

Confidentiality Requested:  
 Yes  No

KANSAS CORPORATION COMMISSION  
OIL & GAS CONSERVATION DIVISION

Form ACO-1  
July 2014

Form must be Typed  
Form must be Signed  
All blanks must be Filled

WELL COMPLETION FORM  
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 30717

Name: Downing Nelson Oil Co., Inc.

Address 1: PO Box 1019

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

City: Hays State: KS Zip: 67601 + \_\_\_\_\_

Contact Person: Ron Nelson

Phone: ( 785 ) 621-2610

CONTRACTOR: License # 31548

Name: Discovery Drilling Co., Inc.

Wellsite Geologist: Marc Downing

Purchaser: Coffeyville Resources

Designate Type of Completion:

- New Well  Re-Entry  Workover
- Oil  WSW  SWD  SLOW
- 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  Dual Completion
- SWD  ENHR  GSW
- Permit #: \_\_\_\_\_ Received
- Permit #: KANSAS CORPORATION COMMISSION
- Permit #: NOV 16 2017
- Permit #: \_\_\_\_\_
- Permit #: CONSERVATION DIVISION
- Permit #: WICHITA, KS

<u>07/29/2017</u>	<u>08/06/2017</u>	<u>09/14/2017</u>
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No. 15 - 195-23,026-00-00

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

SW\_SW\_NE\_NW Sec. 19 Twp. 13 S. R. 21  East  West

1,180 Feet from  North /  South Line of Section

1,600 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: Trego

Lease Name: Herbert West Well #: 2-19

Field Name: Petty

Producing Formation: Conglomerate

Elevation: Ground: 2221 Kelly Bushing: 2229

Total Vertical Depth: 4075 Plug Back Total Depth: \_\_\_\_\_

Amount of Surface Pipe Set and Cemented at: 221 Feet

Multiple Stage Cementing Collar Used?  Yes  No

If yes, show depth set: 1615 Feet

If Alternate II completion, cement circulated from: 1615

feet depth to: 0 w/ 155 sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: 44,000 ppm Fluid volume: 800 bbls

Dewatering method used: Hauled free fluid

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

Operator Name: American Tank Service, LLC

Lease Name: Staab #1 (SWD) License #: 34590

Quarter NW/4 Sec. 20 Twp. 12 S. R. 22  East  West

County: Trego Permit #: D-30,831

INSTRUCTIONS: The original form shall be filed with the Kansas Corporation Commission, 130 S. Market - Room 2078, Wichita, Kansas 67202, within 120 days of the spud date, recompletion, workover or conversion of a well. If confidentiality is requested and approved, side two of this form will be held confidential for a period of 2 years. Rules 82-3-130, 82-3-106 and 82-3-107 apply. Drill Stem Test, Cement Tickets and Geological Well Report must be attached.

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.

Signature: Michael Mauer

Title: Office Manager Date: 11/14/2017

KCC Office Use ONLY

Confidentiality Requested  
Date: \_\_\_\_\_

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

Wireline Log Received

Geologist Report Received

UIC Distribution

ALT  I  II  III Approved by: KJR Date: 11/28/2017

Operator Name: Downing Nelson Oil Co., Inc. Lease Name: Herbert West Well #: 2-19  
 Sec. 19 Twp. 13 S. R.21  East  West County: Trego

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

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

Drill Stem Tests Taken <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i>  Samples Sent to Geological Survey <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  Cores Taken <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Electric Log Run <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  List All E. Logs Run: <b>Micro, Compensated Density Neutron, Dual Induction and Sonic</b>	<input checked="" type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample  <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:70%;"><b>Name</b></td> <td style="width:15%;"><b>Top</b></td> <td style="width:15%;"><b>Datum</b></td> </tr> <tr> <td>Top Anhydrite</td> <td>1648'</td> <td>+581</td> </tr> <tr> <td>Base Anhydrite</td> <td>1692'</td> <td>+537</td> </tr> <tr> <td>Topeka</td> <td>3311'</td> <td>-1082</td> </tr> <tr> <td>Heebner</td> <td>3540'</td> <td>-1311</td> </tr> <tr> <td>Toronto</td> <td>3556'</td> <td>-1327</td> </tr> <tr> <td>LKC</td> <td>3570'</td> <td>-1341</td> </tr> <tr> <td>BKC</td> <td>3817'</td> <td>-1588</td> </tr> </table>	<b>Name</b>	<b>Top</b>	<b>Datum</b>	Top Anhydrite	1648'	+581	Base Anhydrite	1692'	+537	Topeka	3311'	-1082	Heebner	3540'	-1311	Toronto	3556'	-1327	LKC	3570'	-1341	BKC	3817'	-1588
<b>Name</b>	<b>Top</b>	<b>Datum</b>																							
Top Anhydrite	1648'	+581																							
Base Anhydrite	1692'	+537																							
Topeka	3311'	-1082																							
Heebner	3540'	-1311																							
Toronto	3556'	-1327																							
LKC	3570'	-1341																							
BKC	3817'	-1588																							

CASING RECORD <input checked="" 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
Surface Pipe	12.25	8.625	23	221	Common	150	2% Gel & 3% CC
Production Casing	7.875	5.5	14	4077	EA/2	150	

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

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

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record <i>(Amount and Kind of Material Used)</i>	Depth
4	3994'-3997'	400 gallons 7.5% MOD 101	3994'-3997'
Received KANSAS CORPORATION COMMISSION NOV 16 2017 CONSERVATION DIVISION WICHITA, KS			

TUBING RECORD: Size: <u>2.375</u> Set At: <u>4010'</u> Packer At: _____		Liner Run: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Date of First, Resumed Production, SWD or ENHR. <u>10/10/2017</u>		Producing Method: <input type="checkbox"/> Flowing <input checked="" type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____	
Estimated Production Per 24 Hours	Oil Bbls. <u>10</u>	Gas Mcf <u>20</u>	Water Bbls. <u>20</u>
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 checked="" type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____	PRODUCTION INTERVAL: _____ _____
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Downing Nelson Oil Co., Inc.

PO Box 1019

Hays, KS 67601

**Lease** Herbert West #2-19

**API #** 15-195-23026-00-00

**County:** Trego **State:** Kansas

<b>Formation</b>	<b>Log Tops</b>	<b>Datum</b>
Top Anhydrite	1648'	+581
Base Anhydrite	1692'	+537
Topeka	3311'	-1082
Heebner	3540'	-1311
Toronto	3556'	-1327
LKC	3570'	-1341
BKC	3817'	-1588
Marmaton	3911'	-1682
Cherokee Shale	3952'	-1723
Conglomerate Sand	3964'	-1735
Basil Cong. Sand	3989'	-1760
Arbuckle	3997'	-1768

Received  
KANSAS CORPORATION COMMISSION

**NOV 16 2017**

CONSERVATION DIVISION  
WICHITA, KS

JOB LOG

SWIFT Services, Inc.

DATE 7-29-17	PAGE NO. 1
TICKET NO. # 30715	

CUSTOMER Downing & Nelson	WELL NO. # 2-19	LEASE Herbert West	JOB TYPE Surface Pipe
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CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	2045							On location <span style="float:right">8 5/8" 23#</span>
								RTD- 222' TP- 221'
	2100							Start 8 5/8" 23# casing in Hole
	2130							Break Circulation
	2140	4 1/2	5		✓	100		Pump 5 bbl water Spacer
	2145	4 1/2	36		✓	100		mix 150 sks 2% Gel 3% cc @ 14.7 ppg
	2155	4 1/2	0		✓	200		Displace Cement
		4 1/2	8		✓	200		Circulate Cement to Surface * 20 sks *
2200	<del>100</del>	4 1/2	13		✓	300		Kick out Pump
		0	13		✓	300		Shut in * Hold *
								wash up trucks
	2230							Job Complete

Thanks You  
Dave Preston Kirby

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KANSAS CORPORATION COMMISSION  
NOV 16 2017  
CONSERVATION DIVISION  
WICHITA, KS

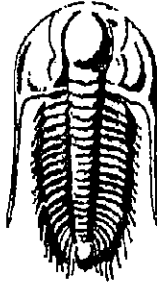
# SWIFT Services, Inc.

DATE 8-7-17	PAGE NO.
TICKET NO. 30445	

LOG	CUSTOMER Downing-Nelson	WELL NO. 2-19	LEASE Herbert West	JOB TYPE 2 stage	
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CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
								On location
								Csg - 5 1/2" x 14#
								RTD - 4075
								Set Pipe = 4077.16
								Shoe It - 43.53 & 4033.63
								Centralizers - 1, 3, 5, 7, 9, 11 & 57
								Baskets - 58
								D.V. Tool - 58 & 1615.52
	1015							Start Running Csg
	1145							Break Circ on Bottom
	1215	5	12			200		Pump mud flush - 500 gals
	1	5	20			200		Pump Wcl Spacer
	1220	5	36			200		Pump Cmt - 150 sks EA - 2" 155'
						0		Drop plug - wash P&L
	1230	7	0			0		Start Disp
	1245	5	98			700		land plug - lift - 700 psi
								land - 1400 psi
	1250							Drop Bomb
								Plug rat hole - 30 sks
								Plug mouse Hole - 15 sks
	1310							Open D.V. Tool
	1315	5	0			150		Start Cmt - 140 sks SMD @ 11.2 ppg
		5	78			150		Raise weight to 14.5 ppg - 15 sks
	1335	5	83			200		End Cmt
								Drop plug
	1335	5	0			150		Start Disp
		5	35			600		Circ cmt
	1345	5	40			700		land plug - lift - 700 psi
								land - 1500 psi
								Circulated 10 sks cmt top it
	1415							Job Complete

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 KANSAS CORPORATION COMMISSION  
 NOV 16 2017  
 CONSERVATION DIVISION  
 WICHITA, KS



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Prepared For: **DNOC**

PO Box 1019  
Hays KS 67601

ATTN: Marc Downing

**Herbert West #2-19**

**19-13S-21W Trego,KS**

Start Date: 2017.08.02 @ 17:59:00

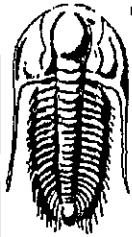
End Date: 2017.08.03 @ 01:04:00

Job Ticket #: 63000                      DST #: 1

Received  
KANSAS CORPORATION COMMISSION  
**NOV 16 2017**  
CONSERVATION DIVISION  
WICHITA, KS

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

Printed: 2017.08.07 @ 15:47:09



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

DNOC  
PO Box 1019  
Hays KS 67601  
ATTN: Marc Downing

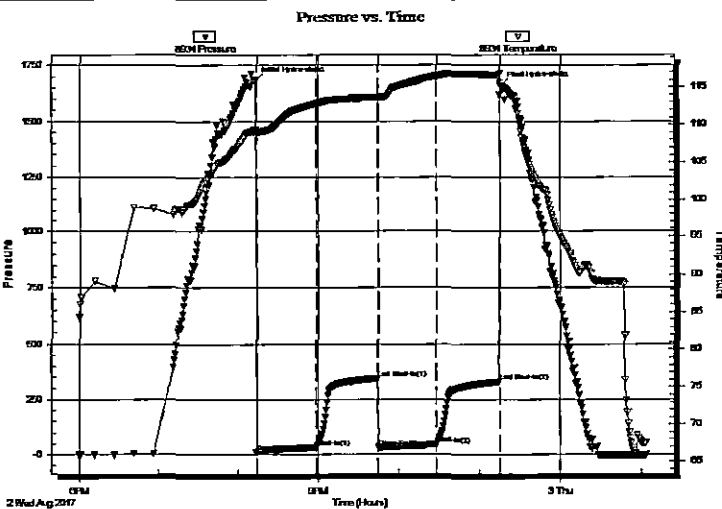
**19-13S-21W Trego, KS**  
**Herbert West #2-19**  
Job Ticket: 63000      DST#: 1  
Test Start: 2017.08.02 @ 17:59:00

## GENERAL INFORMATION:

Formation: **LKC 'A'**  
Deviated: No Whipstock      ft (KB)  
Time Tool Opened: 20:13:45  
Time Test Ended: 01:04:00  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Spencer J. Staab  
Unit No: 84  
Interval: **3560.00 ft (KB) To 3595.00 ft (KB) (TVD)**  
Total Depth: 3595.00 ft (KB) (TVD)  
Reference Elevations: 2229.00 ft (<B)  
2222.00 ft (<F)  
Hole Diameter: 7.88 inches Hole Condition: Fair      KB to GR/CF: 7.00 ft

**Serial #: 8934**      **Outside**  
Press@RunDepth: 45.56 psig @ 3562.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2017.08.02      End Date: 2017.08.03      Last Calib.: 2017.08.03  
Start Time: 17:59:15      End Time: 01:04:00      Time On Btm: 2017.08.02 @ 20:13:30  
Time Off Btm: 2017.08.02 @ 23:15:30

**TEST COMMENT:** 45-IF-Weak Blow; Built to 3 1/4"  
45-ISI-No Return  
45-FF-Weak Blow; Built to 1"  
45-FSI-No Return



## PRESSURE SUMMARY

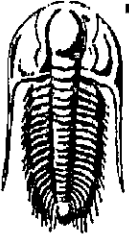
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1681.46	109.32	Initial Hydro-static
1	10.54	108.26	Open To Flow (1)
45	31.60	112.80	Shut-In(1)
91	343.69	113.61	End Shut-In(1)
92	32.44	113.57	Open To Flow (2)
135	45.56	116.43	Shut-In(2)
181	330.60	116.57	End Shut-In(2)
182	1657.29	115.52	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
50.00	GOCMW 5%G 5%O 45%W 45%M	0.41
20.00	GOCWM 5%G 5%O 20%W 70%M	0.28
10.00	Clean Oil 100%O	0.14

## Gas Rates

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



**TRILOBITE**  
TESTING, INC.

**DRILL STEM TEST REPORT**

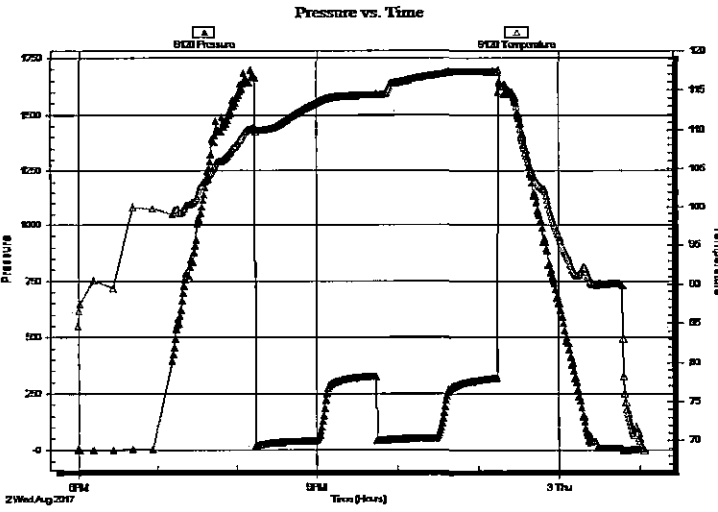
DNOC **19-13S-21W Trego,KS**  
 PO Box 1019 **Herbert West #2-19**  
 Hays KS 67601 **Job Ticket: 63000 DST#: 1**  
 ATTN: Marc Downing **Test Start: 2017.08.02 @ 17:59:00**

**GENERAL INFORMATION:**

Formation: **LKC 'A'**  
 Deviated: **No Whipstock:** ft (KB) **Test Type: Conventional Bottom Hole (Initial)**  
 Time Tool Opened: **20:13:45** **Tester: Spencer J. Staab**  
 Time Test Ended: **01:04:00** **Unit No: 84**  
**Interval: 3560.00 ft (KB) To 3595.00 ft (KB) (TVD)** **Reference Elevations: 2229.00 ft (KB)**  
**Total Depth: 3595.00 ft (KB) (TVD)** **2222.00 ft (CF)**  
**Hole Diameter: 7.88 inches** **Hole Condition: Fair** **KB to GR/CF: 7.00 ft**

**Serial #: 9120 Inside**  
**Press@RunDepth: psig @ 3562.00 ft (KB)** **Capacity: 8000.00 psig**  
**Start Date: 2017.08.02** **End Date: 2017.08.03** **Last Calib.: 2017.08.03**  
**Start Time: 17:59:15** **End Time: 01:04:00** **Time On Btm:**  
**Time Off Btm:**

**TEST COMMENT:** 45-IF-Weak Blow ; Built to 3 1/4"  
 45-ISI-No Return  
 45-FF-Weak Blow ; Built to 1"  
 45-FSI-No Return



**PRESSURE SUMMARY**

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

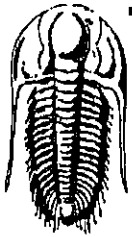
**Recovery**

Length (ft)	Description	Volume (bbl)
50.00	GOCMW 5%G 5%O 45%W 45%M	0.41
20.00	GOCWM 5%G 5%O 20%W 70%M	0.28
10.00	Clean Oil 100%O	0.14

**Gas Rates**

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





**TRILOBITE**  
TESTING, INC.

# DRILL STEM TEST REPORT

TOOL DIAGRAM

DNOC

19-13S-21W Trego,KS

PO Box 1019  
Hays KS 67601

Herbert West #2-19

Job Ticket: 63000

DST#: 1

ATTN: Marc Downing

Test Start: 2017.08.02 @ 17:59:00

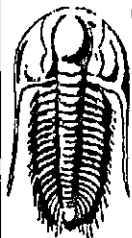
## Tool Information

Drill Pipe:	Length: 3516.00 ft	Diameter: 3.80 inches	Volume: 49.32 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 32.00 ft	Diameter: 2.25 inches	Volume: 0.16 bbl	Weight to Pull Loose: 65000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial 57000.00 lb
Depth to Top Packer:	3560.00 ft			Final 57000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	35.00 ft			
Tool Length:	55.00 ft			
Number of Packers:	1	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3541.00	
Shut In Tool	5.00			3546.00	
Hydraulic tool	5.00			3551.00	
Packer	5.00			3556.00	20.00 Bottom Of Top Packer
Packer	4.00			3560.00	
Stubb	1.00			3561.00	
Perforations	1.00			3562.00	
Recorder	0.00	9120	Inside	3562.00	
Recorder	0.00	8934	Outside	3562.00	
Perforations	29.00			3591.00	
Bullnose	4.00			3595.00	35.00 Bottom Packers & Anchor

**Total Tool Length: 55.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

DNOC

19-13S-21W Trego,KS

PO Box 1019  
Hays KS 67601

Herbert West #2-19

Job Ticket: 63000

DST#: 1

ATTN: Marc Downing

Test Start: 2017.08.02 @ 17:59:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

28 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

66000 ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 16500.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
50.00	GOCMW 5%G 5%O 45%W 45%M	0.410
20.00	GOCWM 5%G 5%O 20%W 70%M	0.281
10.00	Clean Oil 100%O	0.140

Total Length: 80.00 ft      Total Volume: 0.831 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

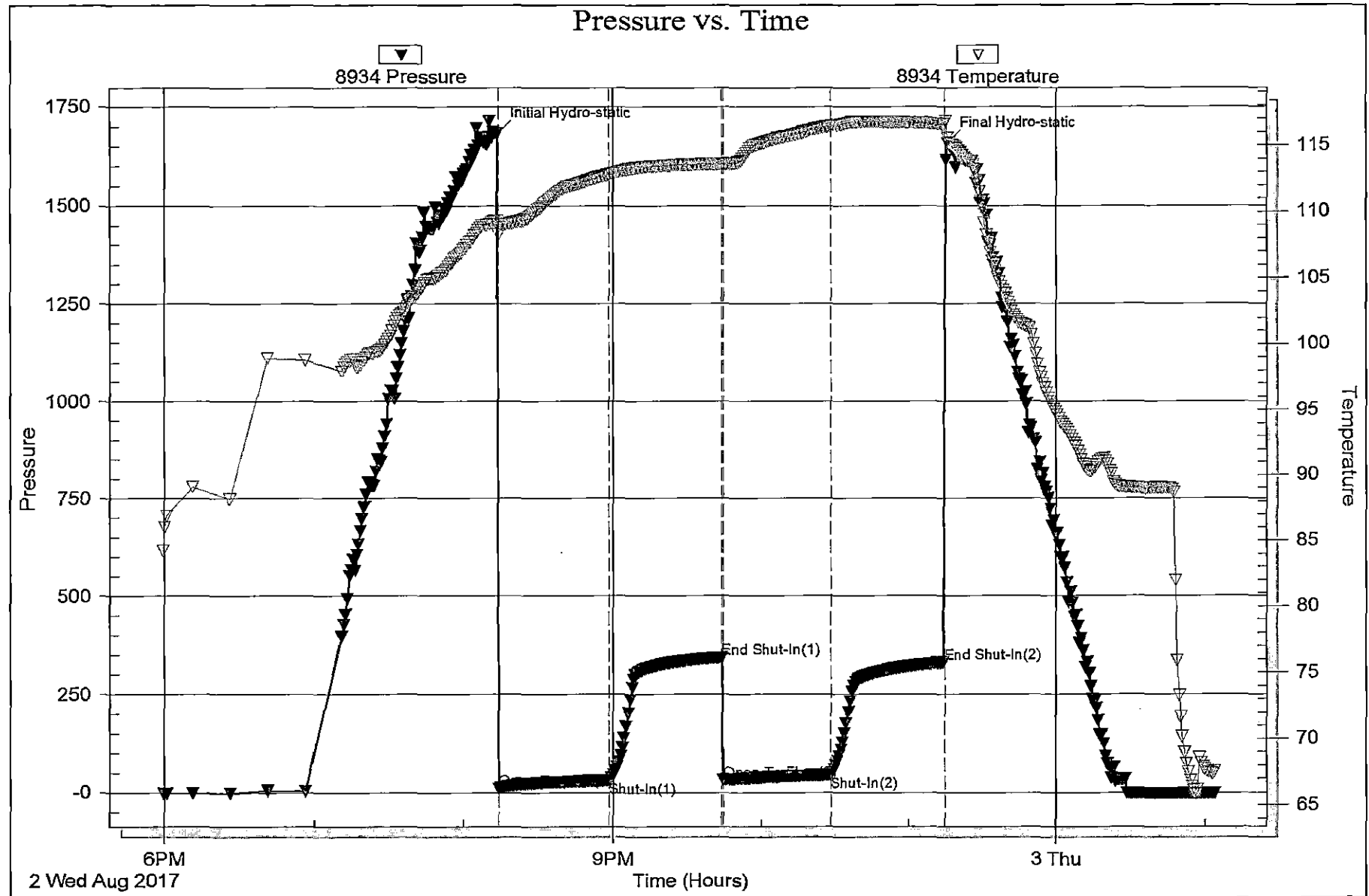
Serial #:

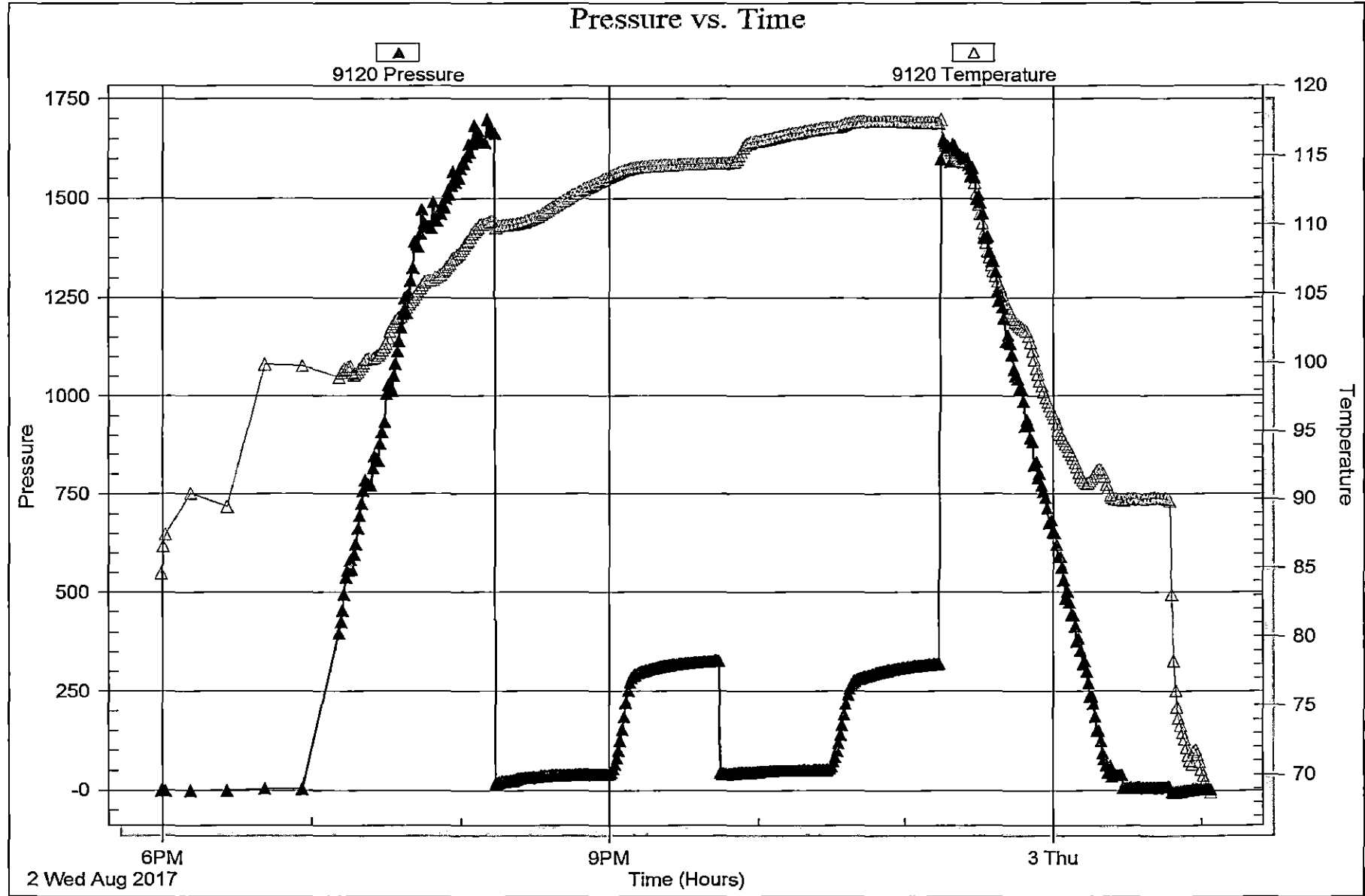
Laboratory Name:

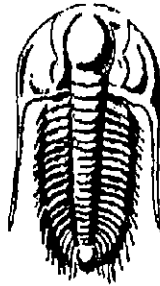
Laboratory Location:

Recovery Comments: 2#LCM

RW= .139@70degrees







**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Prepared For: **DNOC**

PO Box 1019  
Hays KS 67601

ATTN: Marc Downing

**Herbert West #2-19**

**19-13S-21W Trego,KS**

Start Date: 2017.08.03 @ 10:26:00

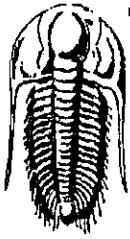
End Date: 2017.08.03 @ 15:28:30

Job Ticket #: 63026                      DST #: 2

Trilobite Testing, Inc

1515 Commerce Parkway Hays, KS 67601

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

DNOC  
PO Box 1019  
Hays KS 67601  
ATTN: Marc Downing

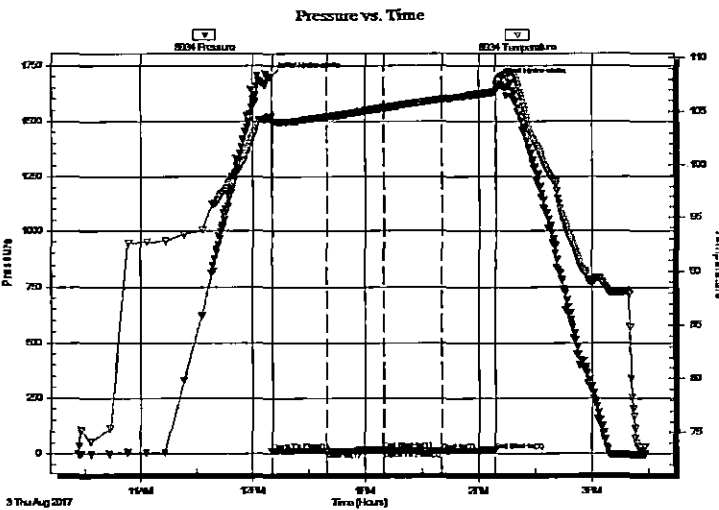
**19-13S-21W Trego, KS**  
**Herbert West #2-19**  
Job Ticket: 63026      **DST#: 2**  
Test Start: 2017.08.03 @ 10:26:00

## GENERAL INFORMATION:

Formation: **LKC 'C - D'**  
Deviated: No Whipstock:                      ft (KB)  
Time Tool Opened: 12:10:30  
Time Test Ended: 15:28:30  
Interval: **3590.00 ft (KB) To 3634.00 ft (KB) (TVD)**  
Total Depth: 3634.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Reference Elevations: 2229.00 ft (KB)  
2222.00 ft (CF)  
KB to GR/CF: 7.00 ft

**Serial #: 8934      Inside**  
Press@RunDepth: 12.76 psig @ 3597.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2017.08.03      End Date: 2017.08.03      Last Calib.: 2017.08.03  
Start Time: 10:26:15      End Time: 15:28:30      Time On Btm: 2017.08.03 @ 12:10:15  
Time Off Btm: 2017.08.03 @ 14:10:00

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



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1699.92	104.51	Initial Hydro-static
1	13.03	103.92	Open To Flow (1)
29	14.21	104.48	Shut-In(1)
59	17.73	105.30	End Shut-In(1)
60	12.60	105.32	Open To Flow (2)
90	12.76	106.13	Shut-In(2)
119	16.23	106.84	End Shut-In(2)
120	1672.71	107.70	Final Hydro-static

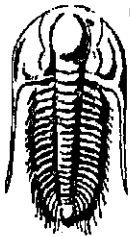
## Recovery

Length (ft)	Description	Volume (bbl)
1.00	Mud 100%M	0.00

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

DNOC

19-13S-21W Trego,KS

PO Box 1019  
Hays KS 67601

**Herbert West #2-19**

Job Ticket: 63026

**DST#: 2**

ATTN: Marc Downing

Test Start: 2017.08.03 @ 10:26:00

### GENERAL INFORMATION:

Formation: **LKC 'C - D'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:10:30

Time Test Ended: 15:28:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Spencer J. Staab

Unit No: 84

Interval: **3590.00 ft (KB) To 3634.00 ft (KB) (TVD)**

Reference Elevations: 2229.00 ft (KB)

Total Depth: 3634.00 ft (KB) (TVD)

2222.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 7.00 ft

**Serial #: 9120**

Inside

Press@RunDepth: psig @ 3597.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.08.03

End Date:

2017.08.03

Last Calib.:

2017.08.03

Start Time: 10:26:15

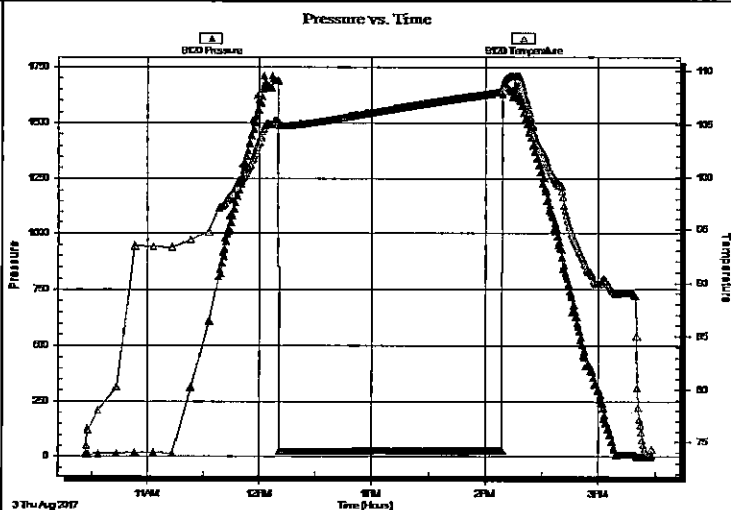
End Time:

15:28:30

Time On Btm:

Time Off Btm:

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



### PRESSURE SUMMARY

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

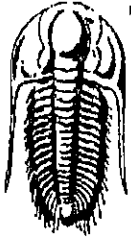
### Recovery

Length (ft)	Description	Volume (bbl)
1.00	Mud 100%M	0.00

### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

TOOL DIAGRAM

DNOC

19-13S-21W Trego, KS

PO Box 1019  
Hays KS 67601

Herbert West #2-19

Job Ticket: 63026

DST#: 2

ATTN: Marc Downing

Test Start: 2017.08.03 @ 10:26:00

## Tool Information

Drill Pipe:	Length: 3547.00 ft	Diameter: 3.80 inches	Volume: 49.76 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 32.00 ft	Diameter: 2.25 inches	Volume: 0.16 bbl	Weight to Pull Loose: 60000.00 lb
		Total Volume: - bbl		Tool Chased 0.00 ft
Drill Pipe Above KB:	9.00 ft			String Weight: Initial 57000.00 lb
Depth to Top Packer:	3590.00 ft			Final 57000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	44.00 ft			
Tool Length:	64.00 ft			
Number of Packers:	1	Diameter: 6.75 inches		

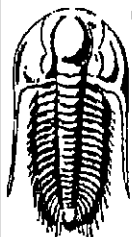
Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3571.00	
Shut In Tool	5.00			3576.00	
Hydraulic tool	5.00			3581.00	
Packer	5.00			3586.00	20.00 Bottom Of Top Packer
Packer	4.00			3590.00	
Stubb	1.00			3591.00	
Perforations	5.00			3596.00	
Change Over Sub	1.00			3597.00	
Recorder	0.00	9120	Inside	3597.00	
Recorder	0.00	8934	Inside	3597.00	
Drill Pipe	32.00			3629.00	
Change Over Sub	1.00			3630.00	
Bullnose	4.00			3634.00	44.00 Bottom Packers & Anchor

**Total Tool Length: 64.00**





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

DNOC

19-13S-21W Trego,KS

PO Box 1019  
Hays KS 67601

Herbert West #2-19

Job Ticket: 63026

DST#: 2

ATTN: Marc Downing

Test Start: 2017.08.03 @ 10:26:00

## 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: 48.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.59 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 50000.00 ppm			
Filter Cake: inches			

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1.00	Mud 100%M	0.005

Total Length: 1.00 ft      Total Volume: 0.005 bbl

Num Fluid Samples: 0

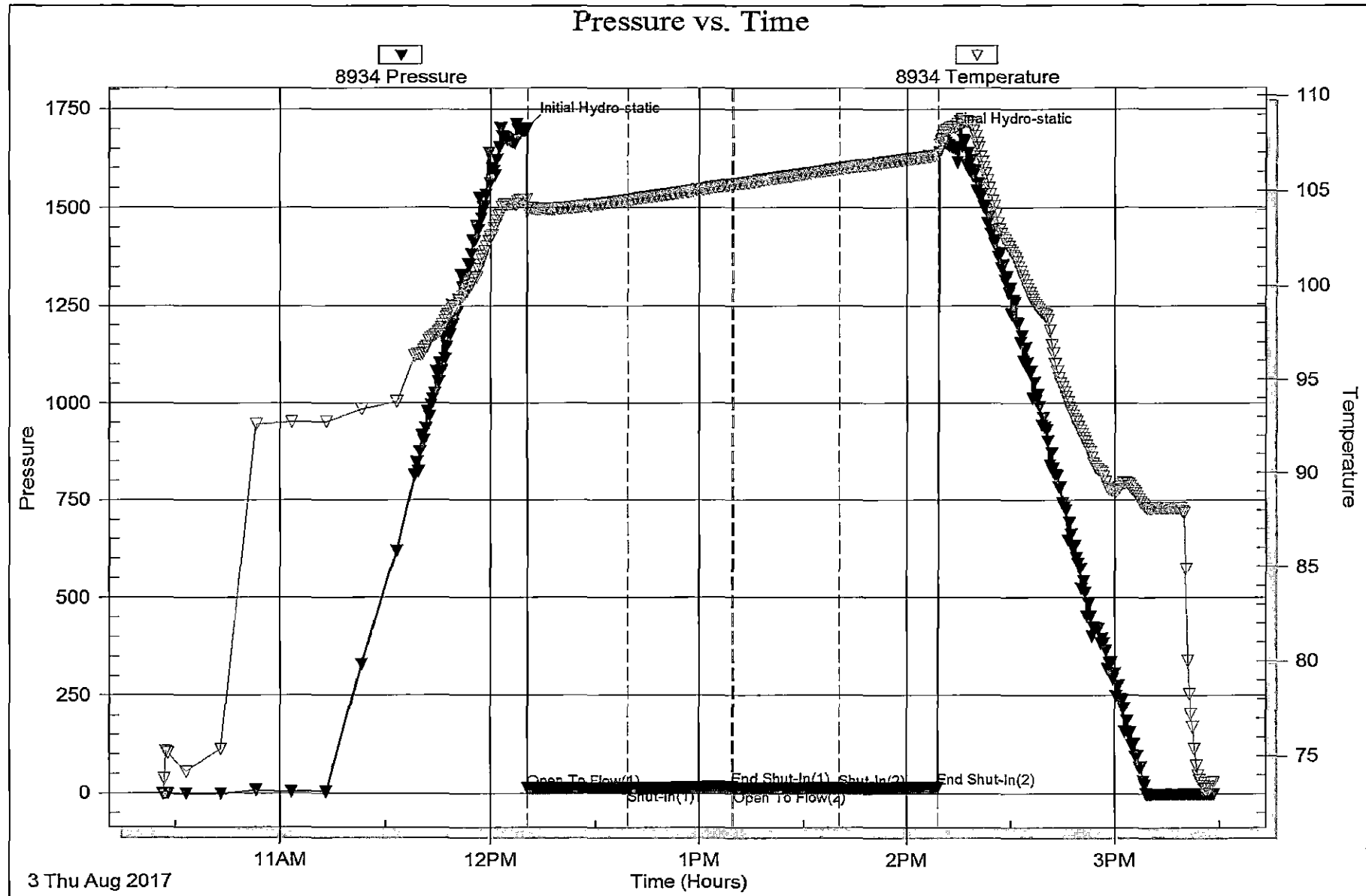
Num Gas Bombs: 0

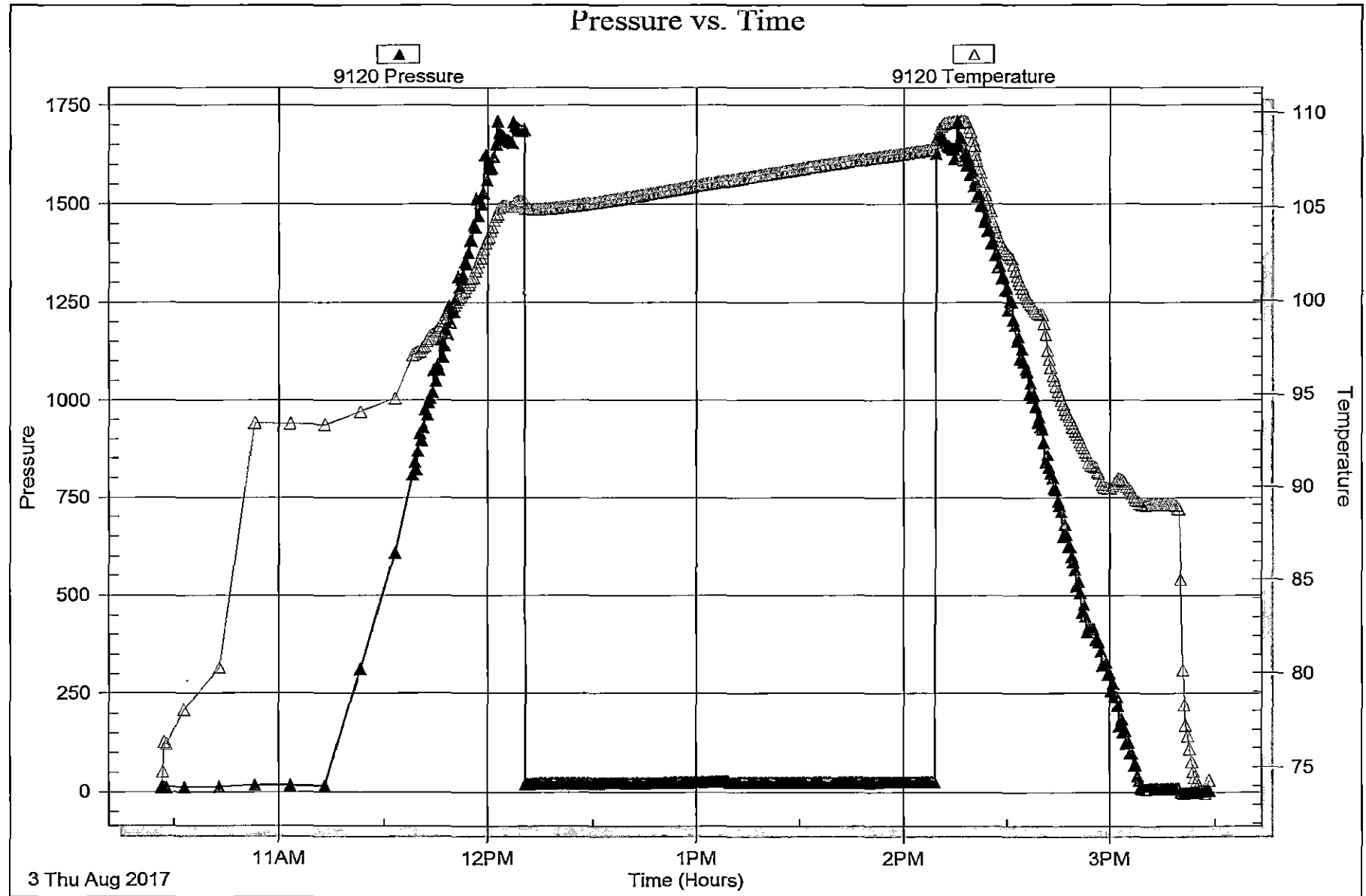
Serial #:

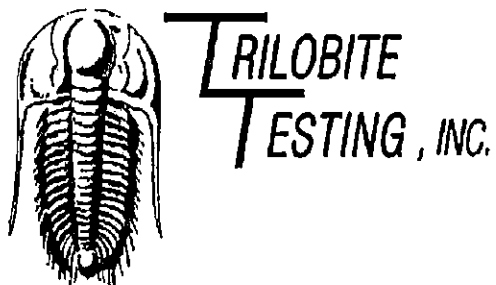
Laboratory Name:

Laboratory Location:

Recovery Comments: 2#LCM







## DRILL STEM TEST REPORT

Prepared For: **DNOC**

PO Box 1019  
Hays KS 67601

ATTN: Marc Downing

**Herbert West #2-19**

**19-13S-21W Trego,KS**

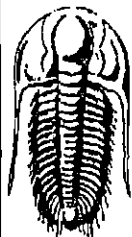
Start Date: 2017.08.04 @ 04:41:00

End Date: 2017.08.04 @ 10:51:45

Job Ticket #: 63027                      DST #: 3

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

Printed: 2017.08.07 @ 15:45:29



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

DNOC

19-13S-21W Trego, KS

PO Box 1019  
Hays KS 67601

Herbert West #2-19

Job Ticket: 63027

DST#: 3

ATTN: Marc Downing

Test Start: 2017.08.04 @ 04:41:00

## GENERAL INFORMATION:

Formation: **LKC 'H - J'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:38:45

Time Test Ended: 10:51:45

Interval: **3688.00 ft (KB) To 3767.00 ft (KB) (TVD)**

Total Depth: 3595.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Test Type: Conventional Bottom Hole (Reset)

Tester: Spencer J. Staab

Unit No: 84

Reference Elevations: 2229.00 ft (KB)

2222.00 ft (CF)

KB to GR/CF: 7.00 ft

Serial #: 8934

Inside

Press@RunDepth: 83.10 psig @ 3699.00 ft (KB)

Start Date: 2017.08.04

End Date:

2017.08.04

Start Time: 04:41:15

End Time:

10:51:45

Capacity: 8000.00 psig

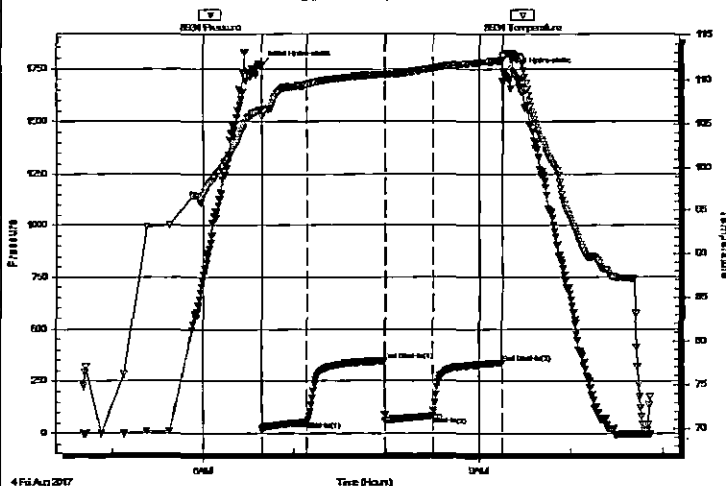
Last Calib.: 2017.08.04

Time On Btm: 2017.08.04 @ 06:38:30

Time Off Btm: 2017.08.04 @ 09:16:00

**TEST COMMENT:** 30-IF-Fair Blow ; BOB in 13 mins  
45-ISI-Weak Blow ; Built to 1/4"  
30-FF-Fair Blow ; BOB in 20 mins  
45-FSI-Weak Surface Blow

Pressure vs. Time



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1765.54	106.71	Initial Hydro-static
1	21.52	105.83	Open To Flow (1)
30	56.69	109.46	Shut-In(1)
81	346.74	110.66	End Shut-In(1)
81	58.83	110.58	Open To Flow (2)
112	83.10	111.25	Shut-In(2)
157	337.52	112.15	End Shut-In(2)
158	1736.06	112.70	Final Hydro-static

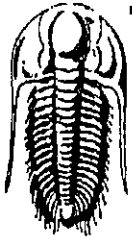
## Recovery

Length (ft)	Description	Volume (bbl)
60.00	GOCM 5%G 5%O 90%M	0.55
70.00	GOCM 5%G 10%O 85%M	0.98
10.00	MCO 10%M 90%O	0.14
0.00	280 GIP	0.00

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE TESTING, INC.**

**DRILL STEM TEST REPORT**

DNOC  
PO Box 1019  
Hays KS 67601  
  
ATTN: Marc Downing

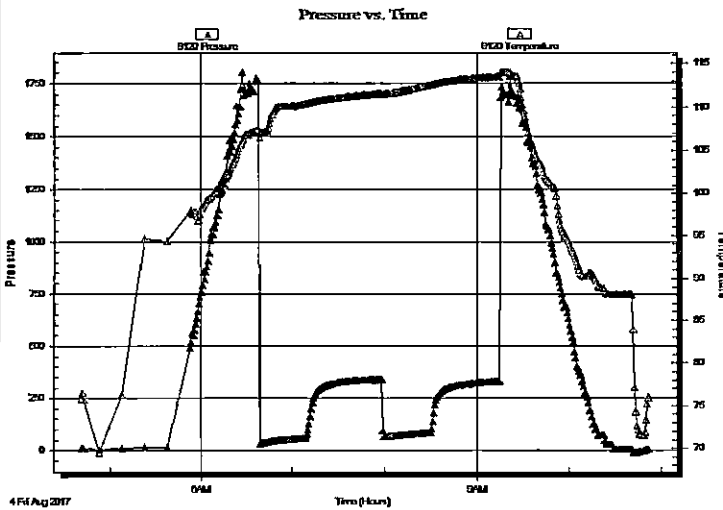
**19-13S-21W Trego,KS**  
**Herbert West #2-19**  
Job Ticket: 63027      **DST#: 3**  
Test Start: 2017.08.04 @ 04:41:00

**GENERAL INFORMATION:**

Formation: **LKC 'H - J'**  
Deviated: No Whipstock: ft (KB)      Test Type: Conventional Bottom Hole (Reset)  
Time Tool Opened: 06:38:45      Tester: Spencer J. Staab  
Time Test Ended: 10:51:45      Unit No: 84  
  
Interval: **3688.00 ft (KB) To 3767.00 ft (KB) (TVD)**      Reference Elevations: 2229.00 ft (KE)  
Total Depth: 3595.00 ft (KB) (TVD)      2222.00 ft (CF)  
Hole Diameter: 7.88 inches Hole Condition: Fair      KB to GR/CF: 7.00 ft

**Serial #: 9120      Inside**  
Press@RunDepth: psig @ 3699.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2017.08.04      End Date: 2017.08.04      Last Calib.: 2017.08.04  
Start Time: 04:41:15      End Time: 10:51:45      Time On Btm:  
Time Off Btm:

**TEST COMMENT:** 30-IF-Fair Blow; BOB in 13 mins  
45-ISI-Weak Blow; Built to 1/4"  
30-FF-Fair Blow; BOB in 20 mins  
45-FSI-Weak Surface Blow



**PRESSURE SUMMARY**

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

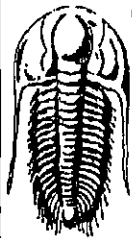
**Recovery**

Length (ft)	Description	Volume (bbl)
60.00	GOCM 5%G 5%O 90%M	0.55
70.00	GOCM 5%G 10%O 85%M	0.98
10.00	MCO 10%M 90%O	0.14
0.00	280 GIP	0.00

**Gas Rates**

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

DNOC

19-13S-21W Trego,KS

PO Box 1019  
Hays KS 67601

Herbert West #2-19

Job Ticket: 63027

DST#: 3

ATTN: Marc Downing

Test Start: 2017.08.04 @ 04:41:00

## Tool Information

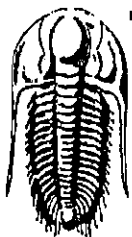
Drill Pipe:	Length: 3644.00 ft	Diameter: 3.80 inches	Volume: 51.12 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 32.00 ft	Diameter: 2.25 inches	Volume: 0.16 bbl	Weight to Pull Loose: 61000.00 lb
			Total Volume: - bbl	Tool Chased 0.00 ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3688.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	79.00 ft			
Tool Length:	99.00 ft			
Number of Packers:	1	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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	9.00			3698.00	
Change Over Sub	1.00			3699.00	
Recorder	0.00	9120	Inside	3699.00	
Recorder	0.00	8934	Inside	3699.00	
Drill Pipe	63.00			3762.00	
Change Over Sub	1.00			3763.00	
Bullnose	4.00			3767.00	79.00 Bottom Packers & Anchor

**Total Tool Length: 99.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

DNOC

19-13S-21W Trego,KS

PO Box 1019  
Hays KS 67601

Herbert West #2-19

Job Ticket: 63027

DST#: 3

ATTN: Marc Downing

Test Start: 2017.08.04 @ 04:41:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

22 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 5500.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
60.00	GOCM 5%G 5%O 90%M	0.550
70.00	GOCM 5%G 10%O 85%M	0.982
10.00	MCO 10%M 90%O	0.140
0.00	280 GIP	0.000

Total Length: 140.00 ft

Total Volume: 1.672 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

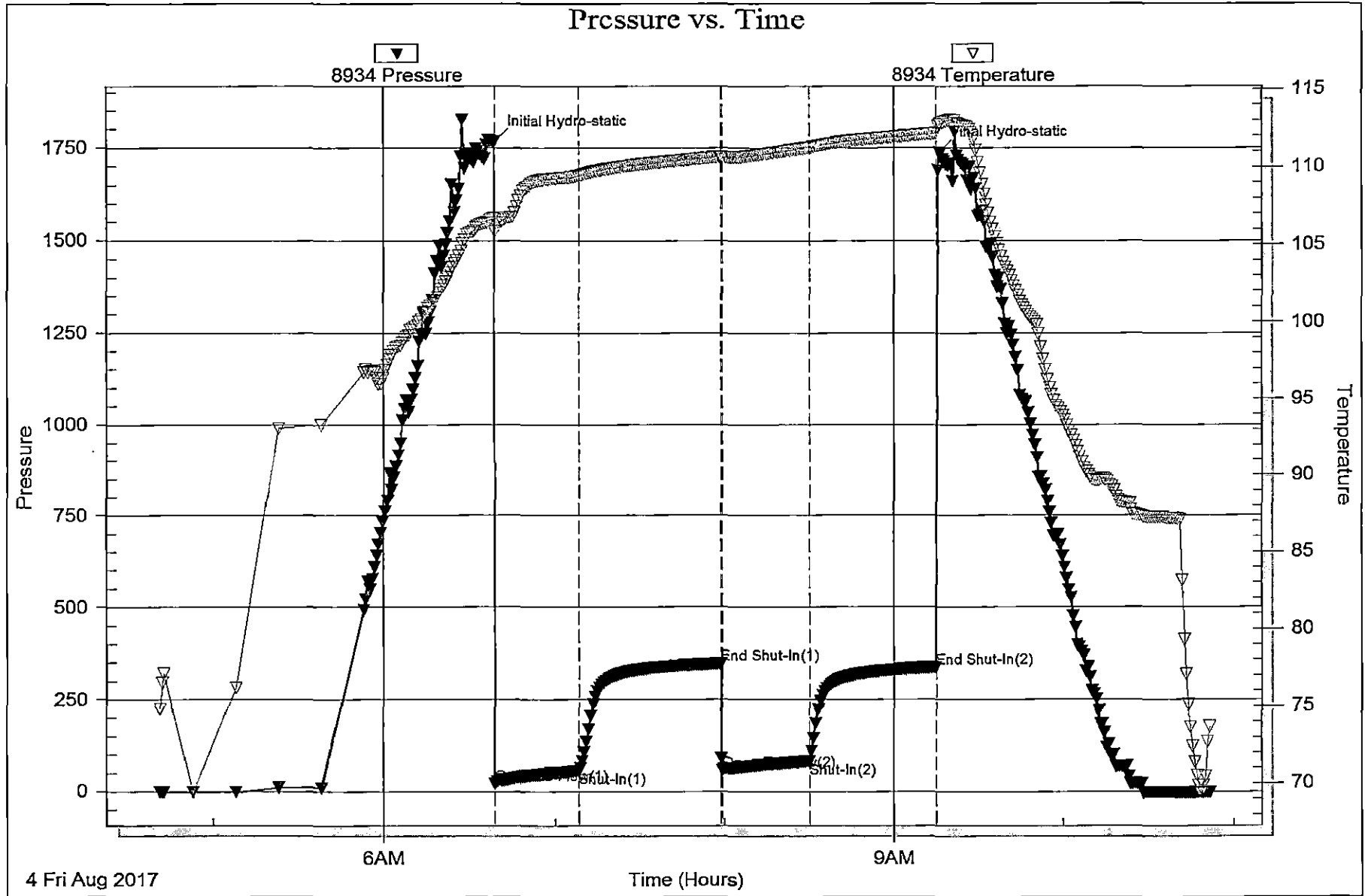
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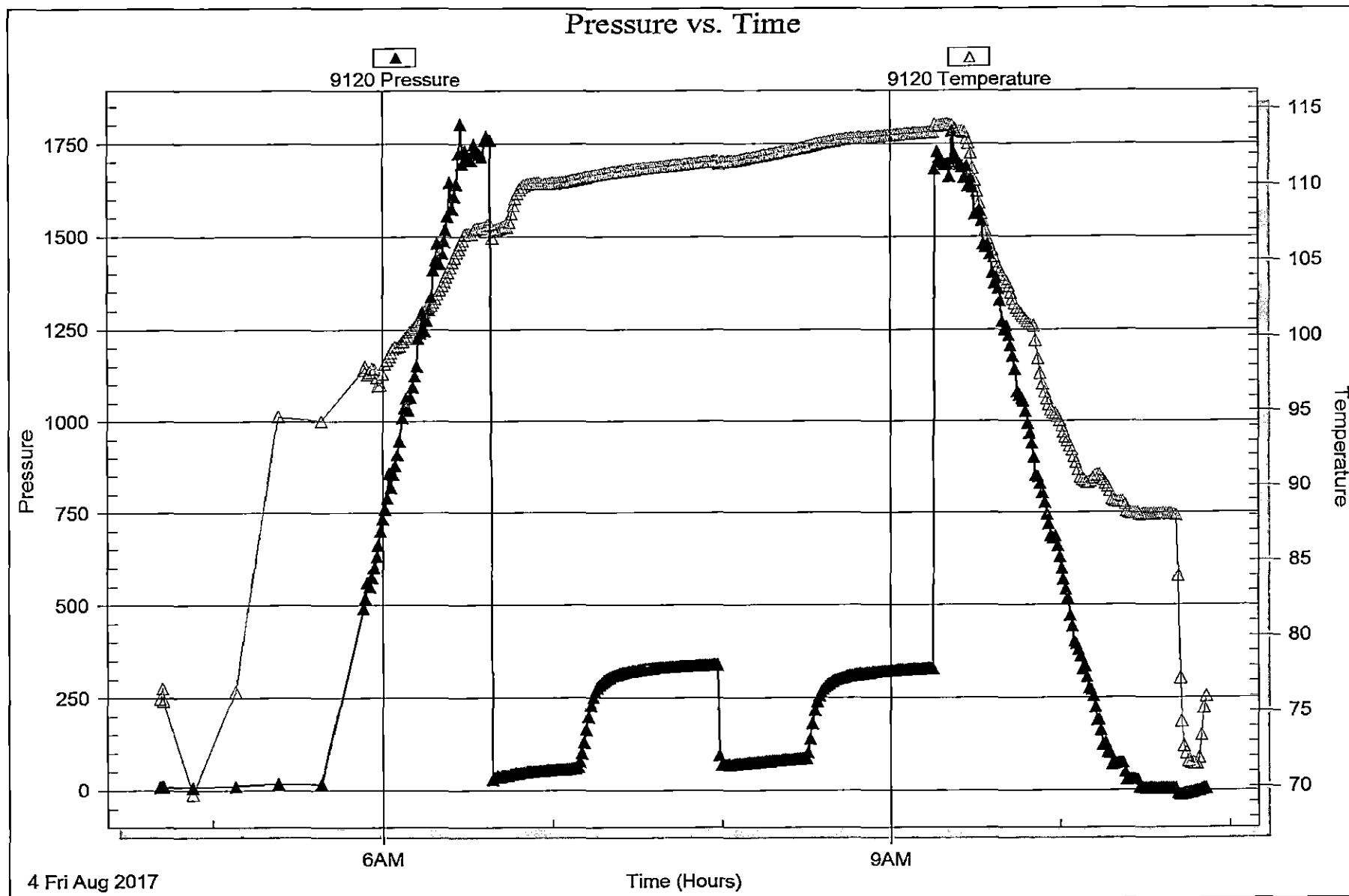
Laboratory Name:

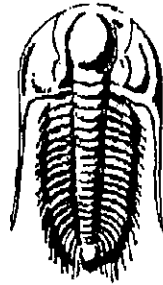
Laboratory Location:

Recovery Comments: 2#LCM









**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Prepared For: **DNOC**

PO Box 1019  
Hays KS 67601

ATTN: Marc Downing

**Herbert West #2-19**

**19-13S-21W Trego,KS**

Start Date: 2017.08.05 @ 07:37:00

End Date: 2017.08.05 @ 14:07:15

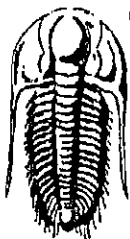
Job Ticket #: 63028                      DST #: 4

Trilobite Testing, Inc

1515 Commerce Parkway Hays, KS 67601

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

Printed: 2017.08.07 @ 15:34:28



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

DNOC  
 PO Box 1019  
 Hays KS 67601  
 ATTN: Marc Downing

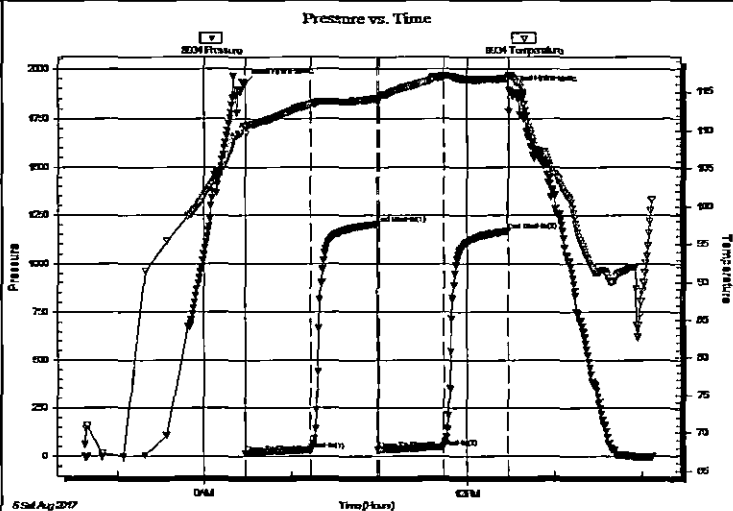
19-13S-21W Trego,KS  
 Herbert West #2-19  
 Job Ticket: 63028      **DST#: 4**  
 Test Start: 2017.08.05 @ 07:37:00

## GENERAL INFORMATION:

Formation: **Conglomerate Sand**  
 Deviated: No Whipstock:      ft (KB)  
 Test Type: Conventional Bottom Hole (Reset)  
 Time Tool Opened: 09:28:45      Tester: Spencer J. Staab  
 Time Test Ended: 14:07:15      Unit No: 84  
 Interval: **3944.00 ft (KB) To 3972.00 ft (KB) (TVD)**      Reference Elevations: 2229.00 ft (KB)  
 Total Depth: 3972.00 ft (KB) (TVD)      2222.00 ft (CF)  
 Hole Diameter: 7.88 inches Hole Condition: Fair      KB to GR/CF: 7.00 ft

**Serial #: 8934**      **Outside**  
 Press@RunDepth: 48.42 psig @ 3949.00 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2017.08.05      End Date: 2017.08.05      Last Calib.: 2017.08.05  
 Start Time: 07:37:15      End Time: 14:07:15      Time On Btm: 2017.08.05 @ 09:28:30  
 Time Off Btm: 2017.08.05 @ 12:29:15

**TEST COMMENT:** 45-IF-Fair Blow ; Built to 6"  
 45-ISI-No Return  
 45-FF-Fair Blow ; Built to 5 1/2"  
 45-FSI-Weak Surface Blow ; Died in 20 mins



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1925.63	110.66	Initial Hydro-static
1	14.15	109.51	Open To Flow (1)
45	32.59	113.41	Shut-In(1)
91	1200.83	114.09	End Shut-In(1)
92	34.26	114.11	Open To Flow (2)
136	48.42	116.97	Shut-In(2)
180	1166.36	116.72	End Shut-In(2)
181	1892.51	117.04	Final Hydro-static

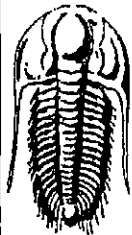
## Recovery

Length (ft)	Description	Volume (bbl)
30.00	GCMO 5%G 30%M 65%O	0.15
60.00	MCOGO 5%M 10%G 85%O	0.82
0.00	30' GIP	0.00

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE TESTING, INC.**

## DRILL STEM TEST REPORT

DNOC  
PO Box 1019  
Hays KS 67601  
ATTN: Marc Downing

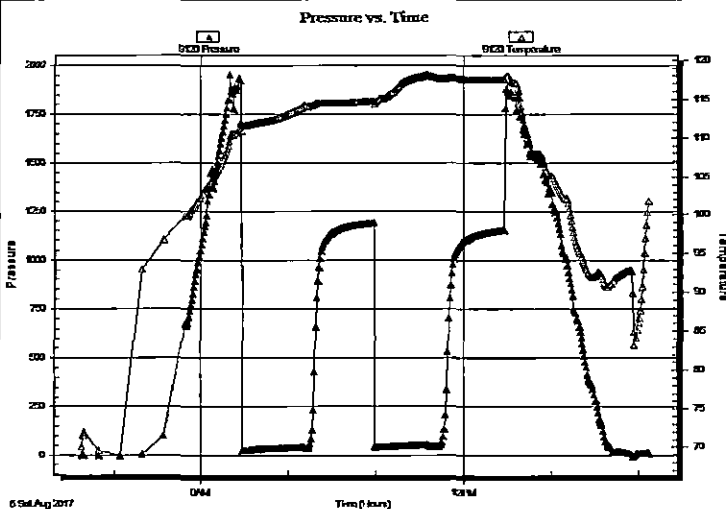
**19-13S-21W Trego,KS**  
**Herbert West #2-19**  
Job Ticket: 63028      **DST#: 4**  
Test Start: 2017.08.05 @ 07:37:00

### GENERAL INFORMATION:

Formation: **Conglomerate Sand**  
Deviated: No Whipstock:      ft (KB)  
Time Tool Opened: 09:28:45  
Time Test Ended: 14:07:15  
Interval: **3944.00 ft (KB) To 3972.00 ft (KB) (TVD)**  
Total Depth: 3972.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole (Resat)  
Tester: Spencer J. Staab  
Unit No: 84  
Reference Elevations: 2229.00 ft (KB)  
2222.00 ft (CF)  
KB to GR/CF: 7.00 ft

**Serial #: 9120      Inside**  
Press@RunDepth:      psig @ 3949.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2017.08.05      End Date: 2017.08.05      Last Calib.: 2017.08.05  
Start Time: 07:37:15      End Time: 14:07:15      Time On Btm:  
Time Off Btm:

**TEST COMMENT:** 45-IF-Fair Blow ; Built to 6"  
45-ISI-No Return  
45-FF-Fair Blow ; Built to 5 1/2"  
45-FSI-Weak Surface Blow ; Died in 20 mins



### PRESSURE SUMMARY

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

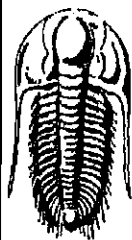
### Recovery

Length (ft)	Description	Volume (bbl)
30.00	GCMO 5%G 30%M 65%O	0.15
60.00	MCOO 5%M 10%G 85%O	0.82
0.00	30' GIP	0.00

### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

DNOC

**19-13S-21W Trego,KS**

PO Box 1019  
Hays KS 67601

**Herbert West #2-19**

Job Ticket: 63028

**DST#: 4**

ATTN: Marc Downing

Test Start: 2017.08.05 @ 07:37:00

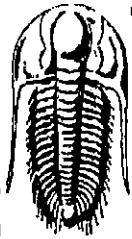
### Tool Information

Drill Pipe:	Length: 3896.00 ft	Diameter: 3.80 inches	Volume: 54.65 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 32.00 ft	Diameter: 2.25 inches	Volume: 0.16 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	4.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	3944.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	28.00 ft			
Tool Length:	48.00 ft			
Number of Packers:	1	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3925.00	
Shut In Tool	5.00			3930.00	
Hydraulic tool	5.00			3935.00	
Packer	5.00			3940.00	20.00 Bottom Of Top Packer
Packer	4.00			3944.00	
Stubb	1.00			3945.00	
Perforations	4.00			3949.00	
Recorder	0.00	9120	Inside	3949.00	
Recorder	0.00	8934	Outside	3949.00	
Perforations	19.00			3968.00	
Bullnose	4.00			3972.00	28.00 Bottom Packers & Anchor

**Total Tool Length: 48.00**



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

**FLUID SUMMARY**

DNOC

19-13S-21W Trego,KS

PO Box 1019  
Hays KS 67601

Herbert West #2-19

Job Ticket: 63028

DST#: 4

ATTN: Marc Downing

Test Start: 2017.08.05 @ 07:37:00

**Mud and Cushion Information**

Mud Type: Gel Chem  
Mud Weight: 9.00 lb/gal  
Viscosity: 52.00 sec/qt  
Water Loss: 7.59 in<sup>3</sup>  
Resistivity: ohm.m  
Salinity: 5500.00 ppm  
Filter Cake: inches

Cushion Type:  
Cushion Length: ft  
Cushion Volume: bbl  
Gas Cushion Type:  
Gas Cushion Pressure: psig

Oil API: 34 deg API  
Water Salinity: ppm

**Recovery Information**

Recovery Table

Length ft	Description	Volume bbl
30.00	GCMO 5%G 30%M 65%O	0.148
60.00	MCGO 5%M 10%G 85%O	0.823
0.00	30' GIP	0.000

Total Length: 90.00 ft      Total Volume: 0.971 bbl

Num Fluid Samples: 0

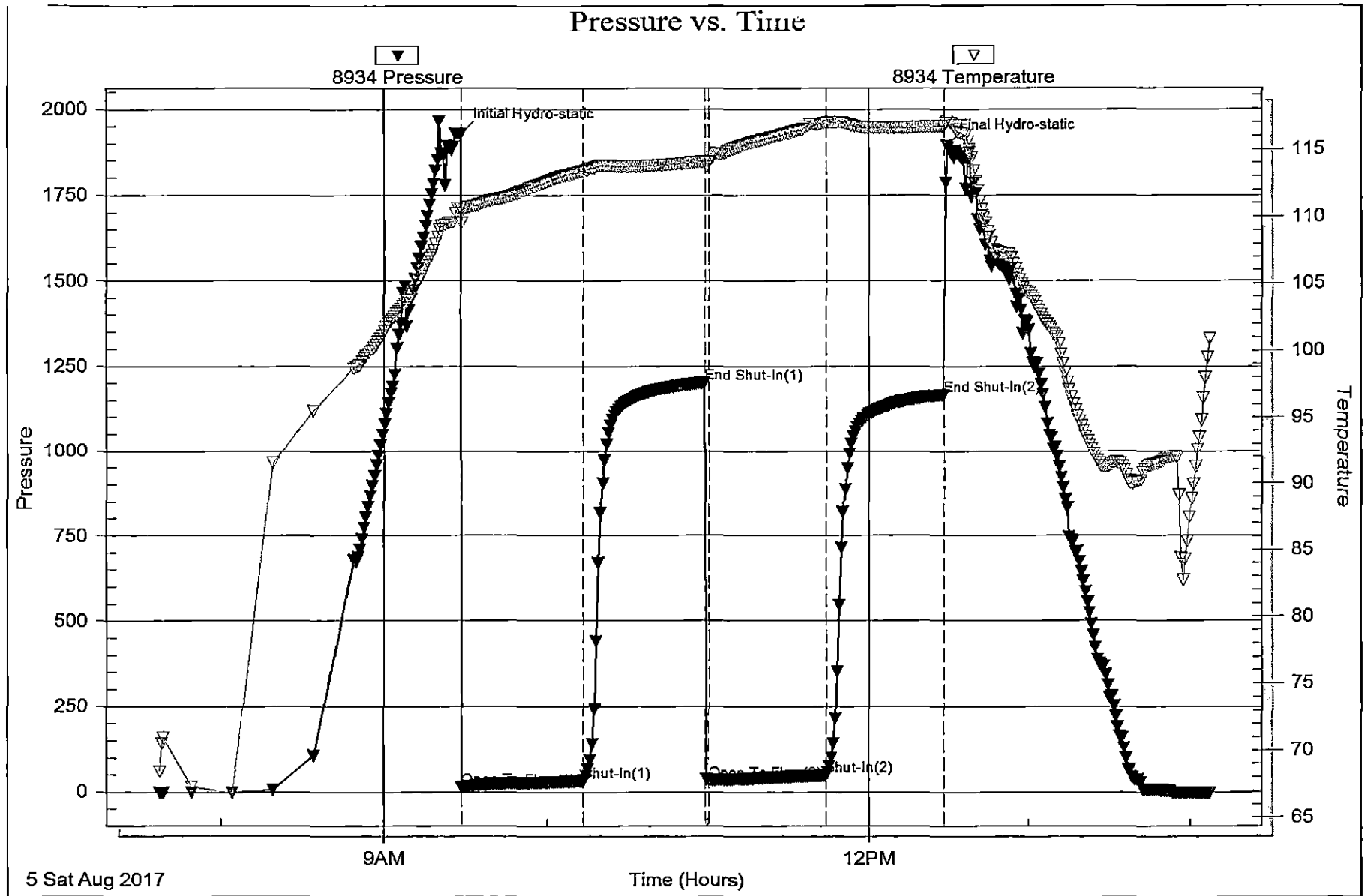
Num Gas Bombs: 0

Serial #:

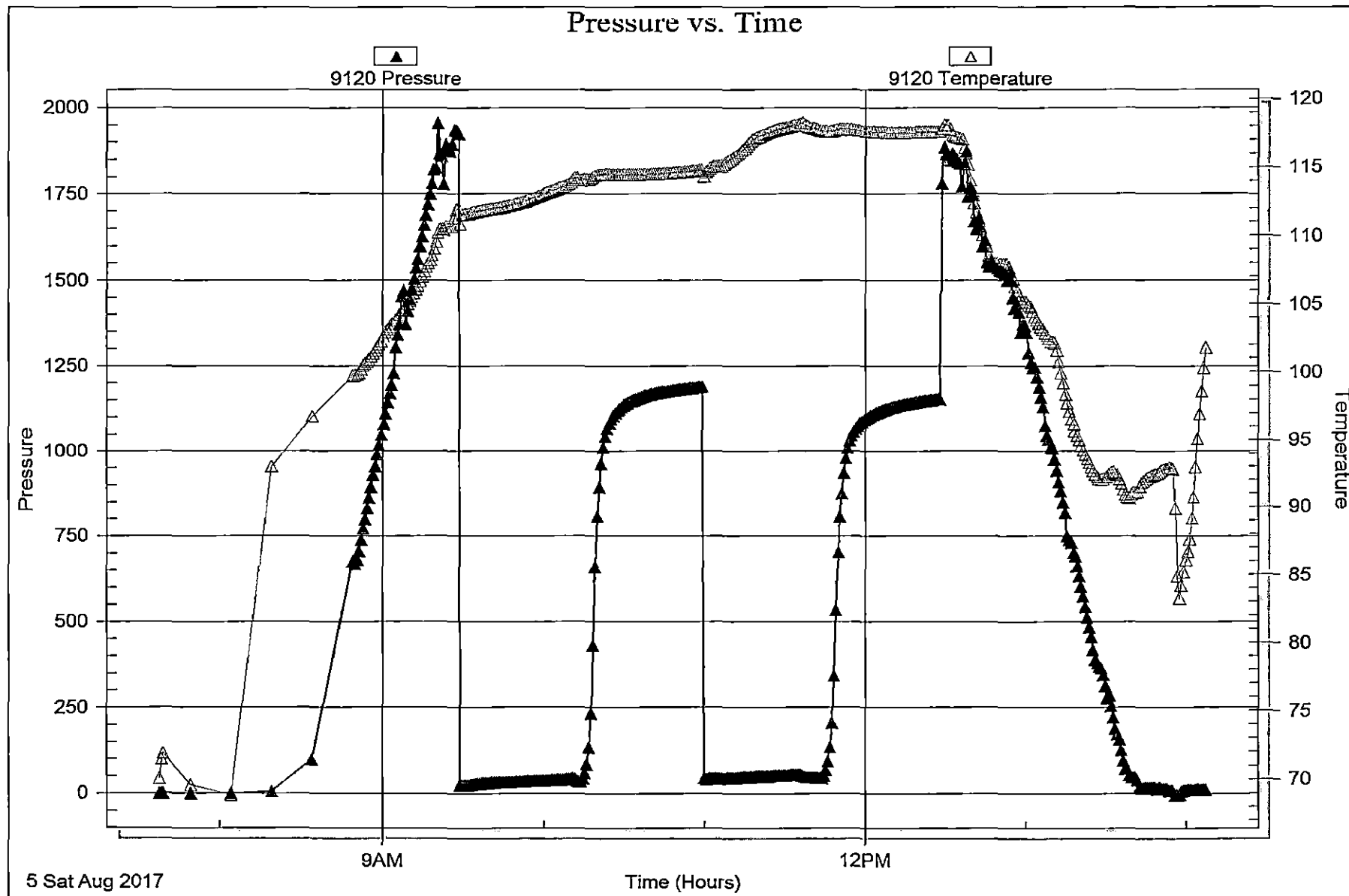
Laboratory Name:

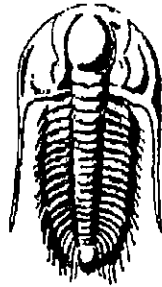
Laboratory Location:

Recovery Comments: 2#LCM









**TRILOBITE  
TESTING, INC.**

## DRILL STEM TEST REPORT

Prepared For: **DNOC**

PO Box 1019  
Hays KS 67601

ATTN: Marc Downing

**Herbert West #2-19**

**19-13S-21W Trego,KS**

Start Date: 2017.08.05 @ 20:46:00

End Date: 2017.08.06 @ 03:23:30

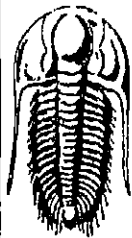
Job Ticket #: 63029                      DST #: 5

Trilobite Testing, Inc

1515 Commerce Parkway Hays, KS 67601

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

Printed: 2017.08.07 @ 15:33:24



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

DNOC

19-13S-21W Trego,KS

PO Box 1019  
Hays KS 67601

Herbert West #2-19

Job Ticket: 63029

DST#: 5

ATTN: Marc Downing

Test Start: 2017.08.05 @ 20:46:00

## GENERAL INFORMATION:

Formation: **Conglomerate Sand #2**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:31:00

Time Test Ended: 03:23:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Spencer J. Staab

Unit No: 84

Interval: **3944.00 ft (KB) To 3994.00 ft (KB) (TVD)**

Total Depth: 3595.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2229.00 ft (KB)

2222.00 ft (CF)

KB to GR/CF: 7.00 ft

Serial #: 8934

Inside

Press@RunDepth: 127.82 psig @ 3957.00 ft (KB)

Start Date: 2017.08.05

End Date:

2017.08.06

Start Time: 20:46:15

End Time:

03:23:30

Capacity: 8000.00 psig

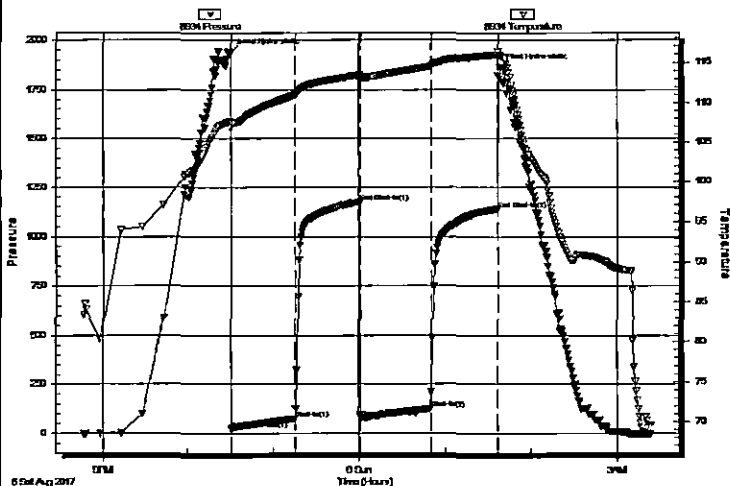
Last Calib.: 2017.08.06

Time On Btm: 2017.08.05 @ 22:30:45

Time Off Btm: 2017.08.06 @ 01:38:15

TEST COMMENT: 45-IF-Strong Blow ; BOB in 25 mins  
45-ISI-No Return  
45-FF-Strong Blow ; BOB in 29 mins  
45-FSI-Weak Surface Blow ; Died 15 mins in

Pressure vs. Time



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1933.16	107.65	Initial Hydro-static
1	23.18	106.87	Open To Flow (1)
45	77.13	110.92	Shut-In(1)
90	1171.61	113.38	End Shut-In(1)
91	81.63	113.04	Open To Flow (2)
140	127.82	114.51	Shut-In(2)
186	1135.89	115.96	End Shut-In(2)
188	1860.84	115.85	Final Hydro-static

## Recovery

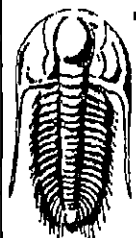
Length (ft)	Description	Volume (bbl)
90.00	MCO 30%M 20%G 50%O	0.97
80.00	MCO 30%M 70%O	1.12
110.00	Gassy Oil 10%G 90%O	1.54
0.00	270' GIP	0.00

## Gas Rates

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

\* Recovery from multiple tests





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

DNOC

**19-13S-21W Trego,KS**

PO Box 1019  
Hays KS 67601

**Herbert West #2-19**

Job Ticket: 63029

**DST#: 5**

ATTN: Marc Downing

Test Start: 2017.08.05 @ 20:46:00

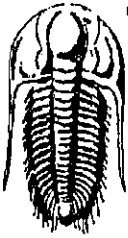
## Tool Information

Drill Pipe:	Length: 3897.00 ft	Diameter: 3.80 inches	Volume: 54.66 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 32.00 ft	Diameter: 2.25 inches	Volume: 0.16 bbl	Weight to Pull Loose: 64000.00 lb
		<u>Total Volume:</u>	- bbl	Tool Chased 0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	3944.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	50.00 ft			
Tool Length:	70.00 ft			
Number of Packers:	1	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3925.00	
Shut In Tool	5.00			3930.00	
Hydraulic tool	5.00			3935.00	
Packer	5.00			3940.00	20.00 Bottom Of Top Packer
Packer	4.00			3944.00	
Stubb	1.00			3945.00	
Perforations	11.00			3956.00	
Change Over Sub	1.00			3957.00	
Recorder	0.00	9120	Inside	3957.00	
Recorder	0.00	8934	Inside	3957.00	
Drill Pipe	32.00			3989.00	
Change Over Sub	1.00			3990.00	
Bullnose	4.00			3994.00	50.00 Bottom Packers & Anchor

**Total Tool Length: 70.00**



**TRILOBITE**  
TESTING, INC.

# DRILL STEM TEST REPORT

FLUID SUMMARY

DNOC

19-13S-21W Trego,KS

PO Box 1019  
Hays KS 67601

Herbert West #2-19

Job Ticket: 63029

DST#: 5

ATTN: Marc Downing

Test Start: 2017.08.05 @ 20:46:00

## Mud and Cushion Information

Mud Type: Gel Chem  
Mud Weight: 9.00 lb/gal  
Viscosity: 52.00 sec/qt  
Water Loss: 7.59 in<sup>3</sup>  
Resistivity: ohm.m  
Salinity: 5500.00 ppm  
Filter Cake: inches

Cushion Type:  
Cushion Length: ft  
Cushion Volume: bbl  
Gas Cushion Type:  
Gas Cushion Pressure: psig

Oil API: 37 deg API  
Water Salinity: ppm

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
90.00	MCO 30%M 20%G 50%O	0.971
80.00	MCO 30%M 70%O	1.122
110.00	Gassy Oil 10%G 90%O	1.543
0.00	270' GIP	0.000

Total Length: 280.00 ft      Total Volume: 3.636 bbl

Num Fluid Samples: 0

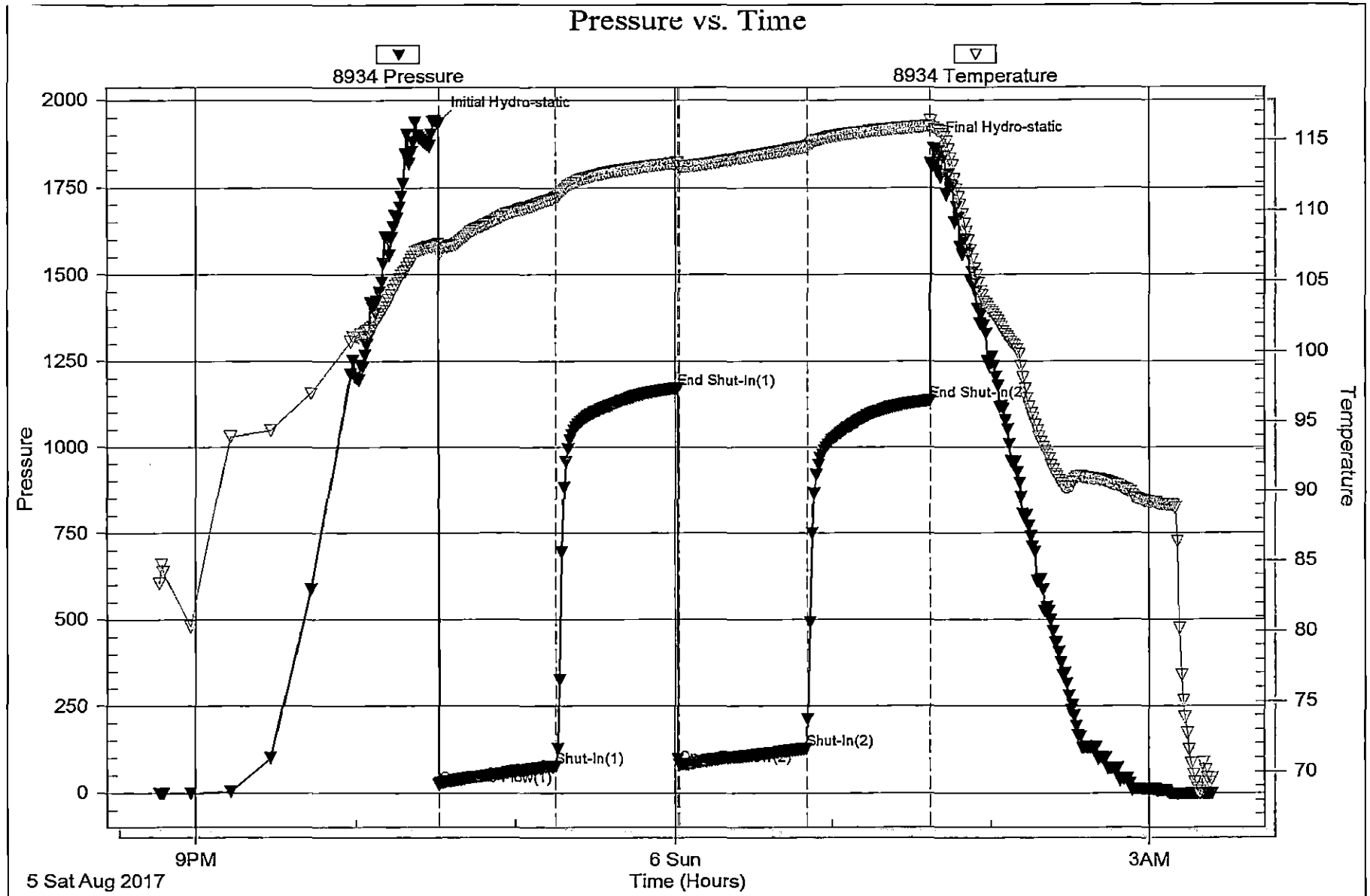
Num Gas Bombs: 0

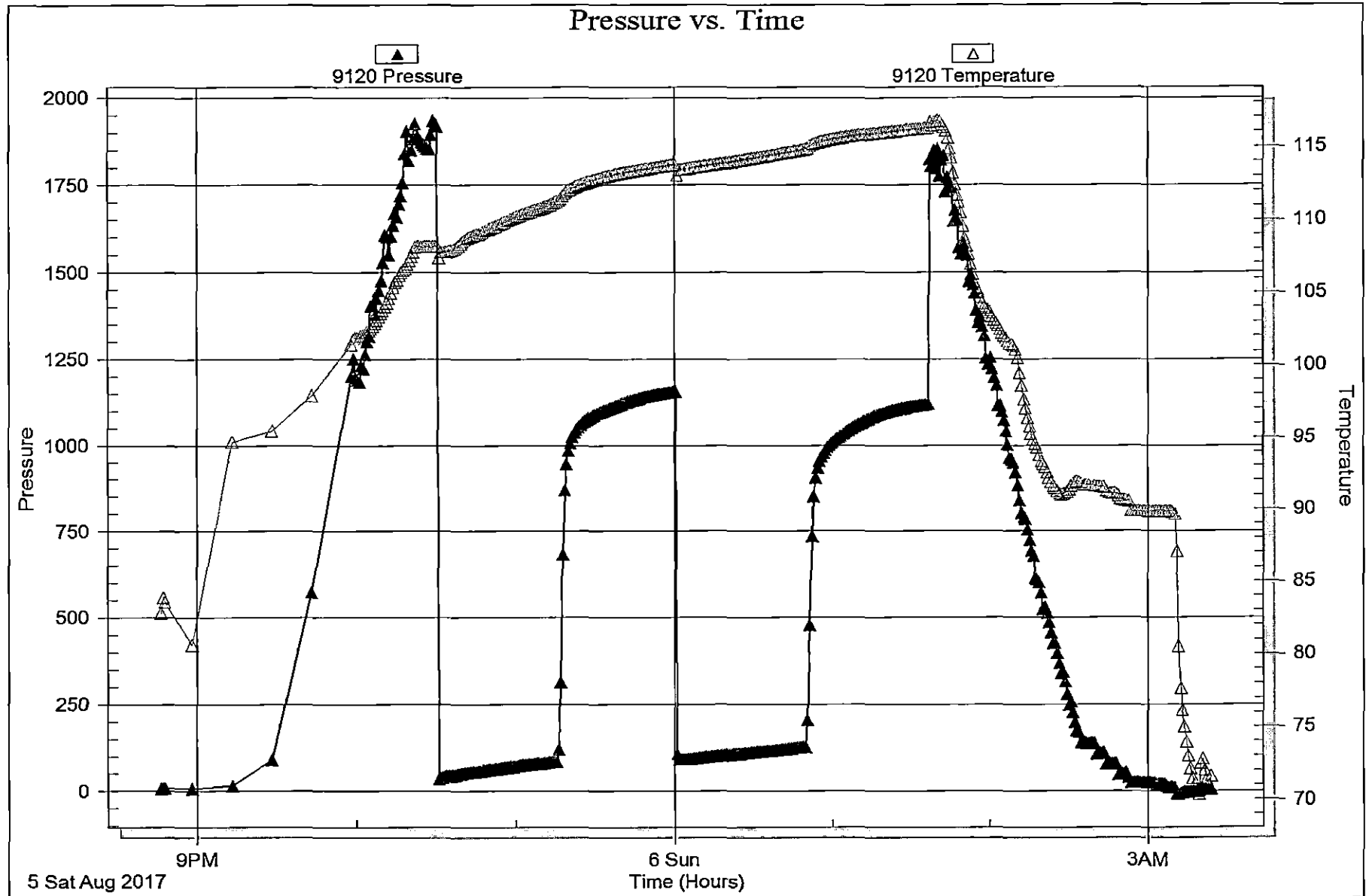
Serial #:

Laboratory Name:

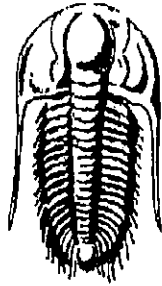
Laboratory Location:

Recovery Comments: 2#LCM









**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Prepared For: **DNOC**

PO Box 1019  
Hays KS 67601

ATTN: Marc Downing

**Herbert West #2-19**

**19-13S-21W Trego,KS**

Start Date: 2017.08.06 @ 09:09:00

End Date: 2017.08.06 @ 16:08:45

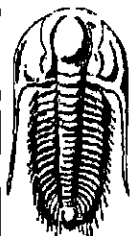
Job Ticket #: 63030                      DST #: 6

Trilobite Testing, Inc

1515 Commerce Parkway Hays, KS 67601

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

Printed: 2017.08.07 @ 15:32:00



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

DNOC  
PO Box 1019  
Hays KS 67601  
ATTN: Marc Downing

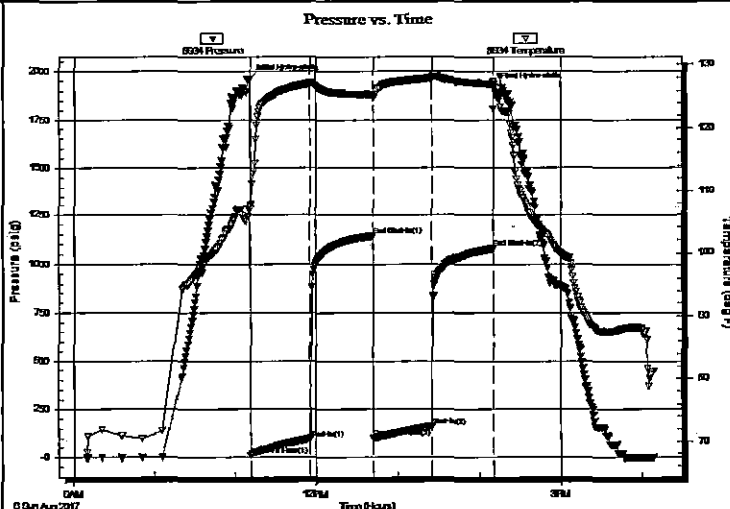
**19-13S-21W Trego, KS**  
**Herbert West #2-19**  
Job Ticket: 63030      **DST#: 6**  
Test Start: 2017.08.06 @ 09:09:00

## GENERAL INFORMATION:

Formation: **Arbuckle**  
Deviated: No      Whipstock:      ft (KB)  
Time Tool Opened: 11:11:45  
Time Test Ended: 16:08:45  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Spencer J. Staab  
Unit No: 84  
Interval: **3995.00 ft (KB) To 4000.00 ft (KB) (TVD)**  
Total Depth: 4000.00 ft (KB) (TVD)  
Reference Elevations: 2229.00 ft (KB)  
Hole Diameter: 7.88 inches      Hole Condition: Fair      KB to GR/CF: 7.00 ft  
2222.00 ft (CF)

**Serial #: 8934      Inside**  
Press@RunDepth: 165.90 psig @ 3996.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2017.08.06      End Date: 2017.08.06      Last Calib.: 2017.08.06  
Start Time: 09:09:15      End Time: 16:08:45      Time On Btm: 2017.08.06 @ 11:11:30  
Time Off Btm: 2017.08.06 @ 14:11:00

**TEST COMMENT:** 45-IF-Fair Blow; BOB in 22 mins  
45-ISI-No Return  
45-FF-Fair Blow; BOB in 30 mins  
45-FSI-No Return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1956.04	107.47	Initial Hydro-static
1	12.99	106.91	Open To Flow (1)
45	99.87	127.10	Shut-In(1)
91	1142.73	125.34	End Shut-In(1)
91	101.37	124.83	Open To Flow (2)
134	165.90	127.92	Shut-In(2)
179	1079.80	126.94	End Shut-In(2)
180	1917.53	126.90	Final Hydro-static

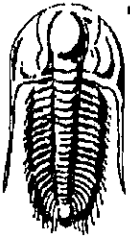
## Recovery

Length (ft)	Description	Volume (bbl)
310.00	Water 100%W	4.06
1.00	Clean Oil 100%O	0.01

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

DNOC  
PO Box 1019  
Hays KS 67601

19-13S-21W Trego,KS

Herbert West #2-19  
Job Ticket: 63030 DST#: 6

ATTN: Marc Downing

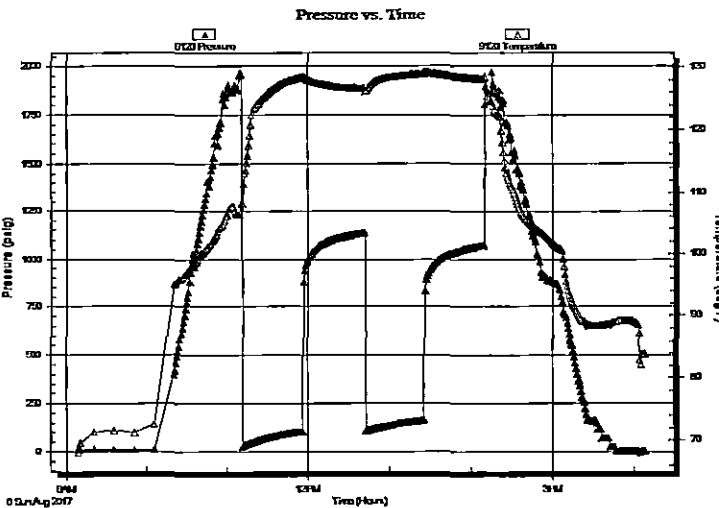
Test Start: 2017.08.06 @ 09:09:00

## GENERAL INFORMATION:

Formation: **Arbuckle**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 11:11:45  
 Time Test Ended: 16:08:45  
 Interval: **3995.00 ft (KB) To 4000.00 ft (KB) (TVD)**  
 Total Depth: 4000.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Spencer J. Staab  
 Unit No: 84  
 Reference Elevations: 2229.00 ft (KB)  
 2222.00 ft (CF)  
 KB to GR/CF: 7.00 ft

Serial #: **9120** Inside  
 Press@RunDepth: psig @ 3996.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2017.08.06 End Date: 2017.08.06 Last Calib.: 2017.08.06  
 Start Time: 09:09:15 End Time: 16:08:45 Time On Btm:  
 Time Off Btm:

TEST COMMENT: 45-IF-Fair Blow; BOB in 22 mins  
 45-IS-No Return  
 45-FF-Fair Blow; BOB in 30 mins  
 45-FSI-No Return



## PRESSURE SUMMARY

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

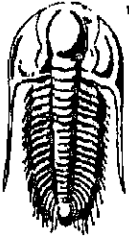
## Recovery

Length (ft)	Description	Volume (bbl)
310.00	Water 100%W	4.06
1.00	Clean Oil 100%O	0.01

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

**TOOL DIAGRAM**

DNOC  
PO Box 1019  
Hays KS 67601  
ATTN: Marc Downing

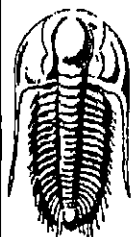
**19-13S-21W Trego,KS**  
**Herbert West #2-19**  
Job Ticket: 63030 **DST#: 6**  
Test Start: 2017.08.06 @ 09:09:00

**Tool Information**

Drill Pipe:	Length: 3960.00 ft	Diameter: 3.80 inches	Volume: 55.55 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 32.00 ft	Diameter: 2.25 inches	Volume: 0.16 bbl	Weight to Pull Loose: 64000.00 lb
		<u>Total Volume: - bbl</u>		Tool Chased 0.00 ft
Drill Pipe Above KB:	17.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	3995.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	5.00 ft			
Tool Length:	25.00 ft			
Number of Packers:	1	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3976.00	
Shut In Tool	5.00			3981.00	
Hydraulic tool	5.00			3986.00	
Packer	5.00			3991.00	20.00 Bottom Of Top Packer
Packer	4.00			3995.00	
Stubb	1.00			3996.00	
Recorder	0.00	9120	Inside	3996.00	
Recorder	0.00	8934	Inside	3996.00	
Bullnose	4.00			4000.00	5.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>25.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

DNOC **19-13S-21W Trego,KS**  
 PO Box 1019 **Herbert West #2-19**  
 Hays KS 67601 Job Ticket: 63030 **DST#: 6**  
 ATTN: Marc Downing Test Start: 2017.08.06 @ 09:09:00

## Mud and Cushion Information

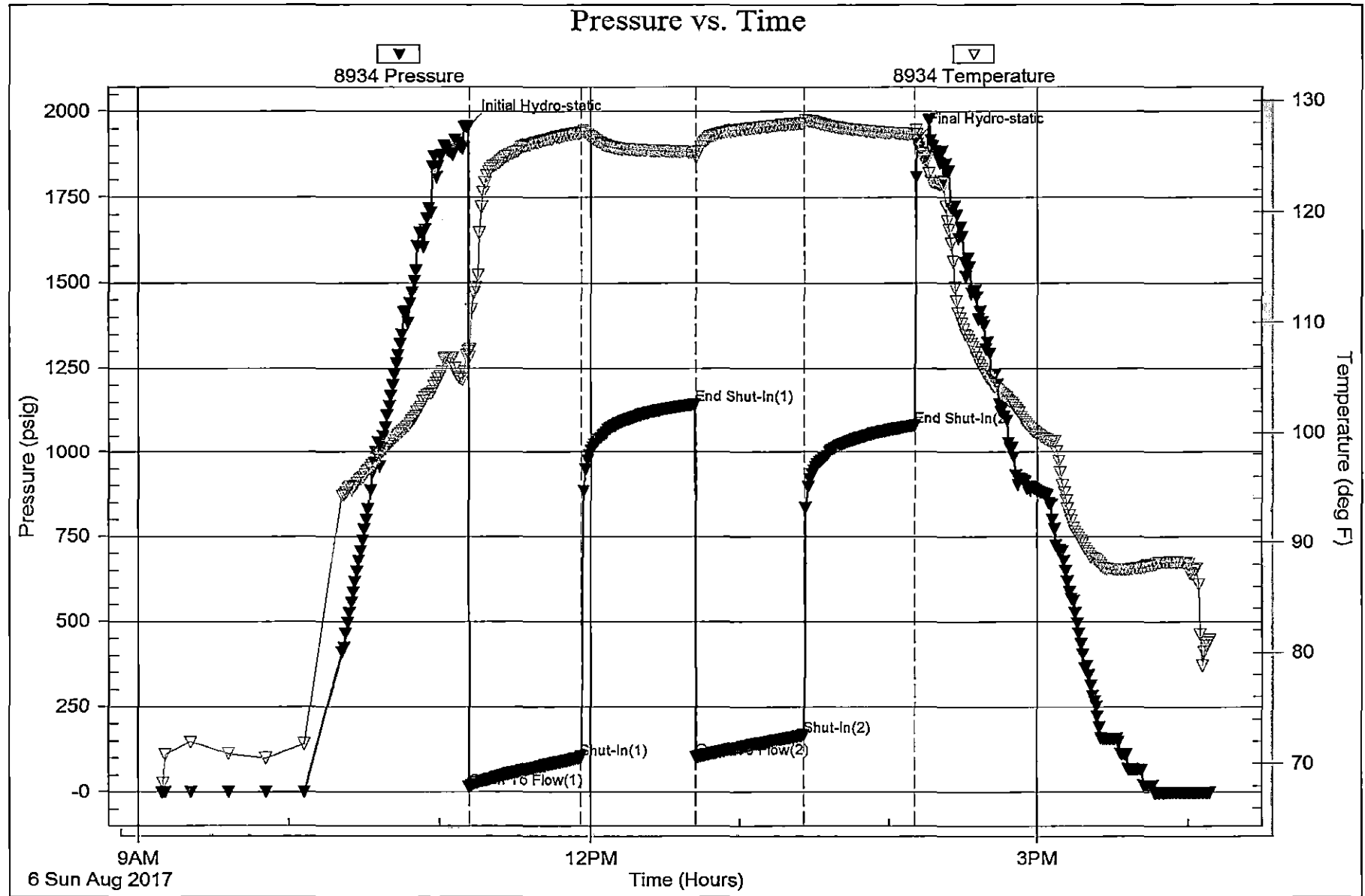
Mud Type: Gel Chem	Cushion Type:	Oil API:	ceg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	30000 ppm
Viscosity: 50.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.19 in <sup>3</sup>	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 6500.00 ppm			
Filter Cake: inches			

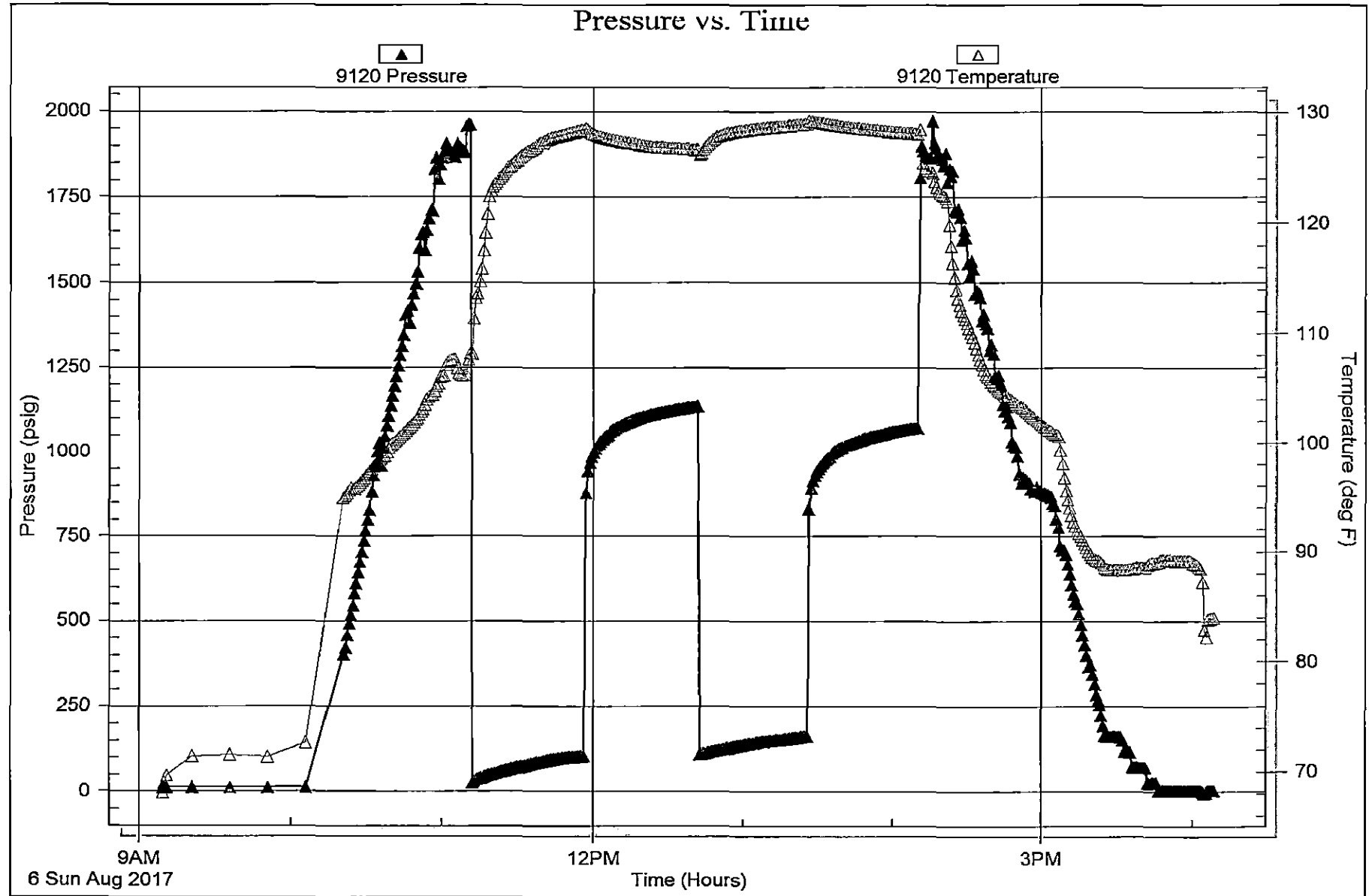
## Recovery Information

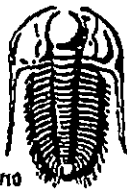
Recovery Table

Length ft	Description	Volume bbl
310.00	Water 100%W	4.057
1.00	Clean Oil 100%O	0.014

Total Length: 311.00 ft Total Volume: 4.071 bbl  
 Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:  
 Laboratory Name: Laboratory Location:  
 Recovery Comments: 2#LCM  
 RW=.211@77degrees







# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 63000

Well Name & No. Herbert West #2 Test No. 1 Date 08/02/2017  
 Company DNOC Elevation 2229 KB 2222 GL  
 Address PO Box 1019 Hays Ks 67601  
 Co. Rep / Geo. Marc Downing Flg Discovery #4  
 Location: Sec. 19 Twp. 13s Rge. 21w Co. Trego State Ks

Interval Tested 3560' - 3595' Zone Tested LHC 'a'  
 Anchor Length 35' Drill Pipe Run 3516' Mud Wt. 8.9  
 Top Packer Depth 3555' Drill Collars Run 32' Vis 50  
 Bottom Packer Depth 3560' Wt. Pipe Run - WL 8  
 Total Depth 3595' Chlorides 16,500 ppm System LCM 2#

Blow Description 17-Weak Blow; Built to 3/4"  
1SD - No Return  
77-Weak Blow; Built to 1"  
7SD - No Return

Rec	Feet of	%gas	%oil	%water	%mud
50'	20CMW	5	5	45	45
20'	20CMW	5	5	20	70
10'	Clean Oil		100		
		%gas	%oil	%water	%mud
		%gas	%oil	%water	%mud
Rec Total	80'				

BHT 117° Gravity 28° API RW 139 @ 70° F Chlorides 66,000 ppm

- (A) Initial Hydrostatic 1681
- (B) First Initial Flow 10
- (C) First Final Flow 31
- (D) Initial Shut-In 343
- (E) Second Initial Flow 32
- (F) Second Final Flow 45
- (G) Final Shut-In 330
- (H) Final Hydrostatic 1657

- Test 1050
- Jars
- Safety Joint
- Circ Sub
- Hourly Standby
- Mileage 60 RT 45
- Sampler
- Straddle
- Shale Packer
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 1095

T-On Location 16:51  
 T-Started 17:59  
 T-Open 20:13  
 T-Pulled 23:13  
 T-Out 01:02 08/03/2017

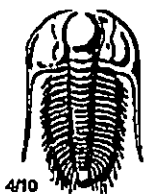
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 Sub Total 0  
 Total 1095  
 MP/DST Disc't \_\_\_\_\_

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

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

Our Representative Spencer J. Jacob Thanks!  
 TriLOBITE TESTING INC. shall not be liable for damaged or destroyed 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. 63026

Well Name & No. Herbert West # 2-19 Test No. 2 Date 08/03/2017  
 Company ANOC Elevation 2229 KB 2222 GL  
 Address PO BOX 1019 Hays KS 67601  
 Co. Rep / Geo. Marc Downing Rig Discovery #4  
 Location: Sec. 19 Twp. 13S Rge. 21W Co. Trego State Ks

Interval Tested 3590' - 3634' Zone Tested LKC 'C-D'  
 Anchor Length 44' Drill Pipe Run 3547' Mud Wt. 8.7  
 Top Packer Depth 3585' Drill Collars Run 32' Vis 48  
 Bottom Packer Depth 3590' Wt. Pipe Run - WL 7.6  
 Total Depth 3634' Chlorides 5,000 ppm System LCM 2#

Blow Description 17 - Weak Blow; Built to 1/4"  
1SD - No Return  
77 - No Blow  
7SD - No Return

Rec	Feet of	%gas	%oil	%water	%mud
1	Mud			100	

Rec Total 1 BHT 106° Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1699  Test 1050 T-On Location 09:52  
 (B) First Initial Flow 13  Jars \_\_\_\_\_ T-Started 10:26  
 (C) First Final Flow 14  Safety Joint \_\_\_\_\_ T-Open 12:10  
 (D) Initial Shut-In 17  Circ Sub \_\_\_\_\_ T-Pulled 14:10  
 (E) Second Initial Flow 12  Hourly Standby \_\_\_\_\_ T-Out 15:27  
 (F) Second Final Flow 12  Mileage 60 R7 45  
 (G) Final Shut-In 16  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1672  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Comments \_\_\_\_\_  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_  
 Sub Total 0  
 Total 1095  
 MP/DST Disc't \_\_\_\_\_

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

Sub Total 1095

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

Our Representative Spencer J. Staab Thank  
785-259-0056



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 63027

Well Name & No. Herbert - West #2-19 Test No. 3 Date 08/04/2017  
 Company DNOC Elevation 2229 KB 2222 GL  
 Address PO BOX 1019 Hays Ks 67601  
 Co. Rep / Geo. Marc Downing Rig Discovery #4  
 Location: Sec. 19 Twp. 13s Rgs. 21w Co. Trego State Ks

Interval Tested 3688' - 3767' Zone Tested LKC #1-D-J  
 Anchor Length 79' Drill Pipe Run 3644' Mud Wt. 9  
 Top Packer Depth 3683' Drill Collars Run 32' Vis 50  
 Bottom Packer Depth 3688' Wt. Pipe Run - WL 7.6  
 Total Depth 3767' Chlorides 5,500 ppm System LCM 2#

Blow Description 77 - Fair Blow; BOB in 13 mins

78D - Weak Blow; Built to 1/4"

77 - Fair Blow; BOB in 20 mins

75D - Weak Surface Blow

Rec	Feet of	%gas	%oil	%water	%mud
60'	DNOCM	5	5	90	
70'	DNOCM	5	10	85	
10'	MCO		90	10	
	280' JHP	100			

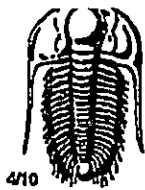
Rec Total 140' BHT 112° Gravity 22° API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1765  Test 1050 T-On Location 04:00  
 (B) First Initial Flow 21  Jars \_\_\_\_\_ T-Started 04:41  
 (C) First Final Flow 56  Safety Joint \_\_\_\_\_ T-Open 06:38  
 (D) Initial Shut-In 346  Circ Sub \_\_\_\_\_ T-Pulled 09:15  
 (E) Second Initial Flow 58  Hourly Standby \_\_\_\_\_ T-Out 10:56  
 (F) Second Final Flow 83  Mileage 6027 45  
 (G) Final Shut-In 337  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1736  Straddle \_\_\_\_\_

Shale Packer \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Initial Open 30  
 Initial Shut-In 45  
 Final Flow 30  
 Final Shut-In 45  
 Sub Total 0  
 Total 1095  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Spencer J. Straub Thanks  
 Sub Total 1095



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 63028

Well Name & No. Herbert - West # 2-19 Test No. 4 Date 08/05/2017  
 Company ANOC Elevation 2229 KB 2222 GL  
 Address PO BOX 1019 Hays, KS 67601  
 Co. Rep / Geo. Marc Downing Rig Discovery #4  
 Location: Sec. 19 Twp. 13S Rge. 2W Co. Trego State Ks

Interval Tested 3944' - 3972' Zone Tested Cong. Sand  
 Anchor Length 28' Drill Pipe Run 3896' Mud Wt. 9  
 Top Packer Depth 3939' Drill Collars Run 32' Vis 52  
 Bottom Packer Depth 3944' Wt. Pipe Run - WL 7.6  
 Total Depth 3972' Chlorides 5,500 ppm System LCM 2H

Blow Description 7 - Fair Blow; Built to 6"

ISD - No Return

77 - Fair Blow; Built to 5 1/2"

75D - Weak Surface Blow; Dried 20 mins in

Rec	Feet of	%gas	%oil	%water	%mud
<u>30'</u>	<u>MCMO</u>	<u>5</u>	<u>65</u>	<u>30</u>	<u>30</u>
<u>60'</u>	<u>MCYO</u>	<u>10</u>	<u>85</u>	<u>5</u>	<u>5</u>
<u>30'</u>	<u>HP</u>				

Rec Total 90' BHT 117° Gravity 34° API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1925  Test 1050 T-On Location 06:59  
 (B) First Initial Flow 14  Jars - T-Started 07:37  
 (C) First Final Flow 32  Safety Joint - T-Open 09:28  
 (D) Initial Shut-In 1200  Circ Sub - T-Pulled 12:28  
 (E) Second Initial Flow 34  Hourly Standby - T-Out 14:06  
 (F) Second Final Flow 48  Mileage 6027 45  
 (G) Final Shut-In 1166  Sampler -  
 (H) Final Hydrostatic 1892  Straddle -  
 Shale Packer -  
 Shale Packer -  
 Extra Packer -  
 Extra Recorder -  
 Day Standby -  
 Accessibility -  
 Sub Total 1095

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

Comments -  
 Ruined Shale Packer -  
 Ruined Packer -  
 Extra Copies -  
 Sub Total 0  
 Total 1095  
 MP/DST Disc't -

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

Our Representative

*Spencer J. Stahl* Thank

725-259-0056



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 63029

Well Name & No. Herbert-West #2-19 Test No. 5 Date 08/05/2017  
 Company DNOCJ Elevation 2229 KB 2222 GL  
 Address PO BOX 1019 Hays Ks 67601  
 Co. Rep / Geo. Mare Downing Rig Discovery #4  
 Location: Sec. 19 Twp. 13s Rge. 21w Co. Trego State Ks

Interval Tested 3944'-3994' Zone Tested Cg. Ss. #2  
 Anchor Length 50' Drill Pipe Run 3897' Mud Wt. 9  
 Top Packer Depth 3939' Drill Collars Run 32' Vis 52  
 Bottom Packer Depth 3944' Wt. Pipe Run - WL 7.6  
 Total Depth 3944' Chlorides 5,500 ppm System LCM 2#

Blow Description 77-Strong Blow; BOB in 25 mins

ISD - No Return

77-Strong Blow; BOB in 29 mins

75D-Weak Surface Blow; Died 15 mins in

Rec	Feet of	%gas	%oil	%water	%mud
<u>90'</u>	<u>MC 210</u>	<u>20</u>	<u>50</u>	<u>30</u>	<u>0</u>
<u>80'</u>	<u>MCO</u>	<u>70</u>	<u>0</u>	<u>30</u>	<u>0</u>
<u>110'</u>	<u>Heavy Oil</u>	<u>10</u>	<u>90</u>	<u>0</u>	<u>0</u>
<u>270'</u>	<u>WAP</u>	<u>100</u>	<u>0</u>	<u>0</u>	<u>0</u>

Rec Total 280' BHT 116° Gravity 37° API RW - @ - °F Chlorides - ppm

- (A) Initial Hydrostatic 1933
- (B) First Initial Flow 23
- (C) First Final Flow 77
- (D) Initial Shut-In 1171
- (E) Second Initial Flow 81
- (F) Second Final Flow 127
- (G) Final Shut-In 1135
- (H) Final Hydrostatic 1860

- Test 1050
- Jars
- Safety Joint
- Circ Sub
- Hourly Standby
- Mileage 6027 45
- Sampler
- Straddle
- Shale Packer
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 1095

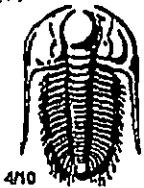
T-On Location 20:20  
 T-Started 20:46  
 T-Open 22:30  
 T-Pulled 01:35 08/05/17  
 T-Out 03:22

Comments \_\_\_\_\_  
 Ruined Shale Packer  
 Ruined Packer  
 Extra Copies  
 Sub Total 0  
 Total 1095  
 MP/DST Disc't \_\_\_\_\_

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

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

Our Representative James J. Fraab Thanks  
 JCF-259 08/1



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 63030

Well Name & No. Herbert - West # 2-19 Test No. 6 Date 08/06/2017  
 Company DNOCJ Elevation 2229 KB 2221 GL  
 Address PO BOX 1019 Hays Ks 67601  
 Co. Rep / Geo. Max Downing Rig Discovery #4  
 Location: Sec. 19 Twp. 13a Rge. 21w Co. Trego State Ks

Interval Tested 3995-4000' Zone Tested Arbuckle  
 Anchor Length 5' Drill Pipe Run 3960' Mud Wt. 9.1  
 Top Packer Depth 3990' Drill Collars Run 32' Vis 50  
 Bottom Packer Depth 3995' Wt. Pipe Run - WL 7.2  
 Total Depth 4000' Chlorides 6,500 ppm System LCM 2#

Blow Description 77- Fair Blow; BOB in 22 mins  
1SD- No Return  
77- Fair Blow; BOB in 30 mins  
7SD- No Return

Rec	Feet of	%gas	%oil	%water	%mu
<u>310'</u>	<u>Water</u>		<u>100</u>		
<u>1'</u>	<u>Clean Oil</u>	<u>100</u>			
Rec	Feet of	%gas	%oil	%water	%mu
Rec	Feet of	%gas	%oil	%water	%mu
Rec	Feet of	%gas	%oil	%water	%mu

Rec Total 311' BHT 127° Gravity - API RW 211 @ 77° F Chlorides 30,000 ppr

- (A) Initial Hydrostatic 1956
- (B) First Initial Flow 12
- (C) First Final Flow 99
- (D) Initial Shut-In 1142
- (E) Second Initial Flow 101
- (F) Second Final Flow 165
- (G) Final Shut-In 1079
- (H) Final Hydrostatic 1917

- Test 1050
- Jars
- Safety Joint
- Circ Sub
- Hourly Standby
- Mileage 60 RT 45
- Sampler
- Straddle
- Shale Packer
- Extra Packer
- Extra Recorder
- Day Standby
- Accessibility
- Sub Total 1095

- T-On Location 08:45
- T-Started 09:09
- T-Open 11:11
- T-Pulled 14:11
- T-Out 16:07
- Comments
- Ruined Shale Packer
- Ruined Packer
- Extra Copies
- Sub Total 0
- Total 1095
- MP/DST Disc't

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

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

Our Representative Spencer J. Stahl Thanks