CORRECTION #1 [redacted]

Confidentiality Requested:
☑ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

1278221

Form ACO-1
August 2013
Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 4787
Name: TDI
Address 1: 1310 BISON RD
Address 2:
City: HAYS State: KS Zip: 67601 + 9696
Contact Person: Tom Denning
Phone: (785) 628-2593
CONTRACTOR: License # 33350
Name: Southwind Drilling, Inc.
Wellsite Geologist: Herb Deines
Purchaser: Coffeyville Resources

Designate Type of Completion:
☑ New Well ☐ Re-Entry ☐ Workover

☑ Oil ☐ WSW ☐ SWD ☐ SIOW
☐ Gas ☐ D&A ☐ ENHR ☐ SIGW
☐ OG ☐ GSW ☑ Temp. Abd.
☐ 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 ENHR ☐ Conv. to SWD
☐ Plug Back ☐ Conv. to GSW ☐ Conv. to Producer

☐ Commingled Permit #:
☐ Dual Completion Permit #:
☐ SWD Permit #:
☐ ENHR Permit #:
☐ GSW Permit #:

12/10/2014 Spud Date or Recompletion Date
12/16/2014 Date Reached TD
6/10/2015 Completion Date or Recompletion Date

API No. 15 - 15-051-26755-00-00
Spot Description:
NW NE SE SE Sec. 9 Twp. 15 S. R. 18 ☐ East ☑ West
1305 Feet from ☐ North / ☑ South Line of Section
530 Feet from ☑ East / ☐ West Line of Section
Footages Calculated from Nearest Outside Section Corner:
☐ NE ☐ NW ☑ SE ☐ SW
GPS Location: Lat: *(e.g. xx.xxxxx)* , Long: *(e.g. -xxx.xxxxx)*
Datum: ☐ NAD27 ☐ NAD83 ☐ WGS84
County: Ellis
Lease Name: Munsch Well #: 9 (Twin)
Field Name: Schoenchen
Producing Formation: Lansing/Kansas City
Elevation: Ground: 2028 Kelly Bushing: 2038
Total Vertical Depth: 3750 Plug Back Total Depth:
Amount of Surface Pipe Set and Cemented at: 220 Feet
Multiple Stage Cementing Collar Used? ☑ Yes ☐ No
If yes, show depth set: 1179 Feet
If Alternate II completion, cement circulated from: 1175
feet depth to: 0 w/ 150 sx cmt.

Drilling Fluid Management Plan
(Data must be collected from the Reserve Pit)

Chloride content: 52000 ppm Fluid volume: 700 bbls
Dewatering method used: Evaporated
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: 01/27/2015
☑ **Confidential Release Date:** 01/26/2017
☑ **Wireline Log Received**
☑ **Geologist Report Received**
☐ **UIC Distribution**
ALT ☐ I ☑ II ☐ III **Approved by:** NAOMI JAMES **Date:** 01/19/2016

CORRECTION #1

Page Two

[redacted]

1278221

Operator Name: TDI Lease Name: Munsch Well #: 9 (Twin)

Sec. 9 Twp. 15 S. R. 18 ☐ East ☑ West County: Ellis

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 ☑ Yes ☐ No
(Attach Additional Sheets)

Samples Sent to Geological Survey ☐ Yes ☑ No

Cores Taken ☐ Yes ☑ No

Electric Log Run ☑ Yes ☐ No

List All E. Logs Run:

Dual Induction Log
Dual Compensated Porosity Log
Microresistivity Log

☑ Log Formation (Top), Depth and Datum ☐ Sample

Name	Top	Datum
Anhydrite	1204'	+831'
Topeka	2992'	-954'
Heebner	3274'	-1236'
Lansing/Kansas City	3320'	-1282'
Base Kansas City	3544'	-1506'
Arbuckle	3612'	-1574'

CASING RECORD ☑ New ☐ 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
Surface	12.25	8.625	20	220	Common	150	3% cc, 2% gel
Production	7.875	5.5	14.5	3748	EA-2	150	

ADDITIONAL CEMENTING / SQUEEZE RECORD

Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
☐ Perforate ☑ Protect Casing ☐ Plug Back TD ☐ Plug Off Zone	0-1175	SMD	150	
	-			

Did you perform a hydraulic fracturing treatment on this well? ☐ Yes ☑ No *(If No, skip questions 2 and 3)*

Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? ☐ Yes ☐ No *(If No, skip question 3)*

Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? ☐ Yes ☐ No *(If No, fill out Page Three of the ACO-1)*

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record *(Amount and Kind of Material Used)*	Depth
4	3476'-3478'	1250 gals. 15%	
4	3366'-3368'	1250 gals. 15%	
4	3353'-3355'	500 gals. 15%	
4	3346'-3348'		

TUBING RECORD: Size: 2.875 Set At: 3686' Packer At: Liner Run: ☐ Yes ☑ No

Date of First, Resumed Production, SWD or ENHR. 6/26/2015

Producing Method: ☐ Flowing ☑ Pumping ☐ Gas Lift ☐ Other *(Explain)*

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

DISPOSITION OF GAS: ☐ Vented ☐ Sold ☐ Used on Lease *(If vented, Submit ACO-18.)*

METHOD OF COMPLETION: ☐ Open Hole ☑ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)* ☐ Other *(Specify)*

PRODUCTION INTERVAL: Lansing/Kansas City

Form	ACO1 - Well Completion
Operator	TDI
Well Name	Munsch 9 (Twin)
Doc ID	1278221

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	220	Common	150	3% cc, 2% gel
Production	7.875	5.5	14.5	3748	EA-2	150	

Summary of Changes

Lease Name and Number: Munsch 9 (Twin)

API/Permit #: 15-051-26755-00-00

Doc ID: 1278221

Correction Number: 1

Approved By: NAOMI JAMES

Field Name	Previous Value	New Value
Approved Date	01/27/2015	01/19/2016
CementingDepth1_PDF	0-1179	0-1175
CementingDepthBase1	1179	1175
Completion Or Recompletion Date	12/16/2014	6/10/2015
Date of First or Resumed Production or SWD or Enhr		6/26/2015
If Alternate II Completion - Cement Circulated From	1179	1175
Perf_Material_1		1250 gals. 15%
Perf_Material_2		1250 gals. 15%
Perf_Material_3		500 gals. 15%
Perf_Record_1	none	3476'-3478'

Summary of changes for correction 1 continued

Field Name	Previous Value	New Value
Perf_Record_2		3366'-3368'
Perf_Record_3		3353'-3355'
Perf_Record_4		3346'-3348'
Perf_Shots_1		4
Perf_Shots_2		4
Perf_Shots_3		4
Perf_Shots_4		4
Producing Method Pumping	No	Yes
Save Link	../../kcc/detail/operatorEditDetail.cfm?docID=1240233	../../kcc/detail/operatorEditDetail.cfm?docID=1278221
Tubing Set At		3686'
Tubing Size		2.875

Confidentiality Requested:
☑ Yes ☐ No

CONFIDENTIAL

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

1240233

Form ACO-1
August 2013
Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 4787
Name: TDI
Address 1: 1310 BISON RD
Address 2:
City: HAYS State: KS Zip: 67601 + 9696
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Phone: (785) 628-2593
CONTRACTOR: License # 33350
Name: Southwind Drilling, Inc.
Wellsite Geologist: Herb Deines
Purchaser: Coffeyville Resources

Designate Type of Completion:

☑ New Well ☐ Re-Entry ☐ Workover

☑ Oil ☐ WSW ☐ SWD ☐ SIOW
☐ Gas ☐ D&A ☐ ENHR ☐ SIGW
☐ OG ☐ GSW ☑ Temp. Abd.
☐ 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 ENHR ☐ Conv. to SWD
☐ Plug Back ☐ Conv. to GSW ☐ Conv. to Producer

☐ Commingled Permit #:
☐ Dual Completion Permit #:
☐ SWD Permit #:
☐ ENHR Permit #:
☐ GSW Permit #:

12/10/2014	12/16/2014	12/16/2014
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No. 15 - 15-051-26755-00-00
Spot Description:
NW NE SE SE Sec. 9 Twp. 15 S. R. 18 ☐ East ☑ West
1305 Feet from ☐ North / ☑ South Line of Section
530 Feet from ☑ East / ☐ West Line of Section

Footages Calculated from Nearest Outside Section Corner:
☐ NE ☐ NW ☑ SE ☐ SW

GPS Location: Lat: *(e.g. xx.xxxxx)* , Long: *(e.g. -xxx.xxxxx)*
Datum: ☐ NAD27 ☐ NAD83 ☐ WGS84
County: Ellis
Lease Name: Munsch Well #: 9 (Twin)
Field Name: Schoenchen
Producing Formation: Lansing/Kansas City
Elevation: Ground: 2028 Kelly Bushing: 2038
Total Vertical Depth: 3750 Plug Back Total Depth:
Amount of Surface Pipe Set and Cemented at: 220 Feet
Multiple Stage Cementing Collar Used? ☑ Yes ☐ No
If yes, show depth set: 1179 Feet
If Alternate II completion, cement circulated from: 1179
feet depth to: 0 w/ 150 sx cmt.

Drilling Fluid Management Plan
(Data must be collected from the Reserve Pit)

Chloride content: 52000 ppm Fluid volume: 700 bbls
Dewatering method used: Evaporated

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: 01/27/2015
☐ **Confidential Release Date:**
☑ **Wireline Log Received**
☑ **Geologist Report Received**
☐ **UIC Distribution**
ALT ☐ I ☑ II ☐ III **Approved by:** NAOMI JAMES **Date:** 01/27/2015

Page Two

Operator Name: TDI Lease Name: Munsch Well #: 9 (Twin)

Sec. 9 Twp. 15 S. R. 18 ☐ East ☑ West County: Ellis

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 *(Attach Additional Sheets)*	☑ Yes	☐ No
Samples Sent to Geological Survey	☐ Yes	☑ No
Cores Taken	☐ Yes	☑ No
Electric Log Run	☑ Yes	☐ No
Geologist Report / Mud Logs	☐ Yes	☐ No

List All E. Logs Run:

Dual Induction Log
Dual Compensated Porosity Log
Microresistivity Log

☑ Log Formation (Top), Depth and Datum ☐ Sample

Name	Top	Datum
Anhydrite	1204'	+831'
Topeka	2992'	-954'
Heebner	3274'	-1236'
Lansing/Kansas City	3320'	-1282'
Base Kansas City	3544'	-1506'
Arbuckle	3612'	-1574'

CASING RECORD ☑ New ☐ 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
Surface	12.25	8.625	20	220	Common	150	3% cc, 2% gel
Production	7.875	5.5	14.5	3748	EA-2	150	

ADDITIONAL CEMENTING / SQUEEZE RECORD

Purpose:
☐ Perforate
☑ Protect Casing
☐ Plug Back TD
☐ Plug Off Zone

Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
0-1175	SMD	150	
-			

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:
6/26/2015	☐ Flowing ☑ Pumping ☐ Gas Lift ☐ Other *(Explain)*

Estimated Production Per 24 Hours	Oil	Bbls.	Gas	Mcf	Water	Bbls.	Gas-Oil Ratio	Gravity

DISPOSITION OF GAS:
☐ Vented ☐ Sold ☐ Used on Lease
(If vented, Submit ACO-18.)

METHOD OF COMPLETION:
☐ Open Hole ☑ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)*

PRODUCTION INTERVAL:

Top	Bottom
Lansing/Kansas City	

Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record *(Amount and Kind of Material Used)*
4					1250 gals. 15%
4					1250 gals. 15%
4					500 gals. 15%
4					

TUBING RECORD: Size: 2.875 Set At: 3686' Packer At:

Mail to: KCC - Conservation Division, 266 N. Main, Suite 220, Wichita, Kansas 67202

Form	ACO1 - Well Completion
Operator	TDI
Well Name	Munsch 9 (Twin)
Doc ID	1240233

Perforations

Shots Per Foot	Perforation Record	Material Record	Depth
	none		

Form	ACO1 - Well Completion
Operator	TDI
Well Name	Munsch 9 (Twin)
Doc ID	1240233

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	220	Common	150	3% cc, 2% gel
Production	7.875	5.5	14.5	3748	EA-2	150	

OPERATOR

Company:	TDI, INC.		
Address:	1310 BISON ROAD HAYS, KANSAS 67601		
Contact Geologist:	TOM DENNING		
Contact Phone Nbr:	785-628-2593		
Well Name:	MUNSCH # 9 TWIN		
Location:	80'E of NW NE SE SE, SEC 9-T15S-R18W		
API:	15-051-26,755-00-00		
Pool:	IN FIELD	Field:	SCHOENCHEN
State:	KANSAS	Country:	USA

Scale 1:240 Imperial

Well Name:	MUNSCH # 9 TWIN		
Surface Location:	80'E of NW NE SE SE, SEC 9-T15S-R18W		
Bottom Location:			
API:	15-051-26,755-00-00		
License Number:	4787		
Spud Date:	12/10/2014	Time:	2:15 PM
Region:	ELLIS COUNTY		
Drilling Completed:	12/16/2014	Time:	4:26 AM
Surface Coordinates:	1305' FSL & 530' FEL		
Bottom Hole Coordinates:			
Ground Elevation:	2028.00ft		
K.B. Elevation:	2038.00ft		
Logged Interval:	2900.00ft	To:	3750.00ft
Total Depth:	3750.00ft		
Formation:	ARBUCKLE		
Drilling Fluid Type:	CHEMICAL/FRESH WATER GEL		

SURFACE CO-ORDINATES

Well Type:	Vertical
Longitude:	-99.320854
Latitude:	38.7585269
N/S Co-ord:	1305' FSL
E/W Co-ord:	530' FEL

LOGGED BY

Company:	SOLUTIONS CONSULTING, INC.		
Address:	108 WEST 35TH STREET HAYS, KANSAS 67601		
Phone Nbr:	785-625-3380		
Logged By:	GEOLOGIST	Name:	HERB DEINES

CONTRACTOR

Contractor:	SOUTHWIND DRILLING, INC.		
Rig #:	1		
Rig Type:	MUD ROTARY		
Spud Date:	12/10/2014	Time:	2:15 PM
TD Date:	12/16/2014	Time:	4:26 AM

Rig Release:	12/17/2014	Time:	1:05 AM

ELEVATIONS

K.B. Elevation:	2038.00ft	Ground Elevation:	2028.00ft
K.B. to Ground:	10.00ft		

NOTES

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON LOG ANALYSIS, STRUCTURE AND POSITIVE RESULTS OF TWO 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

FORMATION TOPS COMPARISON

	MUNSCH #9 Twin 80' E NW NE SE SE SEC.9-15S-18W 2028'GL 2038'KB	MUNSCH #7 NW NE SE SE SEC.9-15-18W KB 2039'	MUNSCH #8 S2 NE SE SE SEC.9-15-18W KB 2041'
FORMATION	LOG TOPS	LOG TOPS	LOG TOPS
Anhydrite	1204 +831	+ 831	+ 835
B-Anhydrite	1241 +797	+ 795	+ 801
Topeka	2992 - 954	- 957	- 964
Heebner Sh.	3274-1236	-1236	-1242
Toronto	3293-1255	-1255	-1261
LKC	3320-1282	-1281	-1290
BKC	3544-1506	-1505	-1514
Arbuckle	3612-1574	-1566	-1618
RTD	3750-1712	-1711	-1709

SUMMARY OF DAILY ACTIVITY

12-10-14	RU, spud 2:15 PM, set 8 5/8" surface casing to 220' w/150 sxs Common 2%Gel 3%CC, plug down 8:15PM, slope ¾ degree
12-11-14	370', drill plug 4:15AM
12-12-14	2040, drilling'
12-13-14	2830', drilling, displaced 2677'-2701'
12-14-14	3360', drilling, CFS 3300', short trip, CFS 3420', DST # 1 3355' to 3420' "D-G" LKC
12-15-14	3530', CFS 3530', DST # 2 3440' to 3530' "H-K" LKC, TIWB, drilling
12-16-14	3750', RTD 3750' @4:28AM, CCH, TOWB, logs, TIWB, LDDP, run production casing
12-17-14	3750', finish cementing production casing

12-17-14 3750', finish cementing production casing

DST # 1 TEST SUMMARY

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

T.D.I. INC.

1310 Bison RD.
Hays Ks.
67601
ATTN: Herb Deines

Sec. 9 - 15 s. - 18 w./ Ellis Ks.

Munsch #9 Twin

Job Ticket: 62501 **DST#: 1**

Test Start: 2014.12.14 @ 12:30:00

GENERAL INFORMATION:

Formation: **L.K.C. " D - G "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 14:54:45
Time Test Ended: 19:49:45

Test Type: Conventional Bottom Hole (Initial)
Tester: Bob Hamel
Unit No: 72

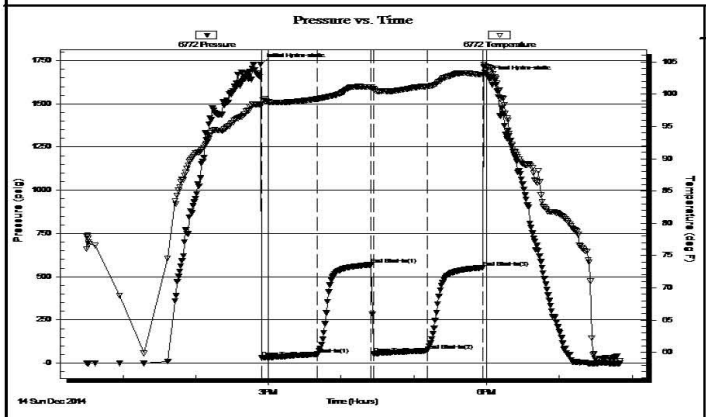
Interval: 3355.00 ft (KB) To 3420.00 ft (KB) (TVD)
Total Depth: 3420.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2040.00 ft (KB)
2031.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 6772 **Inside**
Press@RunDepth: 50.98 psig @ 3392.00 ft (KB)
Start Date: 2014.12.14 End Date: 2014.12.14
Start Time: 12:30:05 End Time: 19:49:44

Capacity: 8000.00 psig
Last Calib.: 2014.12.14
Time On Btm: 2014.12.14 @ 14:53:30
Time Off Btm: 2014.12.14 @ 18:01:00

TEST COMMENT: I.F. - 45 - 1/2" INT. BLOW BUILT TO B.O.B. IN 22 1/2 MIN.
I.S.I. - 45 - NO B.B.
F.F. - 45 - 1/2" INT. BLOW BUILT TO B.O.B. IN 23 MIN.
F.S.I. - 45 - NO B.B.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1727.11	98.38	Initial Hydro-static
2	32.09	98.46	Open To Flow (1)
47	50.98	99.26	Shut-In(1)
92	569.48	101.09	End Shut-In(1)
94	53.42	100.84	Open To Flow (2)
138	72.70	101.22	End Shut-In(2)
184	552.86	103.00	End Shut-In(3)
188	1657.47	104.23	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
3.00	S,O,C,W,M, 10%O 15%W 75%M	0.04
103.00	H,O,C,M, 20%O 80%M	1.44
0.00	272' G.I.P.	0.00

Gas Rates

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

DST # 2 TEST SUMMARY

DRILL STEM TEST REPORT

T.D.I. INC.

1310 Bison RD.
Hays Ks.
67601

ATTN: Herb Deines

Sec. 9 - 15 s. - 18 w./ Ellis Ks.

Munsch #9 Twin

Job Ticket: 62502 **DST#: 2**

Test Start: 2014.12.15 @ 08:04:00

GENERAL INFORMATION:

Formation: **L.K.C. " H - K "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 11:13:45
Time Test Ended: 16:22:15

Test Type: Conventional Bottom Hole (Reset)
Tester: Bob Hamel
Unit No: 72

Interval: 3440.00 ft (KB) To 3530.00 ft (KB) (TVD)
Total Depth: 3530.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

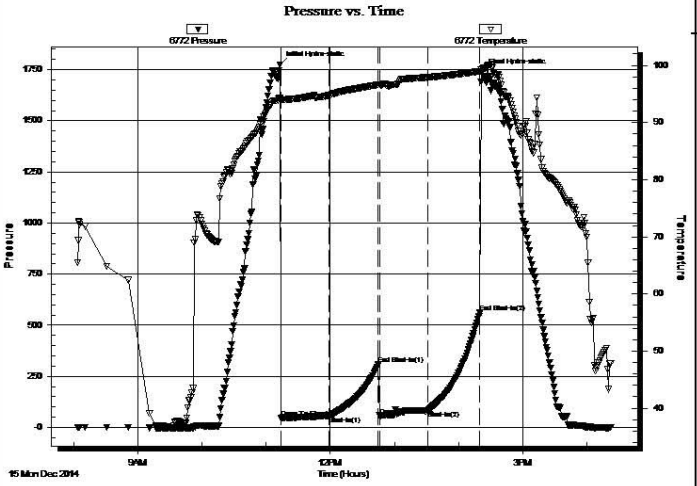
Reference Elevations: 2040.00 ft (KB)
2031.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 6772 **Inside**

Press@RunDepth: 83.85 psig @ 3507.00 ft (KB)
Start Date: 2014.12.15 End Date: 2014.12.15
Start Time: 08:04:05 End Time: 16:22:14

Capacity: 8000.00 psig
Last Calib.: 2014.12.15
Time On Btm: 2014.12.15 @ 11:12:45
Time Off Btm: 2014.12.15 @ 14:21:45

TEST COMMENT: I.F. - 45 - 1/2" INT. BLOW BUILT TO B.O.B. IN 23 MIN.
I.S.I. - 45 - NO B.B.
F.F. - 45 - 8" INT. BLOW DIED TO 1/8" IN 15 MIN. FLUSHED TOOL GOT 1" BLOW DIED OFF FLUSHED AGAIN @ 18 MIN.
DIED @ 26 MIN.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1774.54	94.25	Initial Hydro-static
1	46.65	94.03	Open To Flow (1)
47	55.35	94.78	Shut-In(1)
92	307.38	96.62	End Shut-In(1)
93	57.48	96.59	Open To Flow (2)
139	83.85	97.91	Shut-In(2)
187	560.23	98.97	End Shut-In(2)
189	1737.54	99.38	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
105.00	O,C,M, 10% O 90%M	1.47
0.00	282' G.I.P.	0.00
0.00	SHOW OF FREE OIL IN TEST TOOL	0.00

* Recovery from multiple tests

Gas Rates

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

ROCK TYPES

Clystgy	Lmst fw<7	shale, gry	Shcol
Congl	Lmst fw7>	Carbon Sh	Lscongl
Dolprim	shale, grn	shale, red	Dol Lime

ACCESSORIES

MINERAL
- ▲ Chert, dark
- P Pyrite
- △ Chert White

TEXTURE
- C Chalky

OTHER SYMBOLS

Oil Show
- ● Good Show
- ◉ Fair Show
- ◑ Poor Show
- ◑ Spotted or Trace
- ○ Questionable Stn
- D Dead Oil Stn
- ■ Fluorescence
- ✳ Gas

DST
- DST Int
- DST alt
- Core
- tail pipe

Printed by GEOstrip VC Striplog version 4.0.8.9 (www.grsi.ca)

Curve Track #1
ROP (min/ft)
1:240 Imperial

0 ROP (min/ft) 6

Depth | Intervals
Cored Interval
DST Interval

DST

Lithology

Oil Show

Geological Descriptions

TG, C1 - C5
1:240 Imperial

2900
2910
2920
2930
2940
2950
2960
2970
2980

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

ANHYDRITE TOP 1204+834
ANHYDRITE BASE 1241+797

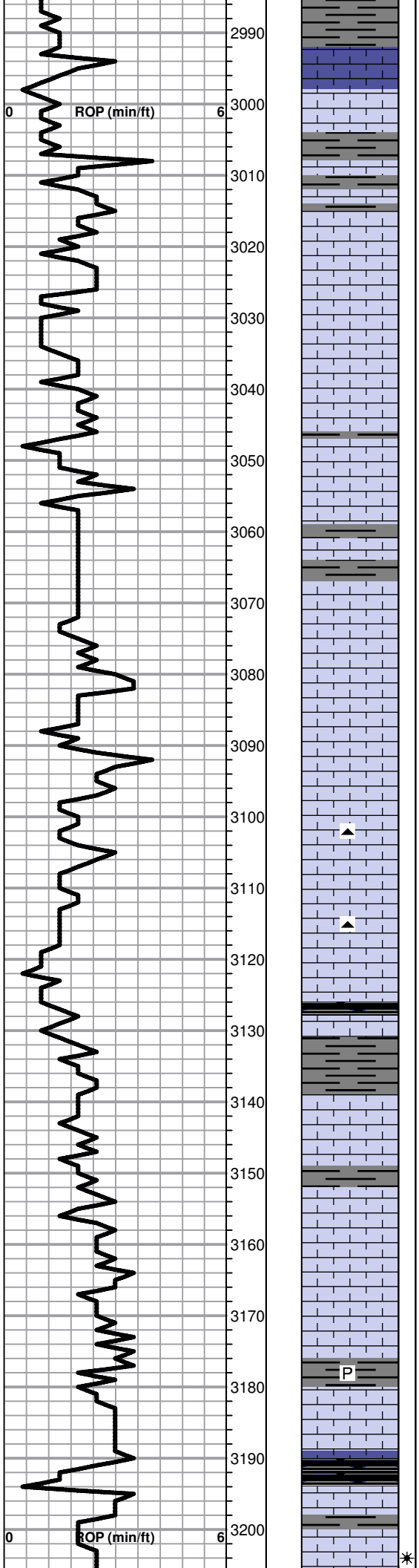
Shale, lt-med gray, soft blocky, slightly sticky in part

Lime, med brn-med grayish brn, fnxln, slightly fossiliferous

Shale, lt gray, soft sticky clumps to soft blocky

8 5/8" SURFACE CASING SET TO 220' W/150 SXS COMMON 2%GEL 3%CC

SLOPE 3/4 DEGREE @ 220'



TOPEKA ELog 2992-954

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

Shale, med gray, blocky, calcareous in part

Lime, lt-med brn, fnxln

Lime, med grayish brn, fnxln, soft chalk in part

Lime, lt-med brn, fnxln, slightly fossiliferous

Lime, lt brn, granular, NS

Lime, lt brn, fnxln

Lime, lt brn, fnxln, soft sticky chalk clumps in part

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

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

Lime, lt brn, fnxln, increasing sticky chalk clumps

Lime, lt brn-lt grayish brn

Lime, lt-med brn, fnxln-granular
Chert, gray-black, fossiliferous

Lime, soft granular with lt of bedded chalk, lt chalk wash

Lime, lt brn-lt gray, granular, sticky chalk clumping

Shale, black carbonaceous, blocky

Shale, lt-med gray, soft blocky, slightly sticky in part

Lime, lt brn, fn-micro xln

Lime, lt brn, fn-vfxln

Lime, lt brn, fn-vfxln, sublithographic

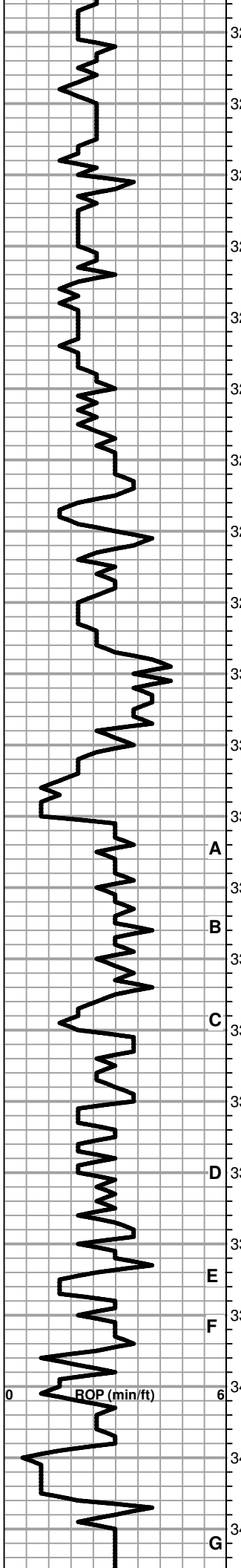
Shale, lt gray, soft-firm blocky

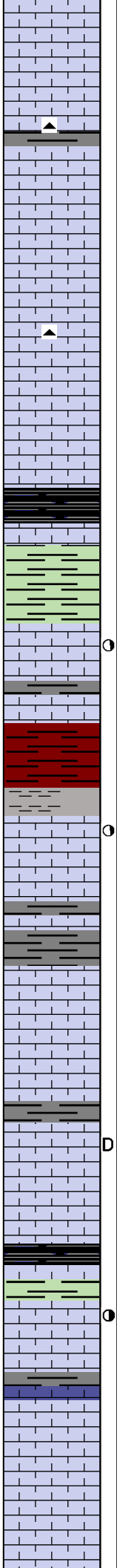
Lime, lt-med brn-med grayish brn, fn-vfxln

Shale, black carbonaceous, blocky

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

Lime, lt brn-lt grayish brn, fn-vfxln, lt odor on crush, NSFO,





No visible staining. Doesn't appear well developed

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

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

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

Lime, crm-lt brn, fnxln, slightly fossiliferous

Lime, crm-lt brn, fn-vfxln

Lime, crm-lt brn, fn-vfxln

HEEBNER SHALE ELog 3274-1236

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

Shale, dove gray-lt lime green, soft sticky clumps

TORONTO ELog 3293-1255

Lime, crm-lt brn, mostly fnxln, thin zone of fossil fragments with scattered vugs, few spots of lt staining, NFO, No Odor

CFS 3300' AND SHORT TRIP

Lime, crm-lt brn, fn-vfxln

Shale, red with lt red wash, soft blocky

LKC ELog 3320-1282

Lime, lt-med brn, fn-micro xln, 1 chip w fossil fragments, very lt odor, NFO, very lt to no detectable staining

Lime, lt-med brn, fn-micro xln
Shale, lt gray, soft to firm with fossil fragments

Lime, crm-tan, fnxln w/fine interxln porosity with scattered vugs, 1 chip oomoldic, sticky chalk clumps, NS

Lime, crm-tan, fn-micro xln

CFS 3360'

Lime, crm-tan, fnxln, dead oil staining in oomoldic chips with lt staining and very lt odor, NFO

Shale, black carbonaceous, blocky

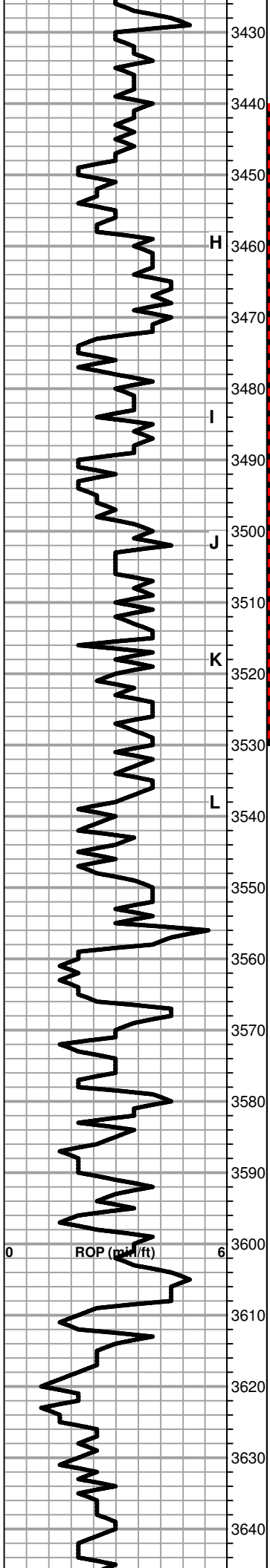
DST # 1 3355' TO 3420' SEE HEADER FOR TEST SUMMARY

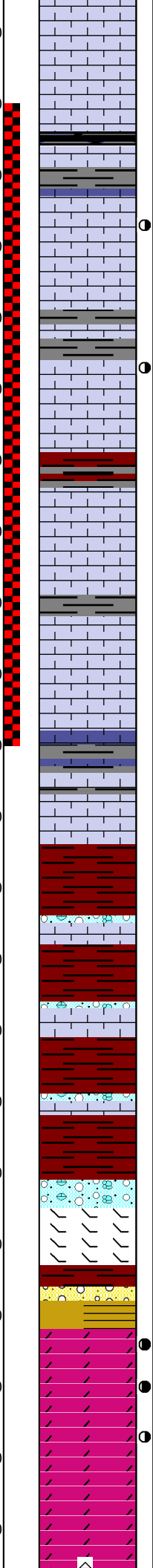
Lime, crm-tan, fnxln, fine interxln porosity with scattered vugs and oomoldic, lt oily sheen, lt odor , NFO

Lime, crm-lt brn, fnxln

Lime, crm-tan, fnxln with oomoldic chips, No Wet Cut, NS, lt chalky wash

Lime, lt brn, fnxln





3430
3440
3450
3460
3470
3480
3490
3500
3510
3520
3530
3540
3550
3560
3570
3580
3590
3600
3610
3620
3630
3640

H
I
J
K
L

Lime, crm, fn-micro xln

Lime, crm, fn-micro xln

Shale, black carbonaceous
Lime, offwhite, fn-micro xln

Lime, crm-lt brn, fossil fragments with intra particle porosity and lt spotty staining, very lt odor, NFO

Lime, crm-lt brn, fn-micro xln

Lime, crm, fnxln, fine interxln porosity with scattered vugs, very lt odor, NFO

DST # 2 3440' TO 3530' SEE HEADER FOR TEST SUMMARY

Lime, crm-lt brn, fn-micro xln

Lime, crm-tan, fnxln, bedded chalk, NS

Lime, crm-tan, fn-micro xln

Shale, med-dark gray, firm blocky

Lime, crm-tan, fn-vfxln, NS

Lime, lt brn, fn-micro xln, NS

Shale, med grayish green, firm blocky

CFS 3530'

Lime, crm-lt brn, fn-vfxln

BKC ELog 3544-1506

Shale, red-dark brn, soft mud to firm blocky

Lime, lt brn, fn-micro xln

Shale, soft red mud-med brn, soft blocky

Lime, crmlt brn, fnxln-slightly crumbly with bedded chalk

Shale, red-med brn, soft blocky

Lime, lt-med brn, fnxln

Shale, sticky red clumps

Lime, lt-med brn, fnxln, clastic mix with chert

Shale, dark brn, firm blocky, earthy

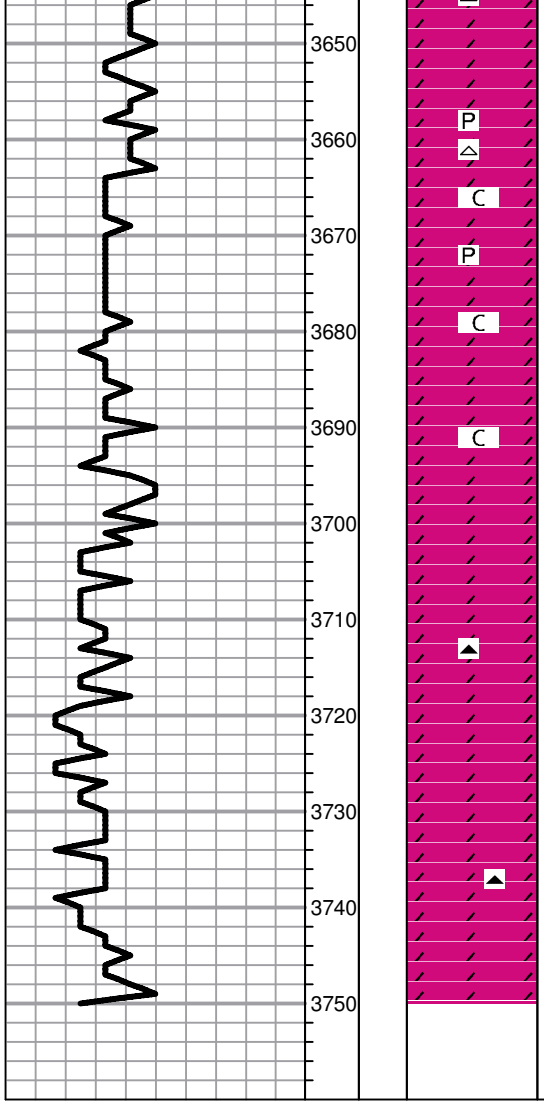
ARBUCKLE ELog 3612-1574

Dolomite, ivory-crm, fnxln-granular, fine-med grained with inter xln porosity, spotty-saturated staining, F-G odor

Dolomite, crm-lt brn, granular, fine to coarse grained with scattered rhombic xls, F-G odor, scattered to saturated stain, VMSFO on crush

Dolomite, crm-lt brn, fnxln-granular, lt decreasing odor intensity, scattered spotty staining

Dolomite, crm-tan-ivory, fnxln-granular, increasing grain size



to coarse xln, white chert, fresh, sharp

Dolomite, crm-tan, fnxln-granular, scattered rhombic xls, lt sulfur odor

Dolomite, crm-tan, fnxln-granular, few chips oolitic chert, lt white chalky wash

Dolomite, ivory, fnxln-granular, lt white chalk wash

Dolomite, ivory, fn-cxln granular, interxln porosity

Dolomite, ivory with tint of lt gray in part, fnxln-granular

Dolomite, ivory with tint of lt salmon, fn-cxln-granular, lt white chalk wash

Dolomite, ivory, fn-micro xln in part, very hard on crush, white chalk wash

Dolomite, ivory-crm, fn-micro xln-granular in part, few chips of smoky gray, oolitic chert

Dolomite, ivory, fnxln-granular

RTD 3750-1712 LTD 3750-1712

5 1/2" PRODUCTION CASING SET TO 3748' W/ 150 SXS EA2
TOP STAGE DV SET IN ANHYDRITE / 150 SXS SMD
20 SXS MOUSEHOLE
30 SXS RATHOLE

SLOPE 1 1/2 DEGREE @3750'

GLOBAL CEMENTING, L.L.C.

1555

REMIT TO 18048 170RD
RUSSELL, KS 67665

SERVICE POINT: RUSSELL, KS

DATE 12-10-2014	SEC.	TWP.	RANGE	CALLED OUT	ON LOCATION	JOB START	JOB FINISH
LEASE MUNCH	WELL #. 9 TWIN		LOCATION			COUNTY ELLIS	STATE KS
OLD OR (NEW) (CIRCLE ONE)							

CONTRACTOR SOUTHWIND #1
TYPE OF JOB SURFACE
HOLE SIZE 12¼ T.D.
CASING SIZE 8 5/8 DEPTH
TUBING SIZE DEPTH
DRILL PIPE DEPTH
TOOL DEPTH
PRES. MAX MINIMUM
MEAS. LINE SHOE JOINT
CEMENT LEFT IN CSG.
PERFS
DISPLACEMENT

EQUIPMENT

PUMP TRUCK # P1 CEMENTER BRAD
HELPER BUDD
BULK TRUCK # B4 DRIVER JASON
BULK TRUCK # DRIVER

OWNER

CEMENT
AMOUNT ORDERED 150 sx w/ 3% cc / 2% GEL

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

REMARKS:

RUN 6 JOINTS 5 5/8 CASING - PUT ON SHOEJOINT - GET CIRCULATION - PUMP ~~CEMENT~~ 150 SX CEMENT - DISPLACE W/ 12.75 BBL H2O - SHUT IN WITH 200 PSI - CEMENT DID CIRCULATE

SERVICE

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

CHARGE TO: TDI
STREET
CITY STATE ZIP

PLUG & FLOAT EQUIPMENT

@
@
@
@
@
TOTAL

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

PRINTED NAME LARRY BEAM

SIGNATURE Larry Beam

SALES TAX (If Any)
TOTAL CHARGES
DISCOUNT IF PAID IN 30 DAYS

JOB LOG

SWIFT Services, Inc.

DATE 12-16-14 | PAGE NO. 1

CUSTOMER	WELL NO.	LEASE	JOB TYPE	TICKET NO.
TDI	9 TWIN	MUNSCH	5½" LONGSTRING	27920

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS T	PUMPS C	PRESSURE (PSI) TUBING	PRESSURE (PSI) CASING	DESCRIPTION OF OPERATION AND MATERIALS
	1930							ON LOCATION
	2045							START 5½" CASING IN WELL
								TD - 3750 SET @ 3748
								TP - 3748 5½ # 14
								SJ - 43
								CENTRALIZERS - 1, 3, 90 (5), 6, 8, 10, 12, 58
								CMT BSKTS - 3, 13, 59
								DV TOOL - 1179 TOP JT # 59
	2250							DROP BALL - CIRCULATE ROTATE
	2350	6	12		✓		400	PUMP 500 GAL MUDFLUSH
	2352	6	20		✓		400	PUMP 20 BBLS KCL - FLUSH
	2400	6	36		✓		250	MIX 150 SKS EA2 CEMNT @ 15.4 PPG
	0007							WASH OUT PUMP + LINES
	0007							RELEASE 1ST STAGE LATCH DOWN PLUG
	0010	6¼	0		✓			DISPLACE PLUG
	0025	5	90.4				1500	PLUG DOWN - PSI UP LATCH IN PLUG
	0028						OK	RELEASE PSI - HELD
	0030							DROP DV OPENING PLUG
	0040						1300	OPEN DV TOOL - CIRCULATE
	0042	6	20		✓		300	PUMP 20 BBLS KCL - FLUSH
	0047		7-5					PLUG RH (30 SKS) MH (20 SKS)
	0050	6½	83		✓		200	MIX 150 SKS SMD CEMNT @ 11.2 PPG
	0103							WASH OUT PUMP + LINES
	0103							RELEASE DV CLOSING PLUG
	0105	6	0		✓			DISPLACE PLUG
	0110	4	28.8				1500	PLUG DOWN - PSI UP CLOSE DV TOOL
	0115						OK	RELEASE PSI - HELD
								CIRCULATED 25 SKS CEMNT TO PIT
								WASH TRUCK
	0200							JOB COMPLETE
								THANK YOU
								WAYNE, DAVID E., ROB

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **TDI Inc**

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

Munsch #9 Twin

9-15s-18w Ellis,KS

Start Date: 2014.12.14 @ 12:30:00

End Date: 2014.12.14 @ 19:49:45

Job Ticket #: 62501 DST #: 1

Trilobite Testing, Inc

1515 Commerce Parkway Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.12.18 @ 10:22:10

DRILL STEM TEST REPORT

TDI Inc

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

9-15s-18w Ellis,KS

Munsch #9 Twin

Job Ticket: 62501 **DST#: 1**

Test Start: 2014.12.14 @ 12:30:00

GENERAL INFORMATION:

Formation: **LKC " D - G "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 14:54:45
Time Test Ended: 19:49:45

Test Type: Conventional Bottom Hole (Initial)
Tester: Bob Hamel
Unit No: 72

Interval: 3355.00 ft (KB) To 3420.00 ft (KB) (TVD)
Total Depth: 3420.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

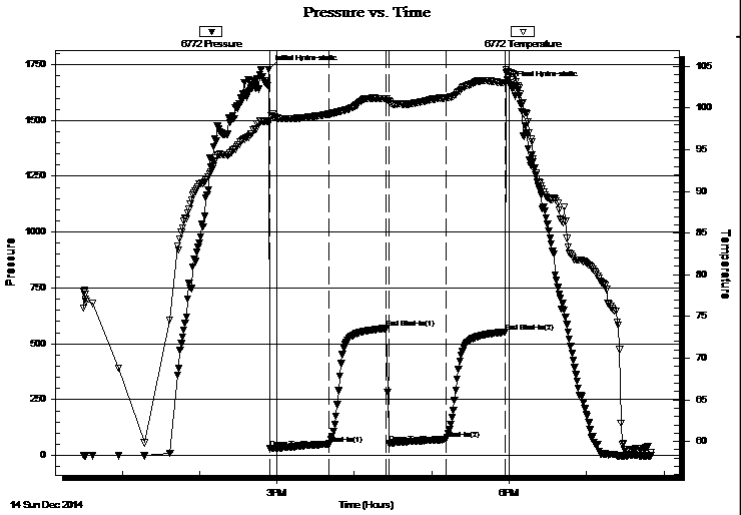
Reference Elevations: 2040.00 ft (KB)
2031.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 6772 **Inside**

Press@RunDepth: 72.70 psig @ 3392.00 ft (KB)
Start Date: 2014.12.14 End Date: 2014.12.14
Start Time: 12:30:05 End Time: 19:49:44

Capacity: 8000.00 psig
Last Calib.: 2014.12.14
Time On Btm: 2014.12.14 @ 14:53:30
Time Off Btm: 2014.12.14 @ 18:01:00

TEST COMMENT: I.F. - 45 - BOB in 22 1/2 min
I.S.I. - 45 - No blow back
F.F. - 45 - BOB in 23 min
F.S.I. - 45 - No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1727.11	98.38	Initial Hydro-static
2	32.09	98.46	Open To Flow (1)
47	50.98	99.26	Shut-In(1)
92	569.48	101.09	End Shut-In(1)
94	53.42	100.84	Open To Flow (2)
138	72.70	101.22	Shut-In(2)
184	552.86	103.00	End Shut-In(2)
188	1657.47	104.23	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
3.00	S,O,C,W,M, 10%O 15%W 75%M	0.04
103.00	O,C,M, 20%O 80%M	1.44
0.00	272' G.I.P.	0.00

Gas Rates

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

DRILL STEM TEST REPORT

TDI Inc

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

9-15s-18w Ellis,KS

Munsch #9 Twin

Job Ticket: 62501 **DST#: 1**

Test Start: 2014.12.14 @ 12:30:00

GENERAL INFORMATION:

Formation: **LKC " D - G "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 14:54:45
Time Test Ended: 19:49:45

Test Type: Conventional Bottom Hole (Initial)
Tester: Bob Hamel
Unit No: 72

Interval: 3355.00 ft (KB) To 3420.00 ft (KB) (TVD)
Total Depth: 3420.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

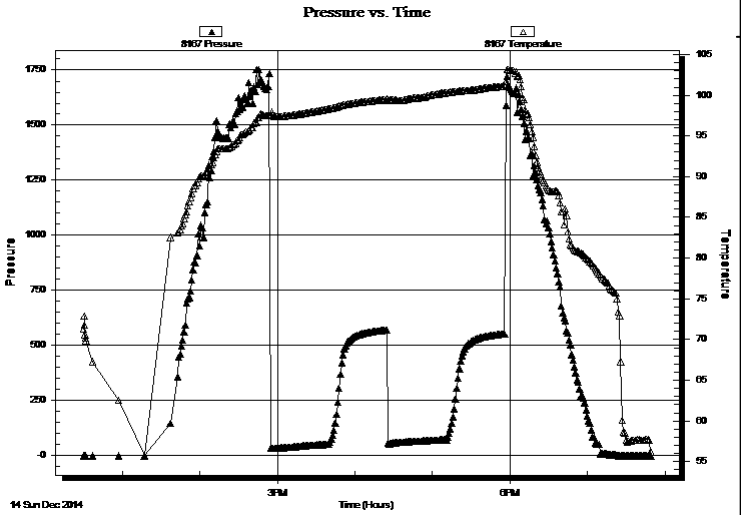
Reference Elevations: 2040.00 ft (KB)
2031.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8167 **Outside**

Press@RunDepth: psig @ 3392.00 ft (KB)
Start Date: 2014.12.14 End Date: 2014.12.14
Start Time: 12:30:05 End Time: 19:49:29

Capacity: 8000.00 psig
Last Calib.: 2014.12.14
Time On Btm:
Time Off Btm:

TEST COMMENT: I.F. - 45 - BOB in 22 1/2 min
I.S.I. - 45 - No blow back
F.F. - 45 - BOB in 23 min
F.S.I. - 45 - No blow back



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
3.00	S,O,C,W,M, 10%O 15%W 75%M	0.04
103.00	O,C,M, 20%O 80%M	1.44
0.00	272' G.I.P.	0.00

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI Inc

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

9-15s-18w Ellis,KS

Munsch #9 Twin

Job Ticket: 62501 **DST#: 1**

Test Start: 2014.12.14 @ 12:30:00

Tool Information

Drill Pipe:	Length:	3369.00 ft	Diameter:	3.80 inches	Volume:	47.26 bbl	Tool Weight:		2000.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	2.70 inches	Volume:	0.00 bbl	Weight set on Packer:		30000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	2.25 inches	Volume:	0.00 bbl	Weight to Pull Loose:		65000.00 lb
					Total Volume:	47.26 bbl	Tool Chased		0.00 ft
Drill Pipe Above KB:		34.00 ft					String Weight:	Initial	30000.00 lb
Depth to Top Packer:		3355.00 ft						Final	61000.00 lb
Depth to Bottom Packer:		ft							
Interval betw een Packers:		65.00 ft							
Tool Length:		85.00 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			3336.00		
Shut In Tool	5.00			3341.00		
Hydraulic tool	5.00			3346.00		
Packer	5.00			3351.00	20.00	Bottom Of Top Packer
Packer	4.00			3355.00		
Stubb	1.00			3356.00		
Perforations	2.00			3358.00		
Change Over Sub	1.00			3359.00		
Drill Pipe	32.00			3391.00		
Change Over Sub	1.00			3392.00		
Recorder	0.00	6772	Inside	3392.00		
Recorder	0.00	8167	Outside	3392.00		
Perforations	25.00			3417.00		
Bullnose	3.00			3420.00	65.00	Bottom Packers & Anchor
Total Tool Length:	**85.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI Inc

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

9-15s-18w Ellis,KS

Munsch #9 Twin

Job Ticket: 62501 **DST#: 1**

Test Start: 2014.12.14 @ 12:30:00

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:	7.59 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2500.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

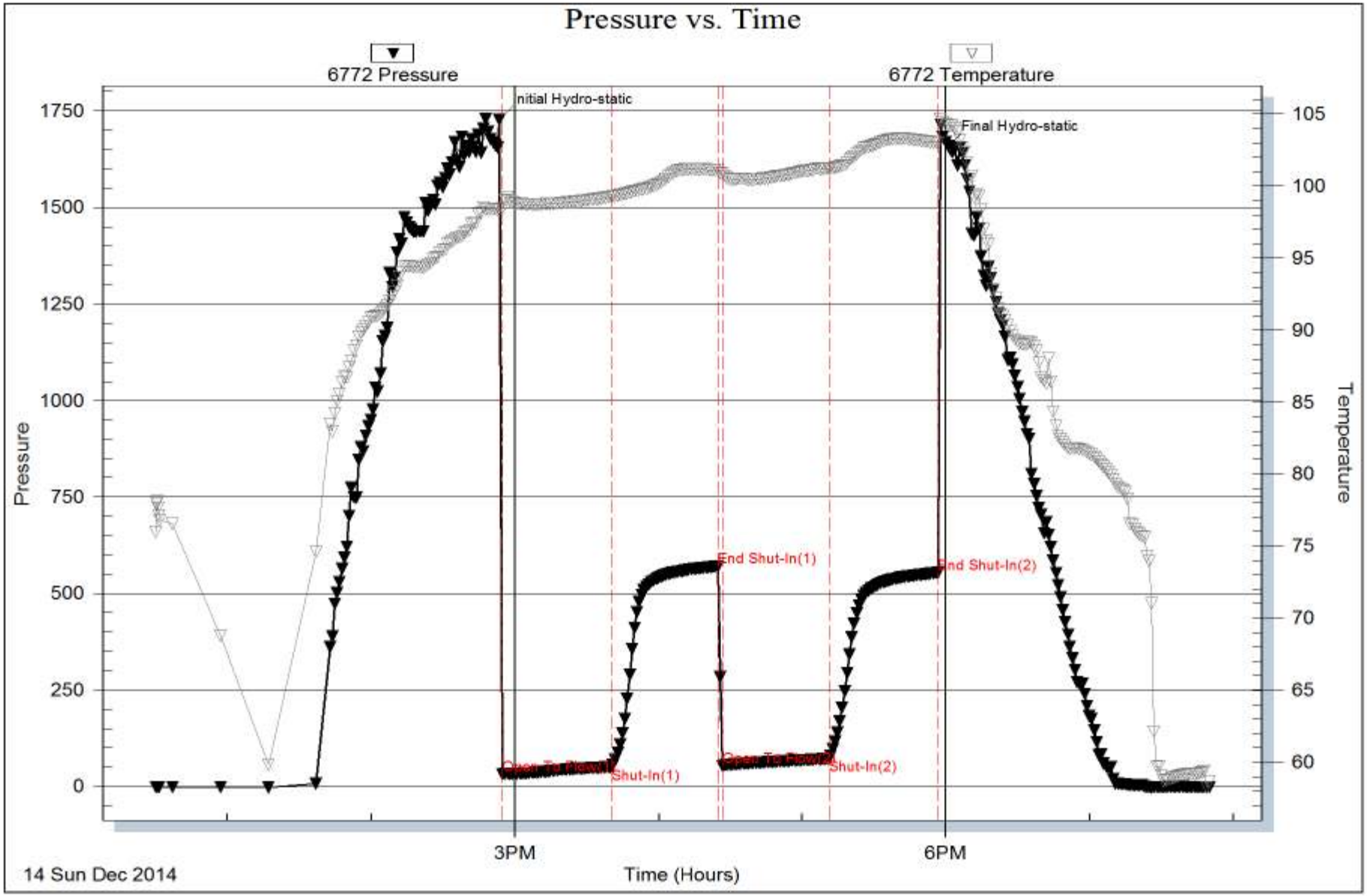
Recovery Table

Length ft	Description	Volume bbl
3.00	S,O,C,W,M, 10%O 15%W 75%M	0.042
103.00	O,C,M, 20%O 80%M	1.445
0.00	272' G.I.P.	0.000

Total Length: 106.00 ft Total Volume: 1.487 bbl

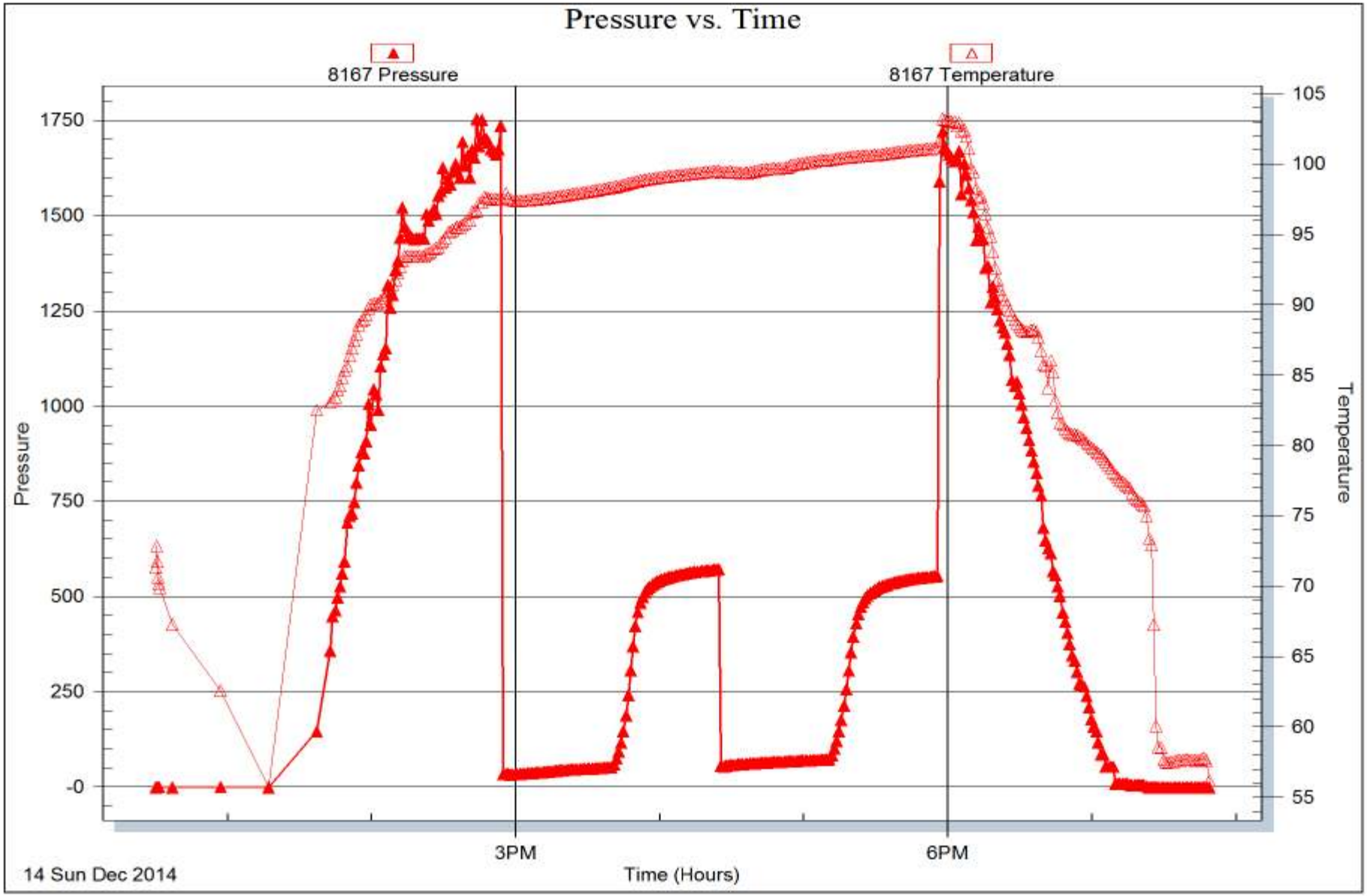
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 6772 **Inside** TDI Inc Munsch #9 Tw in DST Test Number: 1



Trilobite Testing, Inc Ref. No: 62501 Printed: 2014.12.18 @ 10:22:11

Serial #: 8167 **Outside** TDI Inc Munsch #9 Tw in DST Test Number: 1



Trilobite Testing, Inc Ref. No: 62501 Printed: 2014.12.18 @ 10:22:11

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **TDI Inc**

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

Munsch #9 Twin

9-15s-18w Ellis,KS

Start Date: 2014.12.15 @ 08:04:00

End Date: 2014.12.15 @ 16:22:15

Job Ticket #: 62502 DST #: 2

Trilobite Testing, Inc

1515 Commerce Parkway Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.12.18 @ 10:21:34

DRILL STEM TEST REPORT

TDI Inc

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

9-15s-18w Ellis,KS

Munsch #9 Twin

Job Ticket: 62502 **DST#: 2**

Test Start: 2014.12.15 @ 08:04:00

GENERAL INFORMATION:

Formation: **L.K.C. " H - K "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 11:13:45
Time Test Ended: 16:22:15

Test Type: Conventional Bottom Hole (Reset)
Tester: Bob Hamel
Unit No: 72

Interval: 3440.00 ft (KB) To 3530.00 ft (KB) (TVD)
Total Depth: 3530.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

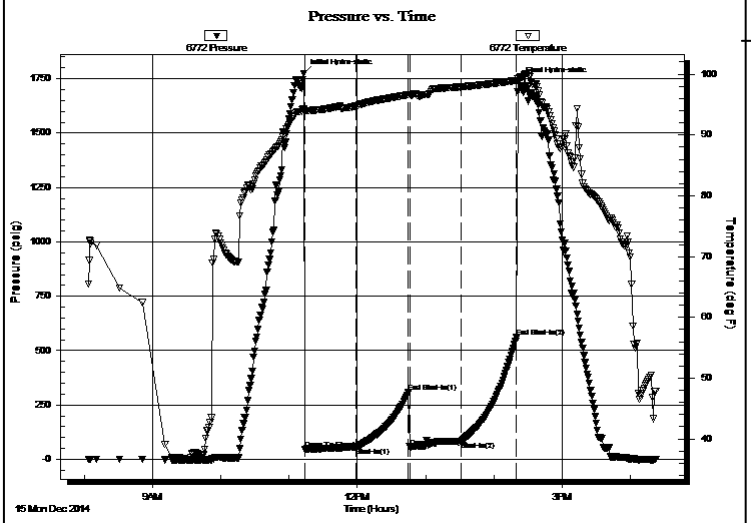
Reference Elevations: 2040.00 ft (KB)
2031.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 6772 **Inside**

Press@RunDepth: 83.85 psig @ 3507.00 ft (KB)
Start Date: 2014.12.15 End Date: 2014.12.15
Start Time: 08:04:05 End Time: 16:22:14

Capacity: 8000.00 psig
Last Calib.: 2014.12.15
Time On Btm: 2014.12.15 @ 11:12:45
Time Off Btm: 2014.12.15 @ 14:21:45

TEST COMMENT: I.F. - 45 - BOB in 23 min
I.S.I. - 45 - No blow back
F.F. - 45 - 8" blow died to 1/8" in 15 min. -flushed tool - 1" blow died - flushed tool at 18 min. blow died
F.S.I. - 45 - No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1774.54	94.25	Initial Hydro-static
1	46.65	94.03	Open To Flow (1)
47	55.35	94.78	Shut-In(1)
92	307.38	96.62	End Shut-In(1)
93	57.48	96.59	Open To Flow (2)
139	83.85	97.91	Shut-In(2)
187	560.23	98.97	End Shut-In(2)
189	1737.54	99.38	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
105.00	O,C,M, 10% O 90%M	1.47
0.00	282' G.I.P.	0.00
0.00	SHOW OF FREE OIL IN TEST TOOL	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TDI Inc

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

9-15s-18w Ellis,KS

Munsch #9 Twin

Job Ticket: 62502 **DST#: 2**

Test Start: 2014.12.15 @ 08:04:00

GENERAL INFORMATION:

Formation: **L.K.C. " H - K "**
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Tester: Bob Hamel
Unit No: 72

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Total Depth: 3530.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

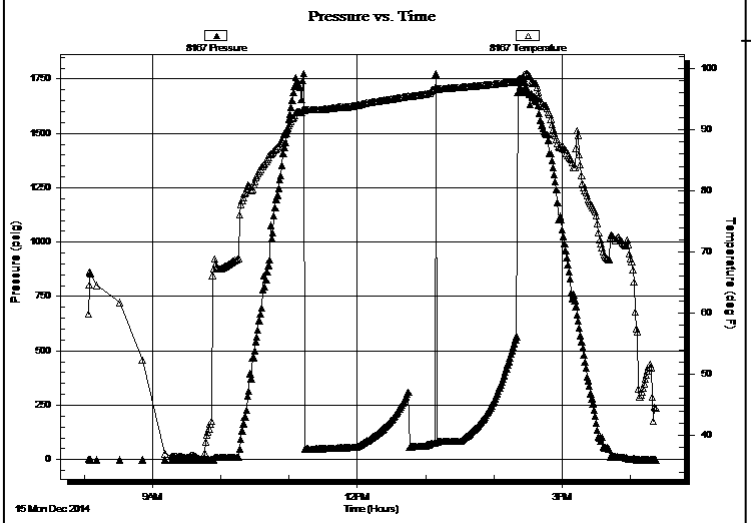
Reference Elevations: 2040.00 ft (KB)
2031.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8167 **Outside**

Press@RunDepth: psig @ 3507.00 ft (KB)
Start Date: 2014.12.15 End Date: 2014.12.15
Start Time: 08:04:05 End Time: 16:21:59

Capacity: 8000.00 psig
Last Calib.: 2014.12.15
Time On Btm:
Time Off Btm:

TEST COMMENT: I.F. - 45 - BOB in 23 min
I.S.I. - 45 - No blow back
F.F. - 45 - 8" blow died to 1/8" in 15 min. -flushed tool - 1" blow died - flushed tool at 18 min. blow died
F.S.I. - 45 - No blow back



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
105.00	O,C,M, 10% O 90%M	1.47
0.00	282' G.I.P.	0.00
0.00	SHOW OF FREE OIL IN TEST TOOL	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

TDI Inc

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

9-15s-18w Ellis,KS

Munsch #9 Twin

Job Ticket: 62502 **DST#: 2**

Test Start: 2014.12.15 @ 08:04:00

Tool Information

Drill Pipe:	Length:	3434.00 ft	Diameter:	3.80 inches	Volume:	48.17 bbl	Tool Weight:		2000.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	2.70 inches	Volume:	0.00 bbl	Weight set on Packer:		30000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	2.25 inches	Volume:	0.00 bbl	Weight to Pull Loose:		35000.00 lb
					Total Volume:	48.17 bbl	Tool Chased		0.00 ft
Drill Pipe Above KB:		14.00 ft					String Weight:	Initial	30000.00 lb
Depth to Top Packer:		3440.00 ft						Final	31000.00 lb
Depth to Bottom Packer:		ft							
Interval betw een Packers:		90.00 ft							
Tool Length:		110.00 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			3421.00		
Shut In Tool	5.00			3426.00		
Hydraulic tool	5.00			3431.00		
Packer	5.00			3436.00	20.00	Bottom Of Top Packer
Packer	4.00			3440.00		
Stubb	1.00			3441.00		
Perforations	2.00			3443.00		
Change Over Sub	1.00			3444.00		
Drill Pipe	62.00			3506.00		
Change Over Sub	1.00			3507.00		
Recorder	0.00	6772	Inside	3507.00		
Recorder	0.00	8167	Outside	3507.00		
Perforations	20.00			3527.00		
Bullnose	3.00			3530.00	90.00	Bottom Packers & Anchor
Total Tool Length:	**110.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

TDI Inc

1310 Bison Rd
Hays KS 67601

ATTN: Herb Deines

9-15s-18w Ellis,KS

Munsch #9 Twin

Job Ticket: 62502 **DST#: 2**

Test Start: 2014.12.15 @ 08:04:00

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:	7.59 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2500.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

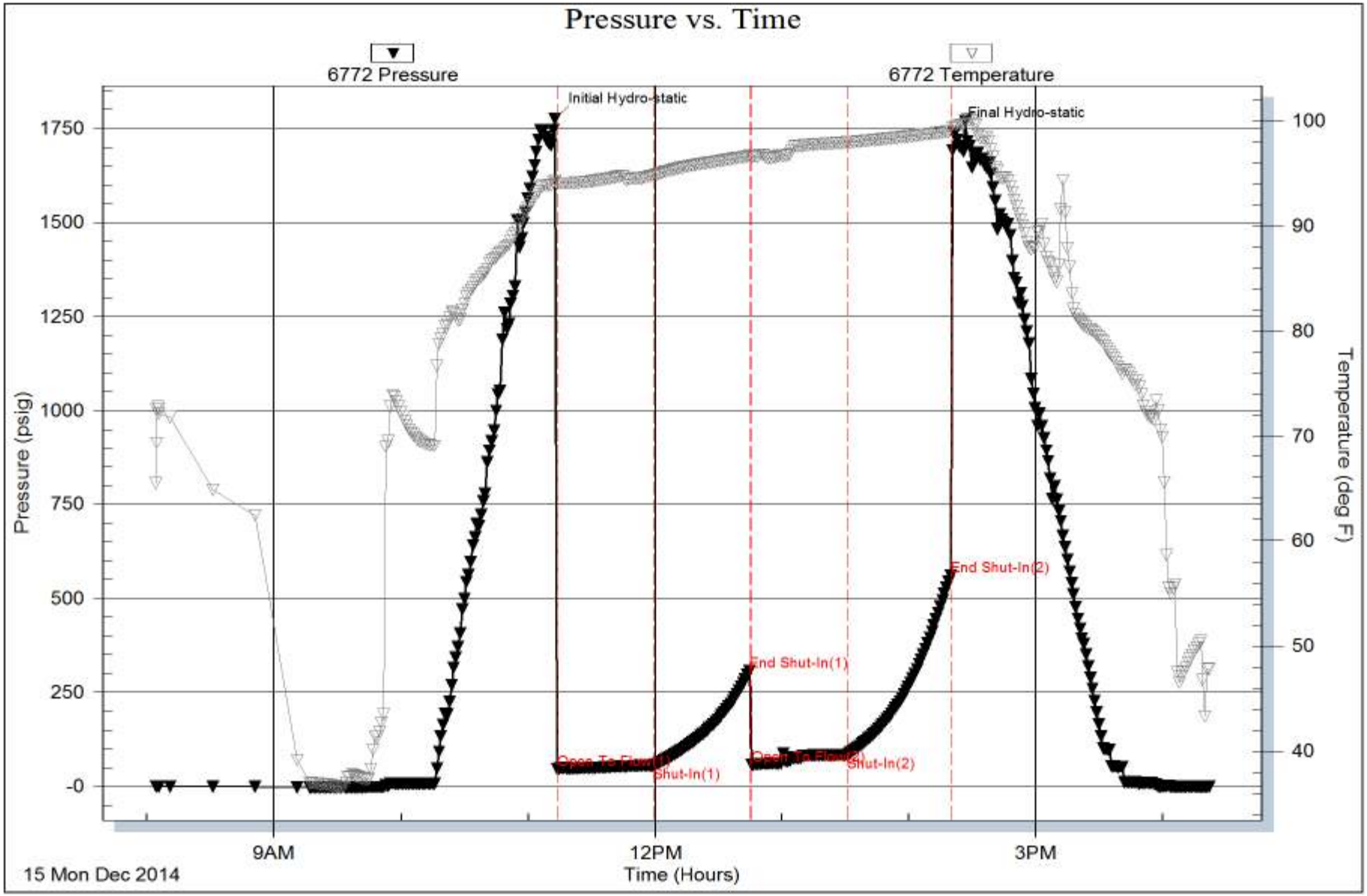
Recovery Table

Length ft	Description	Volume bbl
105.00	O,C,M, 10% O 90%M	1.473
0.00	282' G.I.P.	0.000
0.00	SHOW OF FREE OIL IN TEST TOOL	0.000

Total Length: 105.00 ft Total Volume: 1.473 bbl

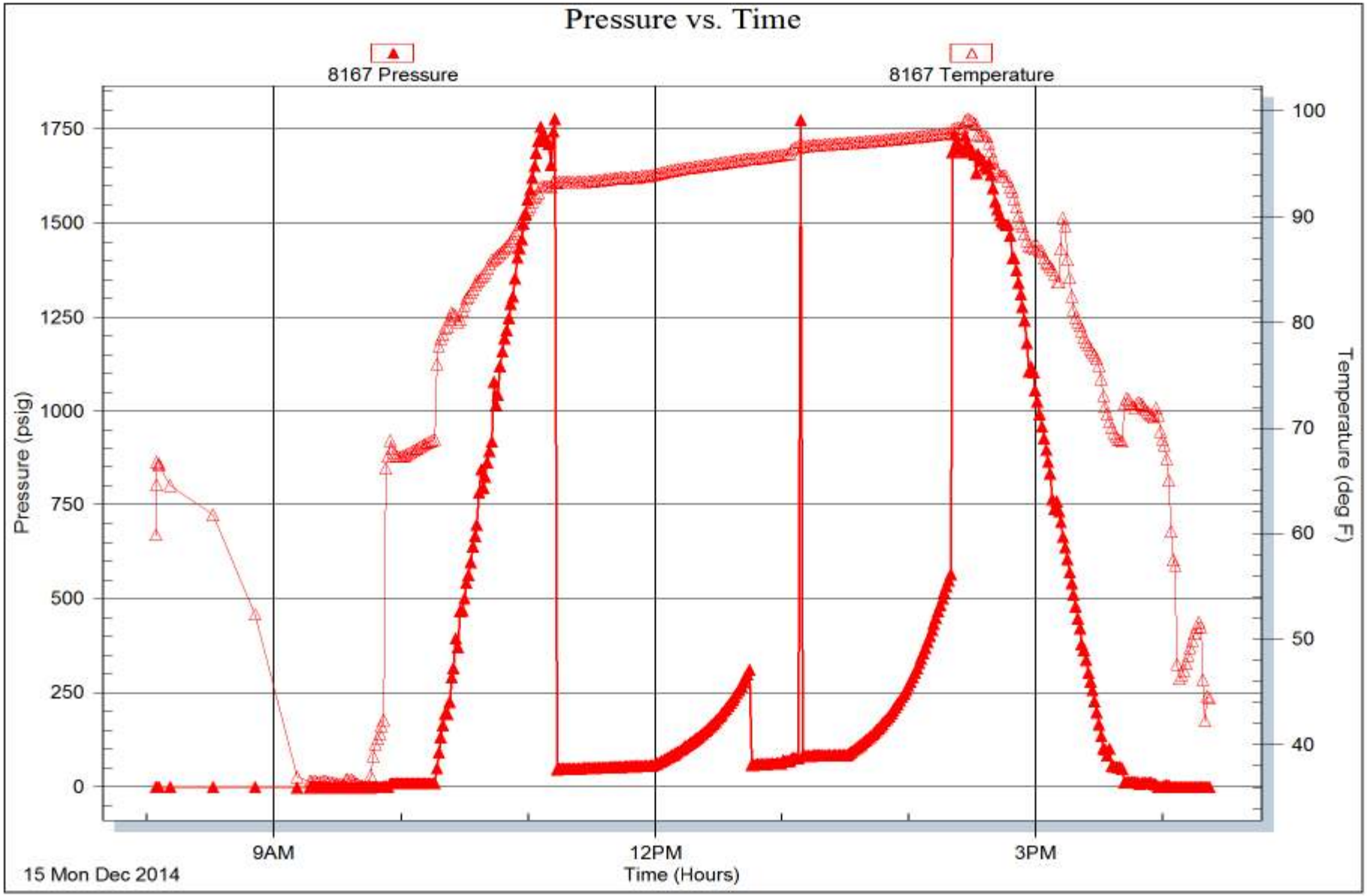
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 6772 **Inside** TDI Inc Munsch #9 Tw in DST Test Number: 2



Trilobite Testing, Inc Ref. No: 62502 Printed: 2014.12.18 @ 10:21:35

Serial #: 8167 **Outside** TDI Inc Munsch #9 Tw in DST Test Number: 2



Trilobite Testing, Inc Ref. No: 62502 Printed: 2014.12.18 @ 10:21:35

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 62501

Well Name & No. Munsch #9 twin Test No. 1 Date 12-14-14

Company TOI, INC. Elevation 2031 KB 2040 GL

Address 1310 Bison R.D. Hays. KS. 67601

Co. Rep / Geo. Herb Deines Rig Southwind Rig #1

Location: Sec. 9 Twp. 15 S. Rge. 18 W. Co. Ell.S State KS.

Interval Tested 3355-3420 Zone Tested D-G

Anchor Length 65 Drill Pipe Run 3369 Mud Wt. 9.3

Top Packer Depth 3350 Drill Collars Run — Vis 59

Bottom Packer Depth 3355 Wt. Pipe Run — WL 7.6

Total Depth 3420 Chlorides 2,500 ppm System LCM 2

Blow Description I.F-45-½" INt. Blow Built to B.O.B. in 22½ M.n.

I.S.I-45-No B.B.

F.F-45-½" INt. Blow Built to B.O.B. in 23min.

F.S.I-45-No B.B.

Rec 0	Feet of 272 G.I.P.	100 %gas	%oil	%water	%mud
Rec 103	Feet of H,O,C,M	%gas	20 %oil	%water	80 %mud
Rec 3	Feet of S,O,C,W,M	%gas	10 %oil	15 %water	75 %mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 106 BHT 104.2 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 1727	☑ Test 1150	T-On Location 12:00:00
(B) First Initial Flow 33	☐ Jars	T-Started 12:30:00
(C) First Final Flow 51	☐ Safety Joint	T-Open 15:07:00
(D) Initial Shut-In 569	☐ Circ Sub	T-Pulled 18:07:00
(E) Second Initial Flow 53	☐ Hourly Standby	T-Out 19:49:45
(F) Second Final Flow 73	☑ Mileage 20/R.T. 31	Comments
(G) Final Shut-In 553	☐ Sampler	"Thank You"
(H) Final Hydrostatic 1657	☐ Straddle	☐ Ruined Shale Packer
	☐ Shale Packer	☐ Ruined Packer
Initial Open 45	☐ Extra Packer	☐ Extra Copies
Initial Shut-In 45	☐ Extra Recorder	Sub Total 0
Final Flow 45	☐ Day Standby	Total 1181
Final Shut-In 45	☐ Accessibility	MP/DST Disc't
	Sub Total 1181	

Approved By Our Representative Bill Hamm

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

4/10

Test Ticket

NO. 62502

Well Name & No. MunSch #9 twin Test No. 2 Date 12-15-14

Company TDI INC. Elevation 2031 KB 2040 GL

Address 1310 Bison RD. Hays KS. 67601

Co. Rep / Geo. Herb Deines Rig Southwind Rig #1

Location: Sec. 9 Twp. 15 S. Rge. 18 W. Co. Ellis State KS.

Interval Tested 3440-3530 Zone Tested L.K.C. "H-K"

Anchor Length 90 Drill Pipe Run 3434 Mud Wt. 9.0

Top Packer Depth 3435 Drill Collars Run — Vis 52

Bottom Packer Depth 3440 Wt. Pipe Run — WL 7.6

Total Depth 3530 Chlorides 2,500 ppm System LCM 2

Blow Description I.F.- 45- ½" INt. Blow Built to B.B. in 23 Min.

I.S.I- 45- No B.B.

F.F- 45- 8" INt. Blow died to ⅛" in 15 min. Flushed tool got 1" Blow died off flushed again 18 min died (26 min.)

F.S.I- 45- No B.B.

Rec 0	Feet of 282' G.I.P.	100 %gas	%oil	%water	%mud
Rec 105	Feet of O,C,M	%gas	10 %oil	%water	90 %mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 105 BHT 99.4 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 1,775	☑ Test 1150	T-On Location 07:15:00
(B) First Initial Flow 47	☐ Jars	T-Started 08:04:00
(C) First Final Flow 53	☐ Safety Joint	T-Open 11:14:00
(D) Initial Shut-In 307	☐ Circ Sub	T-Pulled 14:14:00
(E) Second Initial Flow 57	☐ Hourly Standby	T-Out 16:22:15
(F) Second Final Flow 84	☑ Mileage 3U/R.T 31	Comments Loaded tools @ 14:30 on 12-16-14
(G) Final Shut-In 560	☐ Sampler	"thank-you"
(H) Final Hydrostatic 1,738	☐ Straddle	☐ Ruined Shale Packer
	☐ Shale Packer	☐ Ruined Packer
Initial Open 45	☐ Extra Packer	☐ Extra Copies
Initial Shut-In 45	☐ Extra Recorder	Sub Total 0
Final Flow 45	☐ Day Standby	Total 1181
Final Shut-In 45	☐ Accessibility	MP/DST Disc't
	Sub Total 1181	

Approved By Our Representative

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