API

Water Salinity: 86000 ppm

ft

bbl

psig

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
95.00	MW, 15%M 85%W	1.347

Total Length: 95.00 ft

Total Volume: 1.347 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 6651

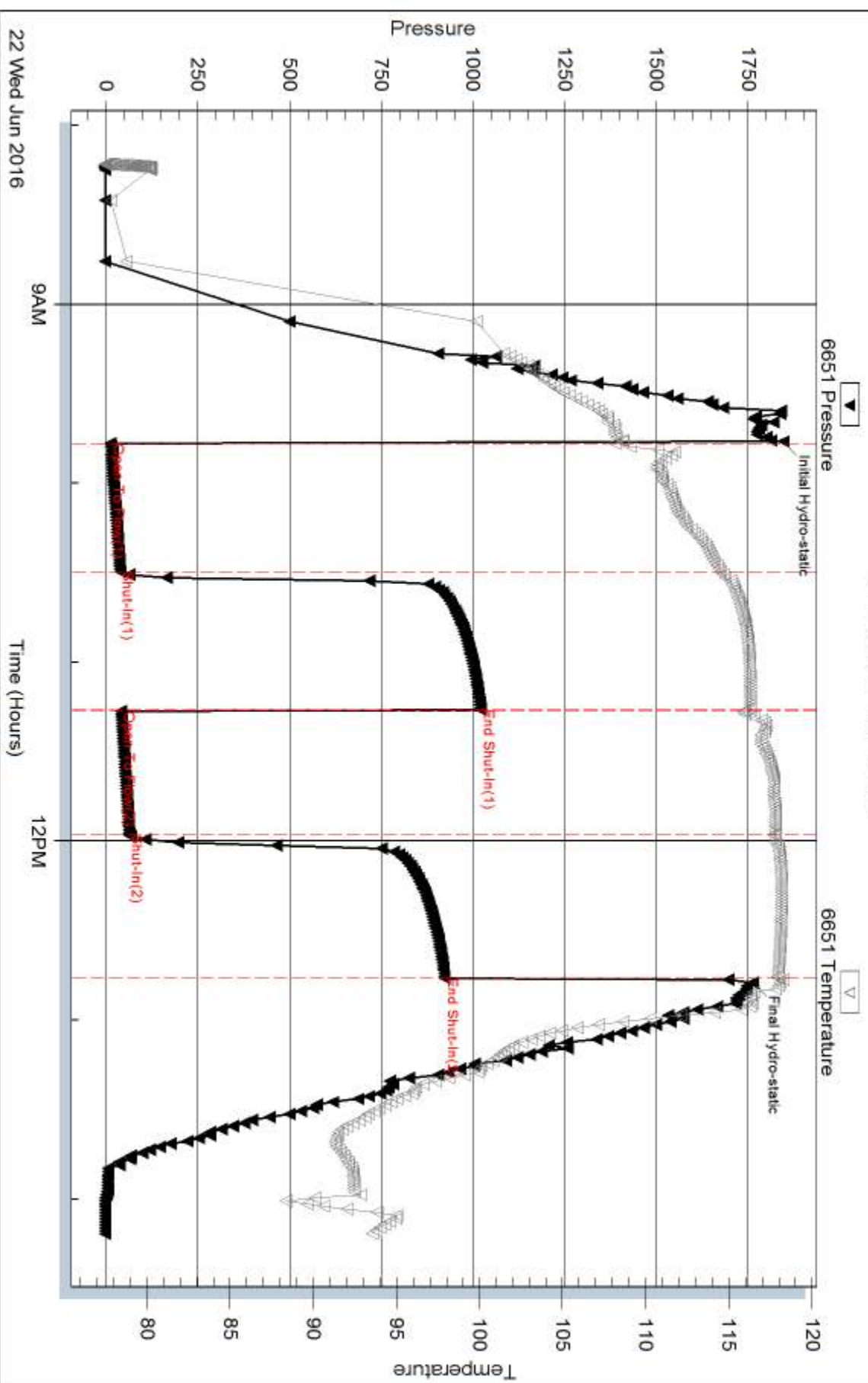
Inside

TDI, Inc.

Joy Unit #1

DST Test Number: 2

Pressure vs. Time



22 Wed Jun 2016

Time (Hours)

Trilobite Testing, Inc

Ref. No: 58092

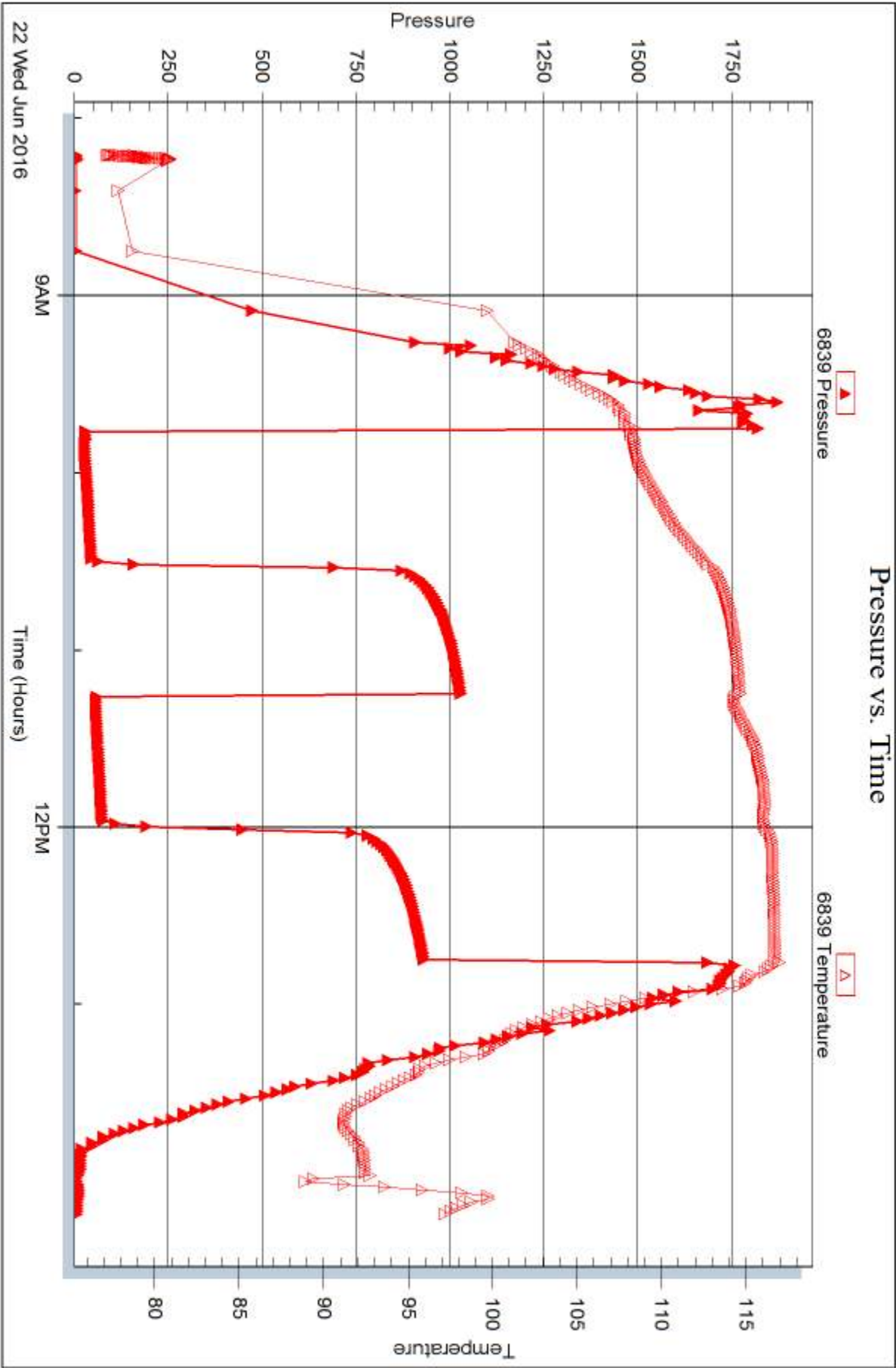
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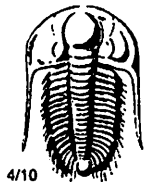
Serial #: 6839

Outside TDI, Inc.

Joy Unit #1

DST Test Number: 2





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 58091

Well Name & No. Joy Unit #1 Test No. 1 Date 6/21/16
 Company TDE, Inc. Elevation 2218 KB 2210 GL
 Address 1316 Bison Rd. Hays, KS 67601
 Co. Rep / Geo. Herb Deines Rig Southwind #3
 Location: Sec. 12 Twp. 12 S Rge. 19 W Co. Ellis State KS

Interval Tested 3472-3590 Zone Tested Top-LKC "D"
 Anchor Length 118' Drill Pipe Run 3484 Mud Wt. 9.1
 Top Packer Depth 3467 Drill Collars Run — Vis 50
 Bottom Packer Depth 3472 Wt. Pipe Run — WL 6.8
 Total Depth 3590 Chlorides 3,300 ppm System LCM 2"

Blow Description IF - Surface down dead in 23 mins
PSI - No blow
FF - No blow
PSI - No blow

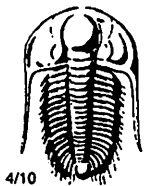
Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>M/W oil spots</u>				
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 15' BHT 109 Gravity — API RW — @ — °F Chlorides — ppm
 (A) Initial Hydrostatic 1702 ☒ Test 1050 T-On Location 1343
 (B) First Initial Flow 12 ☐ Jars — T-Started 1408
 (C) First Final Flow 15 ☐ Safety Joint — T-Open 1640
 (D) Initial Shut-In 609 ☐ Circ Sub — T-Pulled 1840
 (E) Second Initial Flow 16 ☐ Hourly Standby — T-Out 2011
 (F) Second Final Flow 18 ☒ Mileage 36 RT 27 Comments —
 (G) Final Shut-In 335 ☐ Sampler —
 (H) Final Hydrostatic 1687 ☐ Straddle —

☐ Ruined Shale Packer —
☐ Ruined Packer —
☐ Extra Copies —
 Initial Open 30 ☐ Shale Packer —
 Initial Shut-In 30 ☐ Extra Packer —
 Final Flow 30 ☐ Extra Recorder —
 Final Shut-In 30 ☐ Day Standby —
☐ Accessibility —
 Sub Total 1077 MP/DST Disc't —

Approved By — Our Representative Brannon Lonsdale

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. 58092

Well Name & No. Joy Hart #1 Test No. 2 Date 6/22/16
Company TDI, Inc. Elevation 2218 KB 2210 GL
Address 1310 Bison Rd. Hays, KS 67601
Co. Rep / Geo. Herb Domes Rig Southwind #3
Location: Sec. 12 Twp. 12 S Rge. 19 W Co. Ellis State KS

Interval Tested 3688 - 3710 Zone Tested LKC "J"
Anchor Length 22' Drill Pipe Run 2672 Mud Wt. 9.1
Top Packer Depth 3683 Drill Collars Run — Vis 50
Bottom Packer Depth 3688 Wt. Pipe Run — WL 7.2
Total Depth 3710 Chlorides 3900 ppm System LCM 1#

Blow Description IF - Built slowly to 4' 1/2"

ISI - No blow

FF - Built slowly to 2"

PSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>95</u>	<u>MW</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	Feet of	%gas	%oil	%water	%mud

Rec Total 95' BHT 118° Gravity 1050 API RW .06 @ 87 °F Chlorides 86000 ppm

(A) Initial Hydrostatic 1844 ☒ Test 1050

(B) First Initial Flow 11 ☐ Jars —

(C) First Final Flow 38 ☐ Safety Joint —

(D) Initial Shut-In 1021 ☐ Circ Sub —

(E) Second Initial Flow 41 ☐ Hourly Standby —

(F) Second Final Flow 63 ☒ Mileage 36 RT x 2

(G) Final Shut-In 923 ☐ Sampler 27+27

(H) Final Hydrostatic 1762 ☐ Straddle —

☐ Shale Packer —

☐ Extra Packer —

☐ Extra Recorder —

☐ Day Standby —

☐ Accessibility —

Sub Total 1104

T-On Location 0759

T-Started 0812

T-Open 0945

T-Pulled 1245

T-Out 1411

Comments Loaded tools

6/22 @ 2330

—

☐ Ruined Shale Packer —

☐ Ruined Packer —

☐ Extra Copies —

Sub Total 0

Total 1104

MP/DST Disc't —

Approved By —

Our Representative Bryan Lunsdale

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