

Confidentiality Requested:

Yes  No

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

Form ACO-1

January 2018

**Form must be Typed**

**Form must be Signed**

**All blanks must be Filled**

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

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

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

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

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

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

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

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

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

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

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

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

Designate Type of Completion:

New Well  Re-Entry  Workover

Oil  WSW  SWD

Gas  DH  EOR

OG  GSW

CM (Coal Bed Methane)

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

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

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

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

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

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

Plug Back  Liner  Conv. to GSW  Conv. to Producer

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

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

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

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

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

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

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

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

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

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

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

Footages Calculated from Nearest Outside Section Corner:

NE  NW  SE  SW

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

Datum:  NAD27  NAD83  WGS84

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

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

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

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

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

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

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

Multiple Stage Cementing Collar Used?  Yes  No

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

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

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

**Drilling Fluid Management Plan**

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

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

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

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

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

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

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

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

**AFFIDAVIT**

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

Submitted Electronically

**KCC Office Use ONLY**

Confidentiality Requested

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

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

Wireline Log Received  Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

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

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

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

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

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

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

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

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

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

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

TUBING RECORD:	Size:	Set At:	Packer At:	
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**#2 Whitham 35AB**

1,339' FNL & 682' FEL

19' S & 22' W of E/2 NE Section 35-16S-37W

Wichita County, Kansas

API# 15-203-20363-0000

Elevation: GL: 3,335', KB: 3,340'

Sample Tops			Ref. Well
Anhydrite	2504	+836	+14
B/Anhydrite	2524	+816	+12
Stotler	3595	-255	+18
Heebner	3964	-624	+21
Toronto	3982	-642	+22
Lansing	4011	-671	+27
Muncie	4196	-856	+22
Stark	4288	-948	+24
Hush	4340	-1000	+19
BKC	4382	-1042	+24
Marmaton	4430	-1090	+23
Altamont	4444	-1104	+24
Pawnee	4516	-1176	+23
Myrick	4556	-1216	+22
Ft. Scott	4568	-1228	+24
Cherokee	4598	-1258	+20
Johnson	4690	-1350	+22
Morrow	4754	-1414	+23
Mississippian	4852	-1512	+12
RTD	4930	-1590	







**Services, Inc.**

CHARGE TO: Ritchies

TICKET 032991

ADDRESS  
CITY, STATE, ZIP CODE

PAGE 1 OF 2

SERVICE LOCATIONS 1. <u>Ness City 125</u>	WELL/PROJECT NO. <u>40</u>	LEASE <u>W. H. M. 35 AB</u>	COUNTY/PARISH <u>Wichita</u>	STATE <u>KS</u>	CITY <u>Leoti</u>	DATE <u>29 Feb 20</u>	OWNER
2. <u>    </u>	TICKET TYPE <input type="checkbox"/> SERVICE <input type="checkbox"/> SALES	CONTRACTOR	RIG NAME/NO. <u>10</u>	SHIPPED <u>via</u>	DELIVERED TO <u>location</u>	ORDER NO.	
3. <u>    </u>	WELL TYPE <u>0,1</u>	WELL CATEGORY <u>Development</u>	JOB PURPOSE <u>connect long string</u>	WELL PERMIT NO.	WELL LOCATION <u>35-17-37</u>		
4. <u>    </u>	INVOICE INSTRUCTIONS						

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING			DESCRIPTION	MILEAGE	QTY.	U/M	QTY.	U/M	UNIT PRICE	AMOUNT
		LOC	ACCT	DF								
575		1			TRAIL	50	mi				500	4000.00
578		1			Pump Charge (wing string)	1	ea				1400.00	1400.00
403		1			connect Basket	3	in				875.00	2625.00
404		1			BAT collar	1	ea				2500.00	2500.00
406		1			catch down plug & handle	5	in				850.00	4250.00
407		1			insert float shoe on wire line	5	in				825.00	4125.00
409		1			TURBOLIZER	5	in				900.00	4500.00

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

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

**X**

DATE SIGNED \_\_\_\_\_ TIME SIGNED \_\_\_\_\_  A.M.  P.M.

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

**SURVEY**

OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?	AGREE	UNDECIDED	DISAGREE
WE UNDERSTOOD AND MET YOUR NEEDS?			
OUR SERVICE WAS PERFORMED WITHOUT DELAY?			
WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?			
ARE YOU SATISFIED WITH OUR SERVICE?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	

PAGE TOTAL 1091 TAX 1355.19 WITHH 1126.89

TOTAL 14698.08

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

SWIFT OPERATOR \_\_\_\_\_ APPROVAL \_\_\_\_\_

Thank You!



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

TICKET CONTINUATION

TICKET No. 32991

CUSTOMER *Ritchie* WELL *1214-1160-35 AB # 2* DATE *29 Feb 20* PAGE *2* OF *2*

PRICE REFERENCE	SECONDARY REFERENCE / PART NUMBER	ACCOUNTING			TIME	DESCRIPTION	WELL				UNIT PRICE	AMOUNT
		LOC	ACCT	DE			QTY	U/M	QTY	U/M		
325						Standard cement	250	sk			13.50	3375.00
283						5 skt	1355	lb			0.25	338.75
279						Bentonite gel	500	lb	5	sk	30.00	150.00
277						Calcrete	1250	lb			1.25	1562.50
292						Hydrid 322	100	lb			8.57	857.00
281						mudflush	500	gal			1.50	750.00
281						KCL Liquid	2	gal			25.00	50.00
290						D-Air	2	gal			42.00	84.00
581						SERVICE CHARGE	250				1.85	462.50
583						MILEAGE CHARGE	16.75				0.95	1014.79
TOTAL							1663.2					8637.54

CONTINUATION TOTAL 8637.54



JOB LOG

SWIFT Services, Inc.

DATE PAGE NO.

29 Feb 20 1

CUSTOMER Ritchie WELL NO. # 2 LEASE William 35AB JOB TYPE Cement long string TICKET NO. 32991

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
								250 sk Standard cement w/ gel, salt & Gilsomite 5 1/2" x 15.5" casing 117 joints - 4919' string 21.98' Port collar #34-2461' Baskets 57.81.98 Cementations 3.10, 12, 14, 16, 21, 58, 66
	1815							on loc TRK 114
	1823							start 5 1/2" x 15.5" casing in well
	2010							Drop ball - circulates
	2105	3.5	12				200	Pump mud flush
		3.5	20				200	Pump KCL flush
	2115		6					Plug RT 30sk
	2119	3.5	54				200	Mix STD cement 220sk @ 14.9 ppg
								Drop bithead on plug work out Pump & Line
	2145	6 1/4					200	Displace plug
		6 1/4	87				330	
		6 1/4	110				850	
	2200	6 1/4	117				1500	Land plug
								Release pressure to truck - dried up
	2210							work truck
	2230							Break up
	2250							job complete
								Thanks, Blaine, Flint & Isaac



**Services, Inc.**

CHARGE TO: Ritchie

ADDRESS

CITY, STATE, ZIP CODE

TICKET 032996

PAGE 1 OF 1

1. SERVICE LOCATIONS <u>Red City KS</u>	WELL/PROJECT NO <u>#2</u>	LEASE <u>Wichita AB35</u>	COUNTY/PARISH <u>WICHITA</u>	STATE <u>KS</u>	CITY <u>Wichita</u>	DATE <u>6 MAR 20</u>	OWNER
2. TICKET TYPE <input type="checkbox"/> SERVICE <input type="checkbox"/> SALES	CONTRACTOR	RIG NAME/NO.	SHIPPED <input type="checkbox"/> VIBET	DELIVERED TO <u>location</u>	WELL PERMIT NO.	WELL LOCATION	ORDER NO.
3. WELL TYPE <u>oil</u>	WELL CATEGORY <u>WORKOVER</u>	JOB PURPOSE <u>cement pit collar</u>					
4. REFERRAL LOCATION	INVOICE INSTRUCTIONS						

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING			DESCRIPTION	QTY. U/M		UNIT PRICE	AMOUNT
		LOC	ACCT	DF		QTY.	U/M		
575		1			MILEAGE	575	mi	5.00	428.00
576 D		1			TRK 114 (FORT course)	1	ea	1400.00	1400.00
389-8		1			160/40 P22WVX 8% gol	330	sk	11.50	3335.00
275		1			action good hulls	2	sk	35.00	70.00
290		1			D-AIR	4	gal	42.00	168.00
581		1			Service charge	470	sk	1.85	869.50
583		1			Disposal	41319	lb	0.35	1566.32

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**X**

DATE SIGNED \_\_\_\_\_ TIME SIGNED \_\_\_\_\_  A.M.  P.M.

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

**SURVEY**

OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?	AGREE	UNDECIDED	DISAGREE
WE UNDERSTOOD AND MET YOUR NEEDS?			
OUR SERVICE WAS PERFORMED WITHOUT DELAY?			
WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?			
ARE YOU SATISFIED WITH OUR SERVICE?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	

PAGE TOTAL 10910 TOTAL 7885.31

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

SWIFT OPERATOR \_\_\_\_\_ APPROVAL \_\_\_\_\_

Thank You!

JOB LOG

SWIFT Services, Inc.

DATE: 6 MAR 70  
 PAGE NO.: 1  
 TICKET NO.: 32996

CUSTOMER: *H. J. ...*  
 WELL NO.: #2  
 LEASE: *Whitham AB 35*  
 JOB TYPE: *Cement port collar*

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
								420 sk 60/40 p/z 8 3/4 gal 2 3/8 x 5 1/2 Port collar 2458'
	1030							on loc TRK 114 Running tubing
	1145		1			1200	1200	test to 1200 psi - held open port collar
		3	2			300		Ty 30 300
		3				300		Mix 60/40 p/z (8%) @ 12.3 ppg (10 bbl circ) mix in cottonseed hulls - 2 sk
			30					truck sticks in first gear - not pumping - fight w/ truck / go on in 1st gear
		2 1/4				100		
	1343	2 1/4	94			200		→ cement to pit ← <div style="border: 1px solid black; padding: 2px; display: inline-block;">                     200 sk mixed } 20 to pit                 </div>
								close port collar
	1402		20			1200	1200	test to 1200 psi - held Run 5 joints Reverse hole clean - 2 cement plugs -
	1420					1200	1200	test to 1200 psi - held wash truck - pull tubing
	1540						1200	Pressure 5 1/2 casing holding shot in 5 1/2
	1600							Pack up job complete Trucks Blow, flat & dusty



## DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc.**

PO Box 783188  
Wichita, KS 67278

ATTN: Kent Matson

### **Whitham 35AB #2**

### **35-16s-37w Wichita,KS**

Start Date: 2020.02.21 @ 20:02:00

End Date: 2020.02.22 @ 02:33:15

Job Ticket #: 66182                      DST #: 1

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

Printed: 2020.02.28 @ 10:21:36



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66182

**DST#: 1**

ATTN: Kent Matson

Test Start: 2020.02.21 @ 20:02:00

## GENERAL INFORMATION:

Formation: **LKC C**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:52:00

Time Test Ended: 02:33:15

Test Type: Conventional Bottom Hole (Initial)

Tester: Bradley Walter

Unit No: 78

**Interval: 4040.00 ft (KB) To 4070.00 ft (KB) (TVD)**

Reference Elevations: 3340.00 ft (KB)

Total Depth: 4070.00 ft (KB) (TVD)

3335.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8522**

**Inside**

Press@RunDepth: 704.28 psig @ 4041.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2020.02.21

End Date:

2020.02.22

Last Calib.:

2020.02.22

Start Time: 20:02:05

End Time:

02:33:14

Time On Btm:

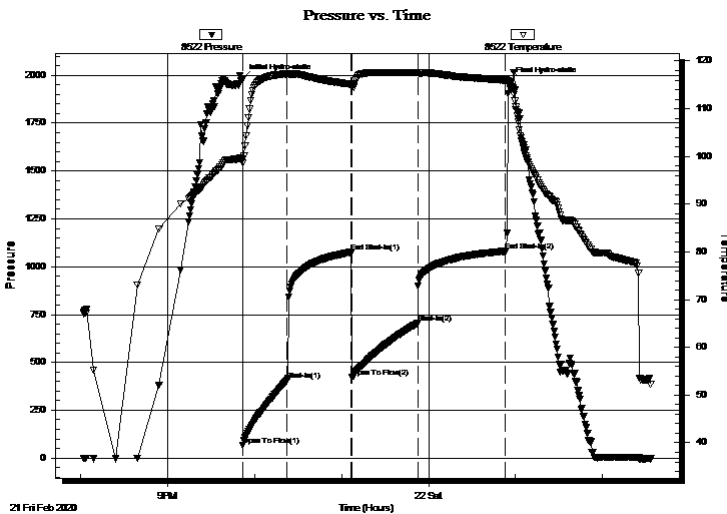
2020.02.21 @ 21:51:45

Time Off Btm:

2020.02.22 @ 00:55:30

**TEST COMMENT:** 30- IF: BOB @ 4 min. built to 91".  
45- IS: No return.  
45- FF: BOB @ 4 min, built to 95".  
60- FS: No return.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1981.20	99.43	Initial Hydro-static
1	64.81	98.59	Open To Flow (1)
31	405.97	117.27	Shut-In(1)
75	1075.27	115.09	End Shut-In(1)
76	421.61	114.88	Open To Flow (2)
121	704.28	117.52	Shut-In(2)
181	1080.87	115.98	End Shut-In(2)
184	1964.86	115.24	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
1530.00	smcw 2m 98w	20.34
0.00	oil spots in tool	0.00

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Ritchie Exploration, Inc.

**35-16s-37w Wichita,KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66182

**DST#: 1**

ATTN: Kent Matson

Test Start: 2020.02.21 @ 20:02:00

## Tool Information

Drill Pipe:	Length: 3906.00 ft	Diameter: 3.80 inches	Volume: 54.79 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 123.00 ft	Diameter: 2.25 inches	Volume: 0.60 bbl	Weight to Pull Loose: 75000.00 lb
			<u>Total Volume: 55.39 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	16.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4040.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	30.00 ft			
Tool Length:	57.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4014.00	
Shut In Tool	5.00		Fluid	4019.00	
Hydraulic tool	5.00			4024.00	
Jars	5.00			4029.00	
Safety Joint	2.00			4031.00	
Packer	5.00		Inside	4036.00	27.00 Bottom Of Top Packer
Packer	4.00			4040.00	
Stubb	1.00			4041.00	
Recorder	0.00	8522	Inside	4041.00	
Recorder	0.00	8319	Outside	4041.00	
Perforations	26.00			4067.00	
Bullnose	3.00			4070.00	30.00 Bottom Packers & Anchor

**Total Tool Length: 57.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66182

**DST#: 1**

ATTN: Kent Matson

Test Start: 2020.02.21 @ 20:02:00

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

42000 ppm

Viscosity: 51.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.17 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2500.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1530.00	smcw 2m 98w	20.341
0.00	oil spots in tool	0.000

Total Length: 1530.00 ft      Total Volume: 20.341 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

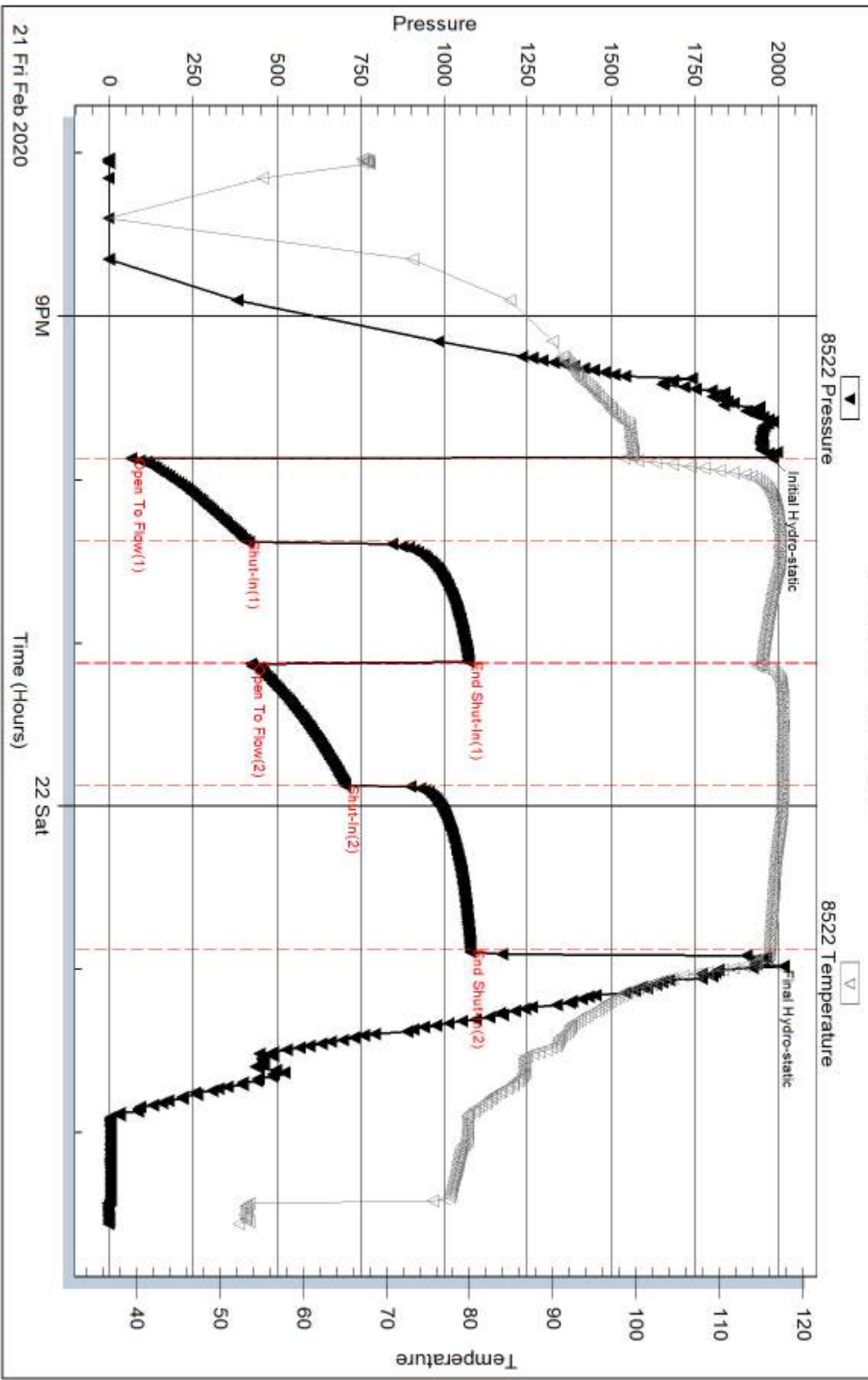
Laboratory Name:

Laboratory Location:

Recovery Comments: rw is .273 @ 43F = 42000ppm



### Pressure vs. Time







## DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc.**

PO Box 783188  
Wichita, KS 67278

ATTN: Kent Matson

### **Whitham 35AB #2**

### **35-16s-37w Wichita,KS**

Start Date: 2020.02.22 @ 13:58:00

End Date: 2020.02.22 @ 20:47:45

Job Ticket #: 66183                      DST #: 2

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

Printed: 2020.02.28 @ 10:20:53

Ritchie Exploration, Inc.

35-16s-37w Wichita,KS

Whitham 35AB #2

DST # 2

LKC E - F

2020.02.22



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66183

**DST#: 2**

ATTN: Kent Matson

Test Start: 2020.02.22 @ 13:58:00

## GENERAL INFORMATION:

Formation: **LKC E - F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 15:48:00

Time Test Ended: 20:47:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 78

**Interval: 4106.00 ft (KB) To 4146.00 ft (KB) (TVD)**

Reference Elevations: 3340.00 ft (KB)

Total Depth: 4146.00 ft (KB) (TVD)

3335.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8522**

**Inside**

Press@RunDepth: 293.11 psig @ 4109.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2020.02.22

End Date:

2020.02.22

Last Calib.:

2020.02.22

Start Time:

13:58:05

End Time:

20:47:44

Time On Btm:

2020.02.22 @ 15:47:45

Time Off Btm:

2020.02.22 @ 18:53:00

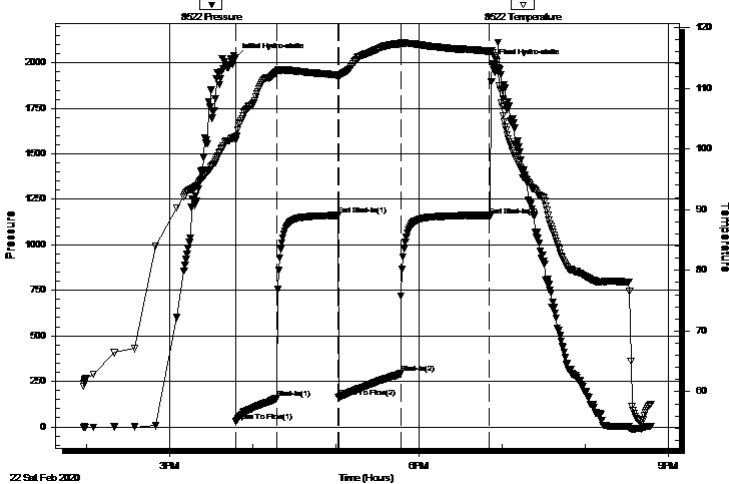
TEST COMMENT: 30- IF: BOB @ 13 min. built to 22"

45- IS: Surface return.

45- FF: BOB @ 13 min, built to 32".

60- FSI: no return.

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2031.22	101.97	Initial Hydro-static
1	29.88	101.42	Open To Flow (1)
30	157.31	112.69	Shut-In(1)
74	1162.45	112.18	End Shut-In(1)
75	162.24	112.03	Open To Flow (2)
120	293.11	117.36	Shut-In(2)
184	1161.81	116.09	End Shut-In(2)
186	1995.28	116.18	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
580.00	mcw 10m 90w w/oil spots	7.02
20.00	oil 100o	0.28
0.00	80' 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**

Ritchie Exploration, Inc.

**35-16s-37w Wichita,KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66183

**DST#: 2**

ATTN: Kent Matson

Test Start: 2020.02.22 @ 13:58:00

## Tool Information

Drill Pipe:	Length: 3970.00 ft	Diameter: 3.80 inches	Volume: 55.69 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 123.00 ft	Diameter: 2.25 inches	Volume: 0.60 bbl	Weight to Pull Loose: 75000.00 lb
			<u>Total Volume: 56.29 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial 61000.00 lb
Depth to Top Packer:	4108.00 ft			Final 63000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	38.00 ft			
Tool Length:	65.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4082.00	
Shut In Tool	5.00		Fluid	4087.00	
Hydraulic tool	5.00			4092.00	
Jars	5.00			4097.00	
Safety Joint	2.00			4099.00	
Packer	5.00		Inside	4104.00	27.00 Bottom Of Top Packer
Packer	4.00			4108.00	
Stubb	1.00			4109.00	
Recorder	0.00	8522	Inside	4109.00	
Recorder	0.00	8319	Outside	4109.00	
Perforations	34.00			4143.00	
Bullnose	3.00			4146.00	38.00 Bottom Packers & Anchor

**Total Tool Length: 65.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Ritchie Exploration, Inc.

**35-16s-37w Wichita,KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66183

**DST#: 2**

ATTN: Kent Matson

Test Start: 2020.02.22 @ 13:58:00

## Mud and Cushion Information

Mud Type: Gel Chem  
Mud Weight: 9.00 lb/gal  
Viscosity: 54.00 sec/qt  
Water Loss: 8.77 in<sup>3</sup>  
Resistivity: ohm.m  
Salinity: 5500.00 ppm  
Filter Cake: 1.00 inches

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

Oil API: 19 deg API  
Water Salinity: 40000 ppm

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
580.00	mcw 10m 90w w/oil spots	7.015
20.00	oil 100o	0.281
0.00	80' GIP	0.000

Total Length: 600.00 ft      Total Volume: 7.296 bbl

Num Fluid Samples: 0

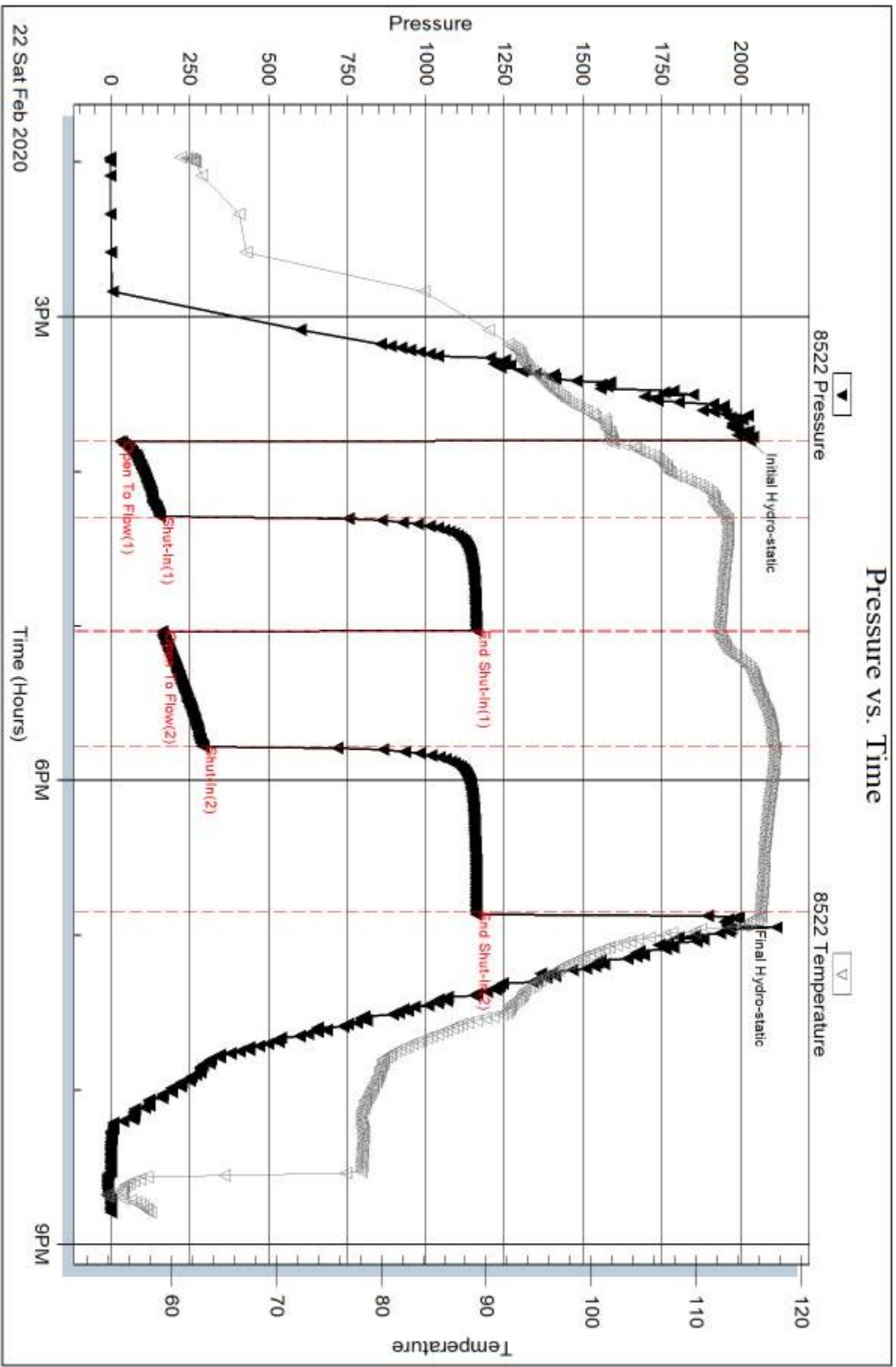
Num Gas Bombs: 0

Serial #:

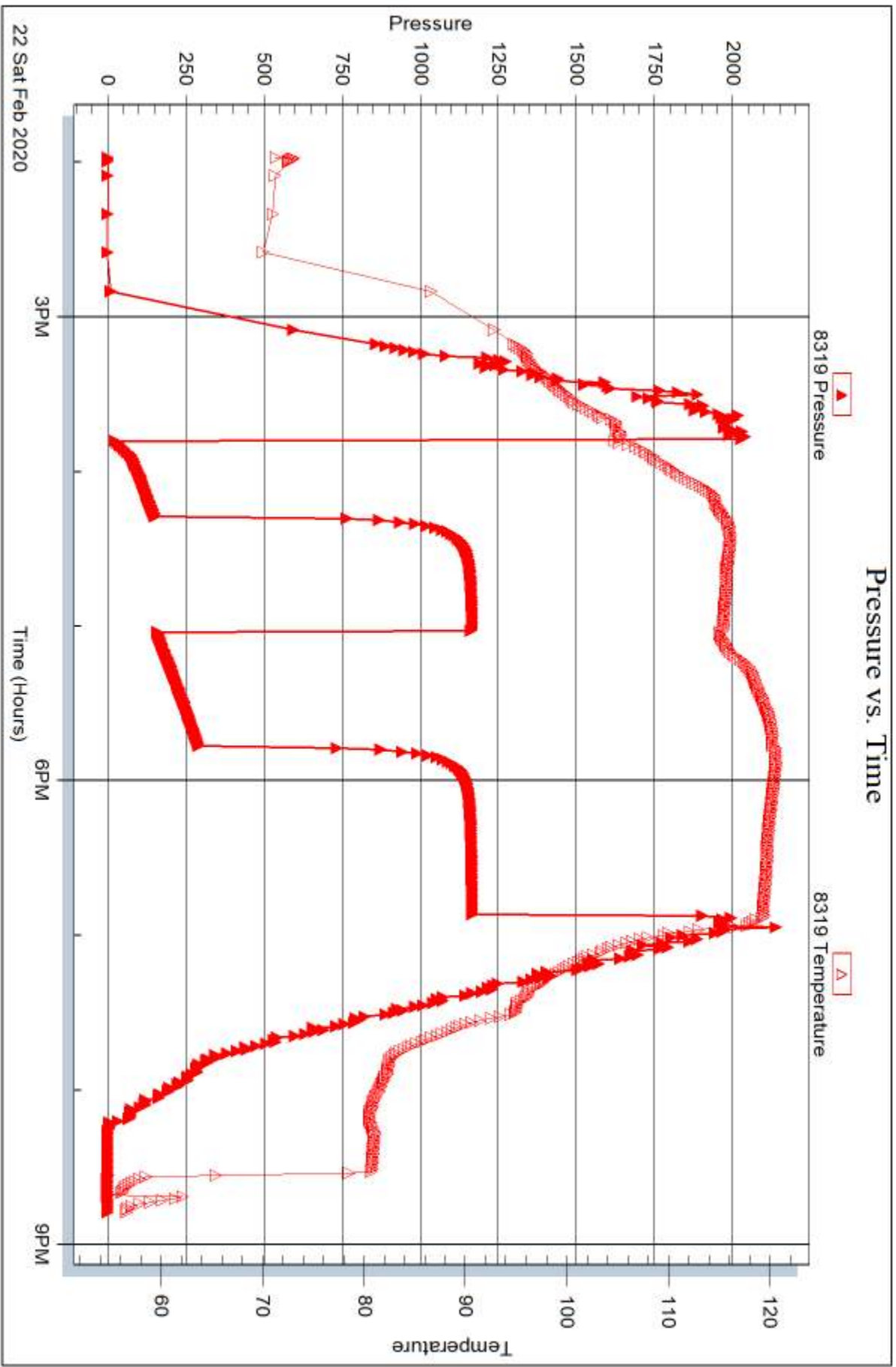
Laboratory Name:

Laboratory Location:

Recovery Comments: rw is .240 @ 51F = 40,000ppm









## DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc.**

PO Box 783188  
Wichita, KS 67278

ATTN: Kent Matson

### **Whitham 35AB #2**

### **35-16s-37w Wichita,KS**

Start Date: 2020.02.23 @ 09:59:00

End Date: 2020.02.23 @ 16:31:45

Job Ticket #: 66184                      DST #: 3

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

Printed: 2020.02.28 @ 10:19:39



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66184

**DST#: 3**

ATTN: Kent Matson

Test Start: 2020.02.23 @ 09:59:00

## GENERAL INFORMATION:

Formation: **LKC I**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:43:45

Time Test Ended: 16:31:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 78

**Interval: 4226.00 ft (KB) To 4260.00 ft (KB) (TVD)**

Reference Elevations: 3340.00 ft (KB)

Total Depth: 4226.00 ft (KB) (TVD)

3335.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8522 Inside**

Press@RunDepth: 85.45 psig @ 4227.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2020.02.23

End Date:

2020.02.23

Last Calib.:

2020.02.23

Start Time: 09:59:05

End Time:

16:31:44

Time On Btm:

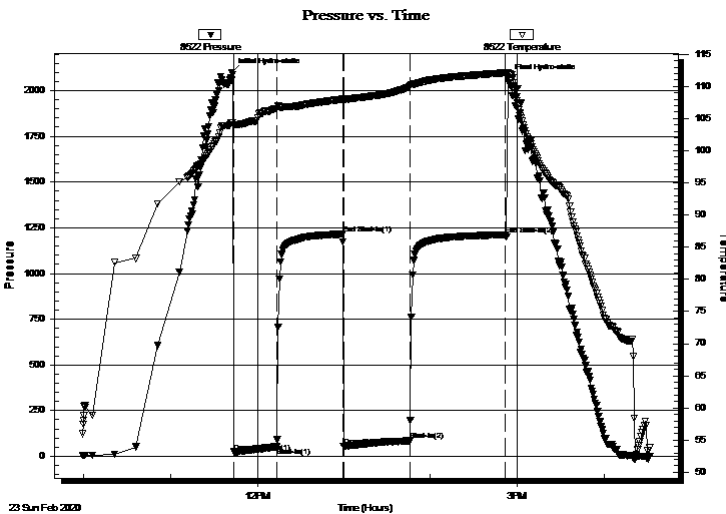
2020.02.23 @ 11:42:30

Time Off Btm:

2020.02.23 @ 14:53:30

**TEST COMMENT:** 30- IF: 2 1/4" blow .  
45- IS: No return.  
45- FF: 3 1/2" blow .  
60- FS: No return.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2099.39	104.39	Initial Hydro-static
2	23.93	103.85	Open To Flow (1)
31	52.14	106.59	Shut-In(1)
77	1215.10	108.02	End Shut-In(1)
78	54.79	107.73	Open To Flow (2)
124	85.45	109.94	Shut-In(2)
190	1211.74	112.12	End Shut-In(2)
191	2066.18	112.18	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
150.00	mcw 40m 60w -Oil spots	0.98

\* Recovery from multiple tests

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66184

**DST#: 3**

ATTN: Kent Matson

Test Start: 2020.02.23 @ 09:59:00

## Tool Information

Drill Pipe:	Length: 4096.00 ft	Diameter: 3.80 inches	Volume: 57.46 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 123.00 ft	Diameter: 2.25 inches	Volume: 0.60 bbl	Weight to Pull Loose: 75000.00 lb
			<u>Total Volume: 58.06 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	20.00 ft			String Weight: Initial 61000.00 lb
Depth to Top Packer:	4226.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	34.00 ft			
Tool Length:	61.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4200.00	
Shut In Tool	5.00		Fluid	4205.00	
Hydraulic tool	5.00			4210.00	
Jars	5.00			4215.00	
Safety Joint	2.00			4217.00	
Packer	5.00		Inside	4222.00	27.00 Bottom Of Top Packer
Packer	4.00			4226.00	
Stubb	1.00			4227.00	
Recorder	0.00	8522	Inside	4227.00	
Recorder	0.00	8319	Outside	4227.00	
Perforations	30.00			4257.00	
Bullnose	3.00			4260.00	34.00 Bottom Packers & Anchor

**Total Tool Length: 61.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66184

**DST#: 3**

ATTN: Kent Matson

Test Start: 2020.02.23 @ 09:59:00

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

31000 ppm

Viscosity: 56.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.97 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 5800.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
150.00	mcw 40m 60w -Oil spots	0.984

Total Length: 150.00 ft      Total Volume: 0.984 bbl

Num Fluid Samples: 0

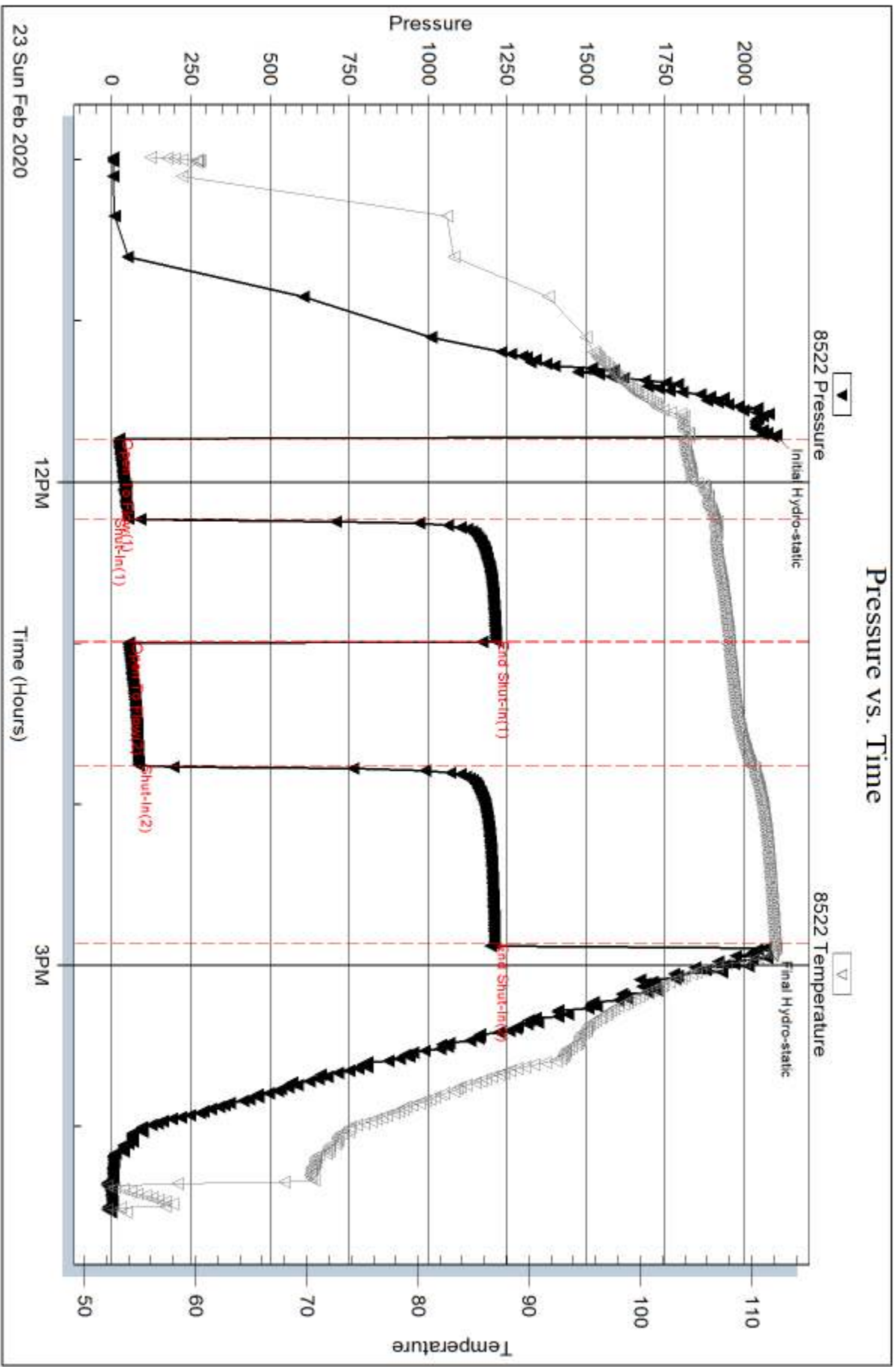
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: rw is .390 @ 45F = 31000ppm

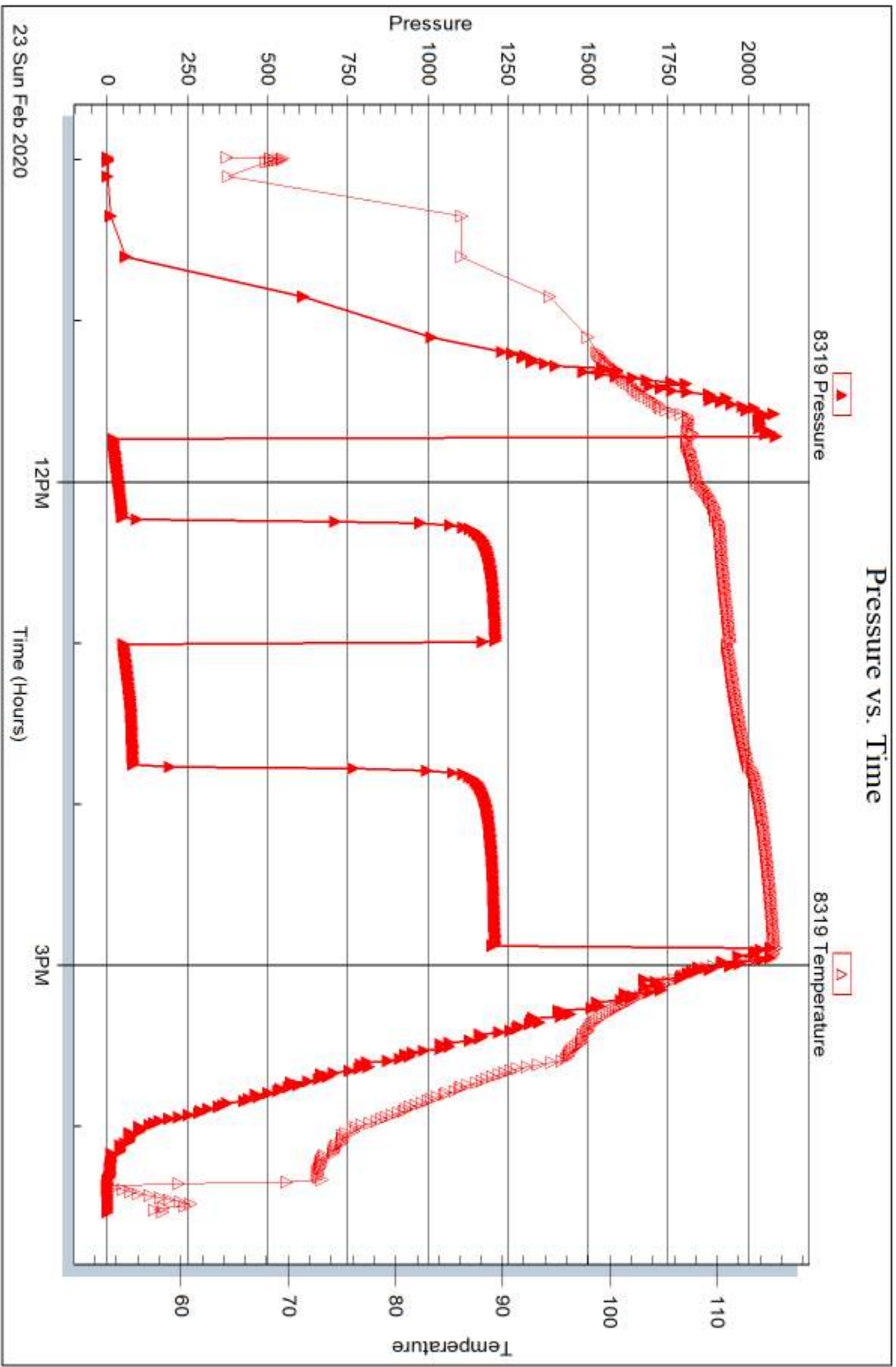


Serial #: 8319

Outside Ritchie Exploration, Inc.

Whitham 35AB #2

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 66184

Printed: 2020.02.28 @ 10:19:39





## DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc.**

PO Box 783188  
Wichita, KS 67278

ATTN: Kent Matson

### **Whitham 35AB #2**

### **35-16s-37w Wichita,KS**

Start Date: 2020.02.24 @ 02:23:00

End Date: 2020.02.24 @ 08:34:15

Job Ticket #: 66185                      DST #: 4

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

Printed: 2020.02.28 @ 10:17:36



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66185

**DST#: 4**

ATTN: Kent Matson

Test Start: 2020.02.24 @ 02:23:00

## GENERAL INFORMATION:

Formation: **LKC K**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 03:57:00

Time Test Ended: 08:34:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 78

**Interval: 4284.00 ft (KB) To 4310.00 ft (KB) (TVD)**

Reference Elevations: 3340.00 ft (KB)

Total Depth: 4310.00 ft (KB) (TVD)

3335.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8319 Outside**

Press@RunDepth: 1032.05 psig @ 4285.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2020.02.24

End Date: 2020.02.24

Last Calib.: 2020.02.24

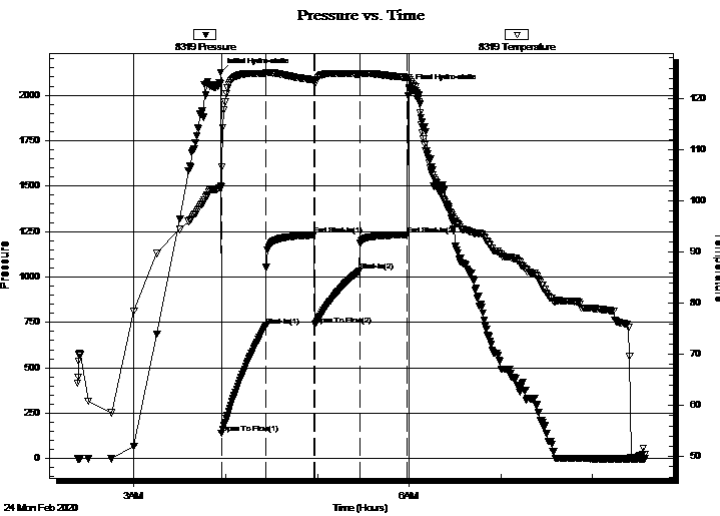
Start Time: 02:23:05

End Time: 08:34:14

Time On Btm: 2020.02.24 @ 03:56:45

Time Off Btm: 2020.02.24 @ 05:59:45

**TEST COMMENT:** 30- IF: BOB @ 1.5 min. built to 193".  
30- IS: No return.  
30- FF: BOB @ 2 min. built to 33" before starting to recede.  
30- FS: No return.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2125.43	102.94	Initial Hydro-static
1	137.75	102.79	Open To Flow (1)
30	732.12	124.99	Shut-In(1)
61	1230.86	123.67	End Shut-In(1)
62	737.49	123.46	Open To Flow (2)
91	1032.05	124.84	Shut-In(2)
122	1232.67	124.20	End Shut-In(2)
123	2038.02	124.17	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
2310.00	smcw 2m 98w (oil spots in tool)	31.28
0.00	21 ppm H2S	0.00

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66185

**DST#: 4**

ATTN: Kent Matson

Test Start: 2020.02.24 @ 02:23:00

## Tool Information

Drill Pipe:	Length: 4161.00 ft	Diameter: 3.80 inches	Volume: 58.37 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 123.00 ft	Diameter: 2.25 inches	Volume: 0.60 bbl	Weight to Pull Loose:	80000.00 lb
			<u>Total Volume: 58.97 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	27.00 ft			String Weight: Initial	61000.00 lb
Depth to Top Packer:	4284.00 ft			Final	68000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	26.00 ft				
Tool Length:	53.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4258.00	
Shut In Tool	5.00		Fluid	4263.00	
Hydraulic tool	5.00			4268.00	
Jars	5.00			4273.00	
Safety Joint	2.00			4275.00	
Packer	5.00		Inside	4280.00	27.00 Bottom Of Top Packer
Packer	4.00			4284.00	
Stubb	1.00			4285.00	
Recorder	0.00	8522	Inside	4285.00	
Recorder	0.00	8319	Outside	4285.00	
Perforations	22.00			4307.00	
Bullnose	3.00			4310.00	26.00 Bottom Packers & Anchor

**Total Tool Length: 53.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66185

**DST#: 4**

ATTN: Kent Matson

Test Start: 2020.02.24 @ 02:23:00

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

48500 ppm

Viscosity: 48.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.97 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 5800.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
2310.00	smcw 2m 98w (oil spots in tool)	31.283
0.00	21 ppm H2S	0.000

Total Length: 2310.00 ft      Total Volume: 31.283 bbl

Num Fluid Samples: 0

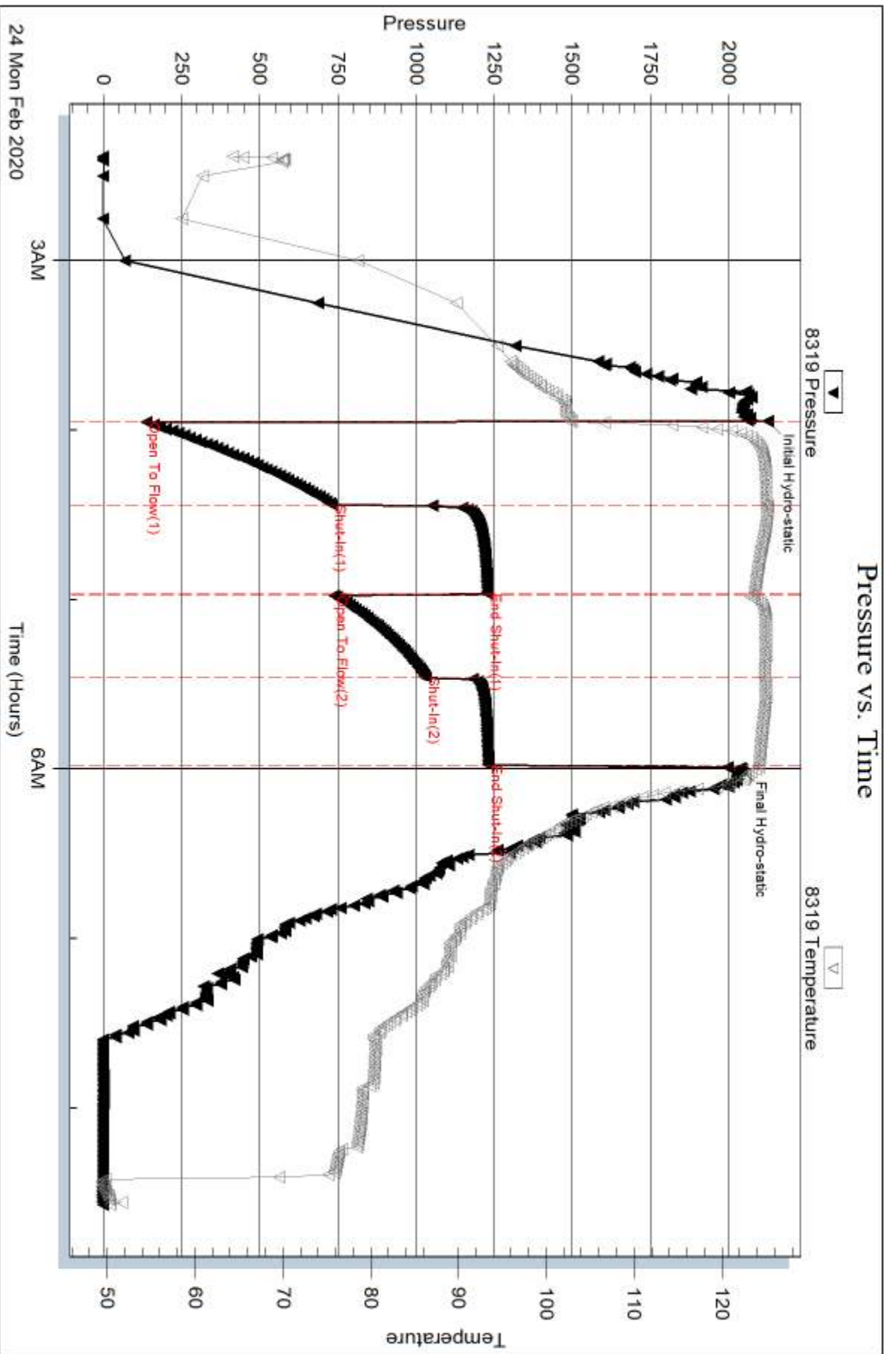
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: rw is .209 @ 50F = 48,500ppm





## DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc.**

PO Box 783188  
Wichita, KS 67278

ATTN: Kent Matson

### **Whitham 35AB #2**

#### **35-16s-37w Wichita,KS**

Start Date: 2020.02.24 @ 20:48:00

End Date: 2020.02.25 @ 03:29:15

Job Ticket #: 66186                      DST #: 5

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

Printed: 2020.02.28 @ 10:11:41



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66186

**DST#: 5**

ATTN: Kent Matson

Test Start: 2020.02.24 @ 20:48:00

## GENERAL INFORMATION:

Formation: **Pleasanton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:48:30

Time Test Ended: 03:29:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 78

**Interval: 4376.00 ft (KB) To 4395.00 ft (KB) (TVD)**

Reference Elevations: 3340.00 ft (KB)

Total Depth: 4395.00 ft (KB) (TVD)

3335.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8522**

**Inside**

Press@RunDepth: 136.28 psig @ 4377.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2020.02.24

End Date:

2020.02.25

Last Calib.:

2020.02.25

Start Time: 20:48:05

End Time:

03:29:14

Time On Btm:

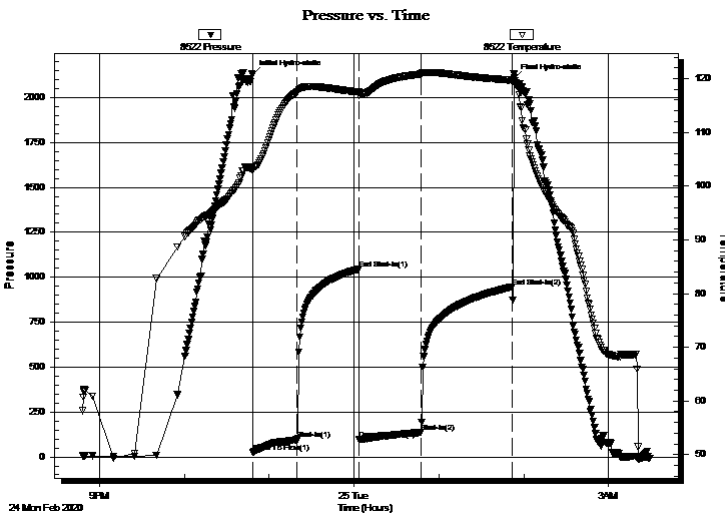
2020.02.24 @ 22:48:15

Time Off Btm:

2020.02.25 @ 01:53:15

TEST COMMENT: 30- IF: 8 3/4" blow .  
45- IS: No return.  
45- FF: 7 3/4" blow .  
60- FS: No return.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2127.12	103.55	Initial Hydro-static
1	25.23	102.78	Open To Flow (1)
32	95.25	117.50	Shut-In(1)
76	1045.88	117.48	End Shut-In(1)
76	96.78	116.93	Open To Flow (2)
120	136.28	120.83	Shut-In(2)
184	945.45	119.70	End Shut-In(2)
185	2108.07	119.21	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
330.00	mcw 5m 95w oil spots	3.51

## Gas Rates

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

\* Recovery from multiple tests







**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66186

**DST#: 5**

ATTN: Kent Matson

Test Start: 2020.02.24 @ 20:48:00

## Tool Information

Drill Pipe:	Length: 4255.00 ft	Diameter: 3.80 inches	Volume: 59.69 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 123.00 ft	Diameter: 2.25 inches	Volume: 0.60 bbl	Weight to Pull Loose: 75000.00 lb
			<u>Total Volume: 60.29 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	29.00 ft			String Weight: Initial 61000.00 lb
Depth to Top Packer:	4376.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	19.00 ft			
Tool Length:	46.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4350.00	
Shut In Tool	5.00		Fluid	4355.00	
Hydraulic tool	5.00			4360.00	
Jars	5.00			4365.00	
Safety Joint	2.00			4367.00	
Packer	5.00		Inside	4372.00	27.00 Bottom Of Top Packer
Packer	4.00			4376.00	
Stubb	1.00			4377.00	
Recorder	0.00	8522	Inside	4377.00	
Recorder	0.00	8319	Outside	4377.00	
Perforations	15.00			4392.00	
Bullnose	3.00			4395.00	19.00 Bottom Packers & Anchor

**Total Tool Length: 46.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66186

**DST#: 5**

ATTN: Kent Matson

Test Start: 2020.02.24 @ 20:48:00

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

24000 ppm

Viscosity: 53.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.98 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 6000.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
330.00	mcw 5m 95w oil spots	3.509

Total Length: 330.00 ft      Total Volume: 3.509 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

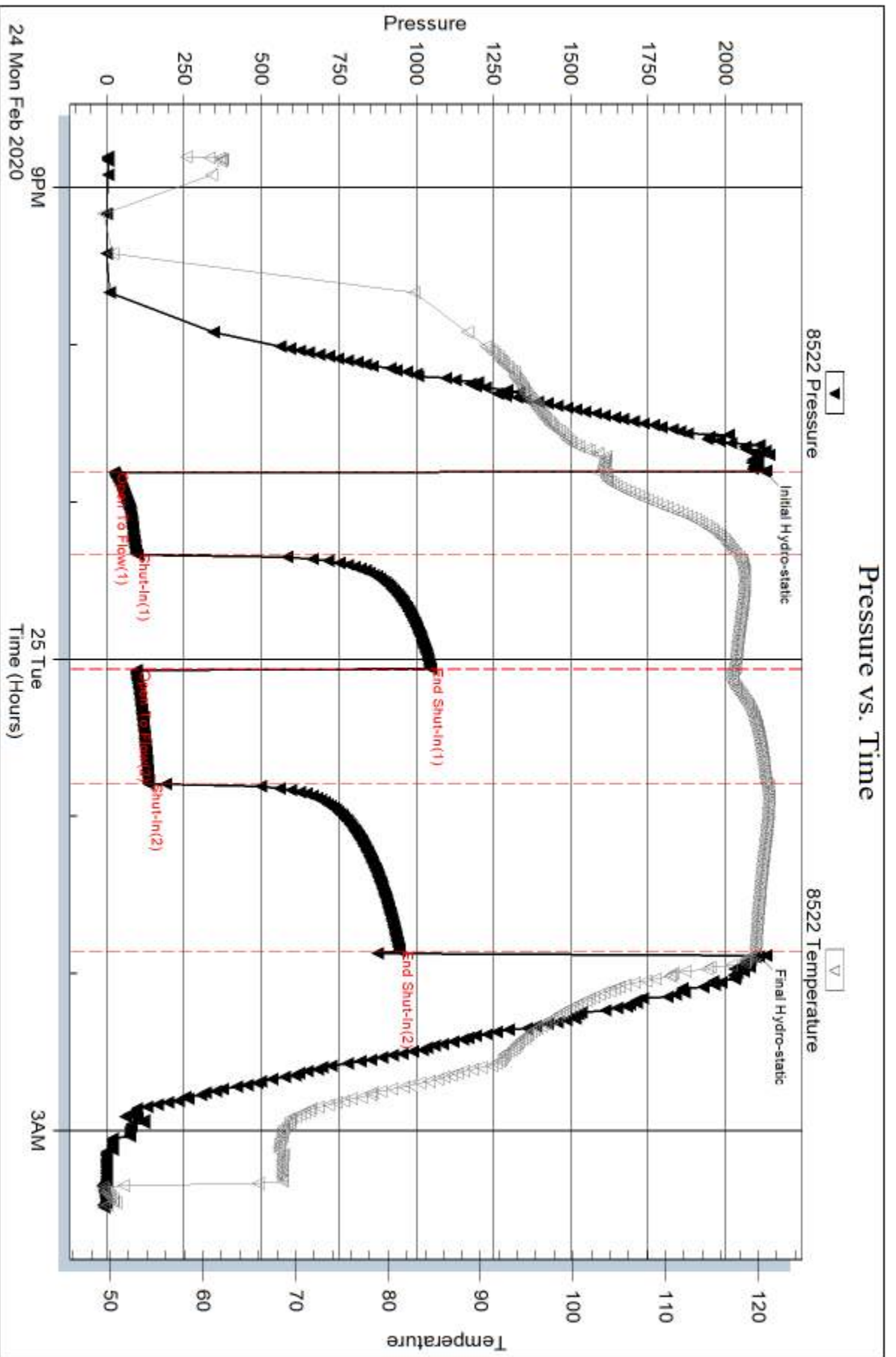
Serial #:

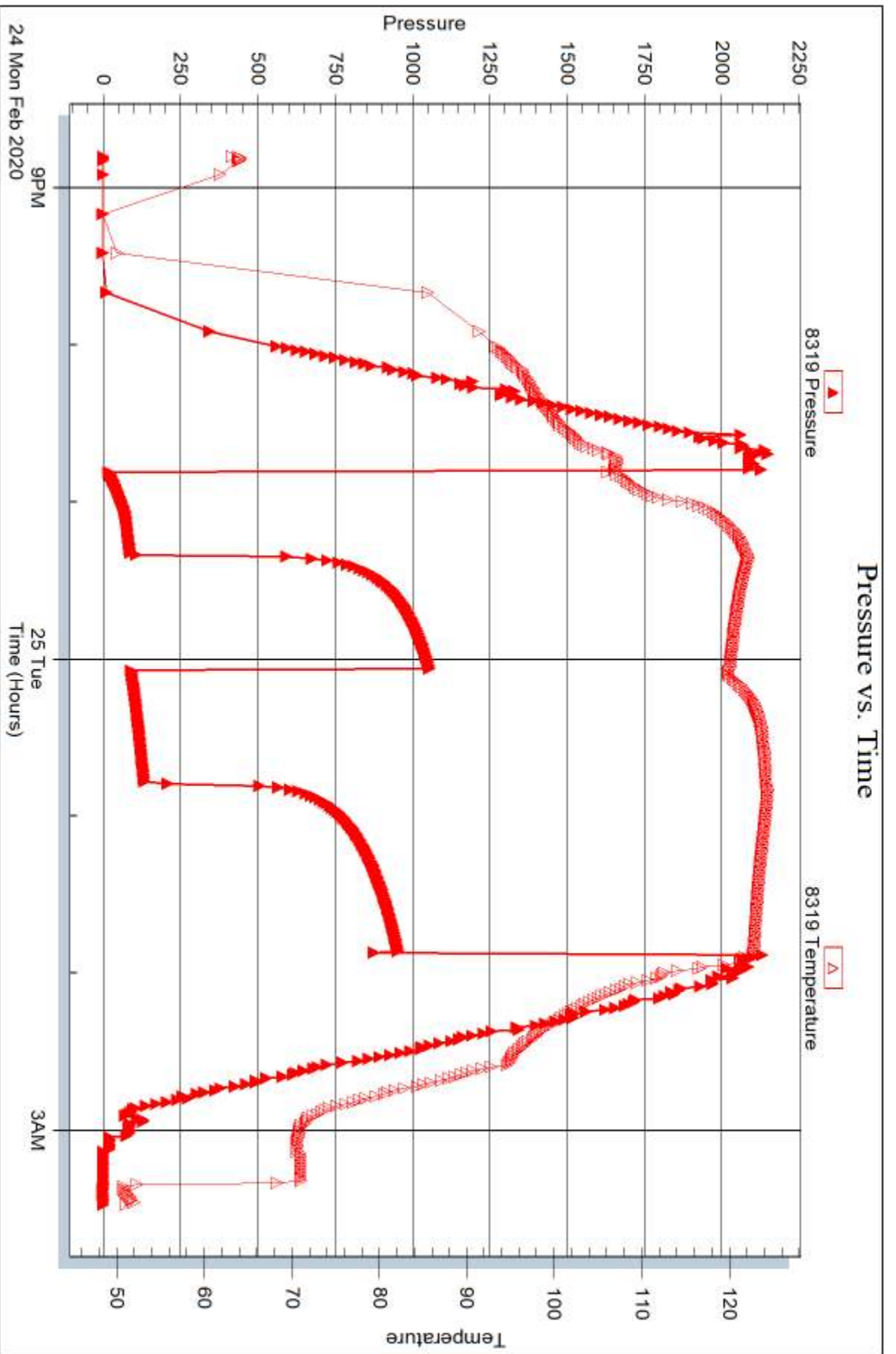
Laboratory Name:

Laboratory Location:

Recovery Comments: rw is .370 @ 53F = 24000ppm

### Pressure vs. Time







## DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc.**

PO Box 783188  
Wichita, KS 67278

ATTN: Kent Matson

### **Whitham 35AB #2**

#### **35-16s-37w Wichita,KS**

Start Date: 2020.02.25 @ 14:23:00

End Date: 2020.02.25 @ 22:10:15

Job Ticket #: 66187                      DST #: 6

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

Printed: 2020.02.28 @ 10:06:20

Ritchie Exploration, Inc.

35-16s-37w Wichita,KS

Whitham 35AB #2

DST # 6

Altamont A

2020.02.25



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66187

**DST#: 6**

ATTN: Kent Matson

Test Start: 2020.02.25 @ 14:23:00

## GENERAL INFORMATION:

Formation: **Altamont A**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:35:00

Time Test Ended: 22:10:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 78

**Interval: 4432.00 ft (KB) To 4470.00 ft (KB) (TVD)**

Reference Elevations: 3340.00 ft (KB)

Total Depth: 4470.00 ft (KB) (TVD)

3335.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8522 Inside**

Press@RunDepth: 414.68 psig @ 4433.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2020.02.25 End Date: 2020.02.25

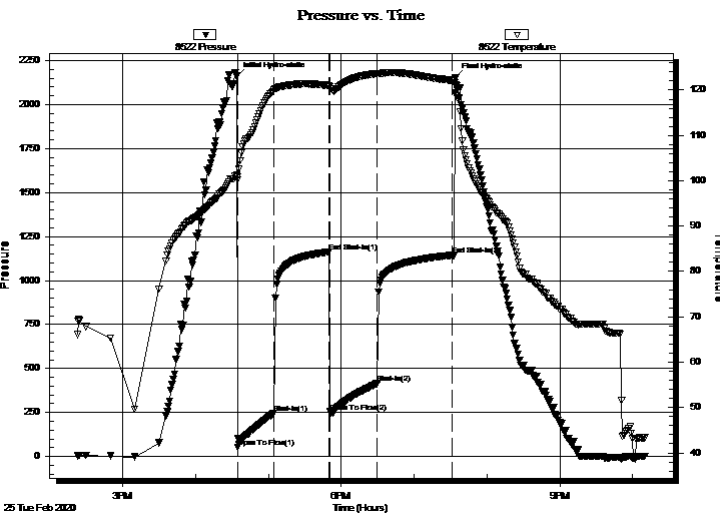
Last Calib.: 2020.02.25

Start Time: 14:23:05 End Time: 22:10:14

Time On Btm: 2020.02.25 @ 16:34:15

Time Off Btm: 2020.02.25 @ 19:34:00

**TEST COMMENT:** 30- IF: BOB @ 4 min. built to 67".  
45- IS: BOB @ 29 min, built to 17 1/2"  
45- FF: BOB @ 4 min. built to 67".  
60- FS: 6 1/2" return.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2160.07	101.34	Initial Hydro-static
1	53.64	100.88	Open To Flow (1)
31	247.67	119.98	Shut-In(1)
76	1162.85	120.96	End Shut-In(1)
77	253.98	120.73	Open To Flow (2)
115	414.68	123.61	Shut-In(2)
177	1144.23	122.12	End Shut-In(2)
180	2151.27	121.08	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
180.00	gocm 35g 25o 40m	1.40
920.00	go 30g 70o	12.91
0.00	720' GIP	0.00

\* Recovery from multiple tests

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66187

**DST#: 6**

ATTN: Kent Matson

Test Start: 2020.02.25 @ 14:23:00

## Tool Information

Drill Pipe:	Length: 4288.00 ft	Diameter: 3.80 inches	Volume: 60.15 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 123.00 ft	Diameter: 2.25 inches	Volume: 0.60 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 60.75 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	6.00 ft			String Weight: Initial 67000.00 lb
Depth to Top Packer:	4432.00 ft			Final 69000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	38.00 ft			
Tool Length:	65.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4406.00	
Shut In Tool	5.00		Fluid	4411.00	
Hydraulic tool	5.00			4416.00	
Jars	5.00			4421.00	
Safety Joint	2.00			4423.00	
Packer	5.00		Inside	4428.00	27.00 Bottom Of Top Packer
Packer	4.00			4432.00	
Stubb	1.00			4433.00	
Recorder	0.00	8522	Inside	4433.00	
Recorder	0.00	8319	Outside	4433.00	
Perforations	34.00			4467.00	
Bullnose	3.00			4470.00	38.00 Bottom Packers & Anchor

**Total Tool Length: 65.00**





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66187

**DST#: 6**

ATTN: Kent Matson

Test Start: 2020.02.25 @ 14:23:00

## Mud and Cushion Information

Mud Type: Gel Chem  
Mud Weight: 9.00 lb/gal  
Viscosity: 58.00 sec/qt  
Water Loss: 9.59 in<sup>3</sup>  
Resistivity: ohm.m  
Salinity: 8500.00 ppm  
Filter Cake: 1.00 inches

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

Oil API: 28 deg API  
Water Salinity: 0 ppm

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
180.00	gocm 35g 25o 40m	1.404
920.00	go 30g 70o	12.905
0.00	720' GIP	0.000

Total Length: 1100.00 ft      Total Volume: 14.309 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

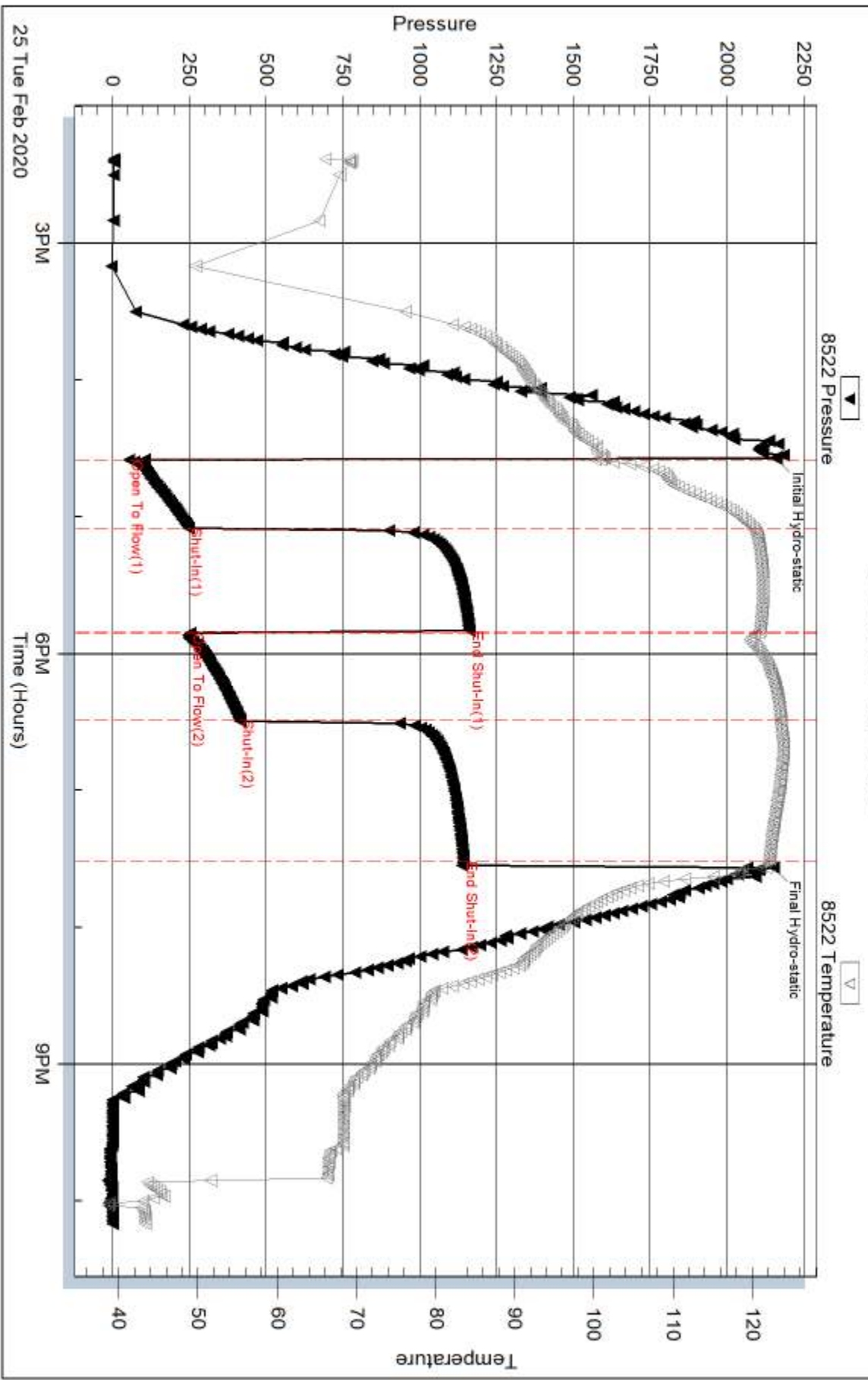
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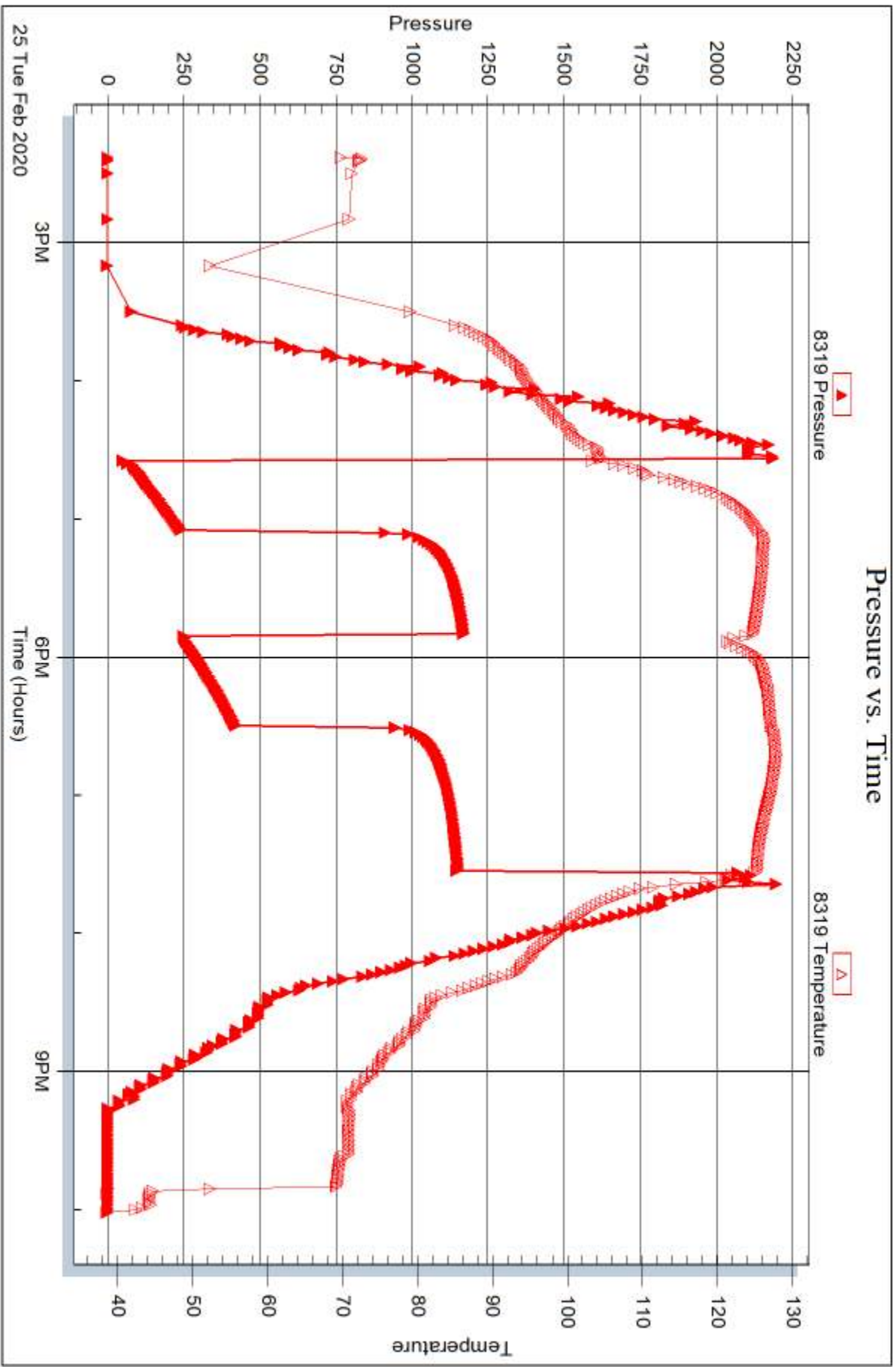
Laboratory Name:

Laboratory Location:

Recovery Comments:

### Pressure vs. Time







## DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc.**

PO Box 783188  
Wichita, KS 67278

ATTN: Kent Matson

### **Whitham 35AB #2**

#### **35-16s-37w Wichita,KS**

Start Date: 2020.02.26 @ 05:40:00

End Date: 2020.02.26 @ 11:58:00

Job Ticket #: 66188                      DST #: 7

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

Printed: 2020.02.28 @ 10:05:27



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66188

**DST#: 7**

ATTN: Kent Matson

Test Start: 2020.02.26 @ 05:40:00

## GENERAL INFORMATION:

Formation: **Altamont B**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 07:19:15

Time Test Ended: 11:58:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 78

**Interval: 4469.00 ft (KB) To 4490.00 ft (KB) (TVD)**

Reference Elevations: 3340.00 ft (KB)

Total Depth: 4490.00 ft (KB) (TVD)

3335.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8522 Inside**

Press@RunDepth: 24.69 psig @ 4470.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2020.02.26

End Date:

2020.02.26

Last Calib.:

2020.02.26

Start Time: 05:40:05

End Time:

11:57:59

Time On Btm:

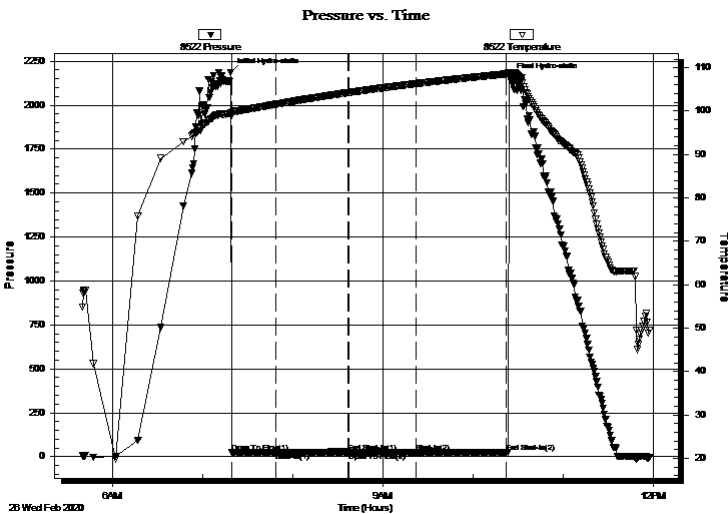
2020.02.26 @ 07:19:00

Time Off Btm:

2020.02.26 @ 10:24:30

TEST COMMENT: 30- IF: 1" blow .  
45- IS: No return.  
45- FF: No blow .  
60- FS: No return.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2186.10	99.62	Initial Hydro-static
1	24.59	98.98	Open To Flow (1)
30	24.73	101.59	Shut-In(1)
78	28.04	104.26	End Shut-In(1)
79	24.09	104.28	Open To Flow (2)
123	24.69	106.31	Shut-In(2)
184	26.36	108.57	End Shut-In(2)
186	2159.17	108.82	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	MUD 100M (oil spots)	0.02

\* Recovery from multiple tests

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66188

**DST#: 7**

ATTN: Kent Matson

Test Start: 2020.02.26 @ 05:40:00

## Tool Information

Drill Pipe:	Length: 4349.00 ft	Diameter: 3.80 inches	Volume: 61.01 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 123.00 ft	Diameter: 2.25 inches	Volume: 0.60 bbl	Weight to Pull Loose: 75000.00 lb
			<u>Total Volume: 61.61 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	30.00 ft			String Weight: Initial 62000.00 lb
Depth to Top Packer:	4469.00 ft			Final 62000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	21.00 ft			
Tool Length:	48.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4443.00	
Shut In Tool	5.00		Fluid	4448.00	
Hydraulic tool	5.00			4453.00	
Jars	5.00			4458.00	
Safety Joint	2.00			4460.00	
Packer	5.00		Inside	4465.00	27.00 Bottom Of Top Packer
Packer	4.00			4469.00	
Stubb	1.00			4470.00	
Recorder	0.00	8522	Inside	4470.00	
Recorder	0.00	8319	Outside	4470.00	
Perforations	17.00			4487.00	
Bullnose	3.00			4490.00	21.00 Bottom Packers & Anchor

**Total Tool Length: 48.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66188

**DST#: 7**

ATTN: Kent Matson

Test Start: 2020.02.26 @ 05:40:00

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 43.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 9000.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	MUD 100M (oil spots)	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

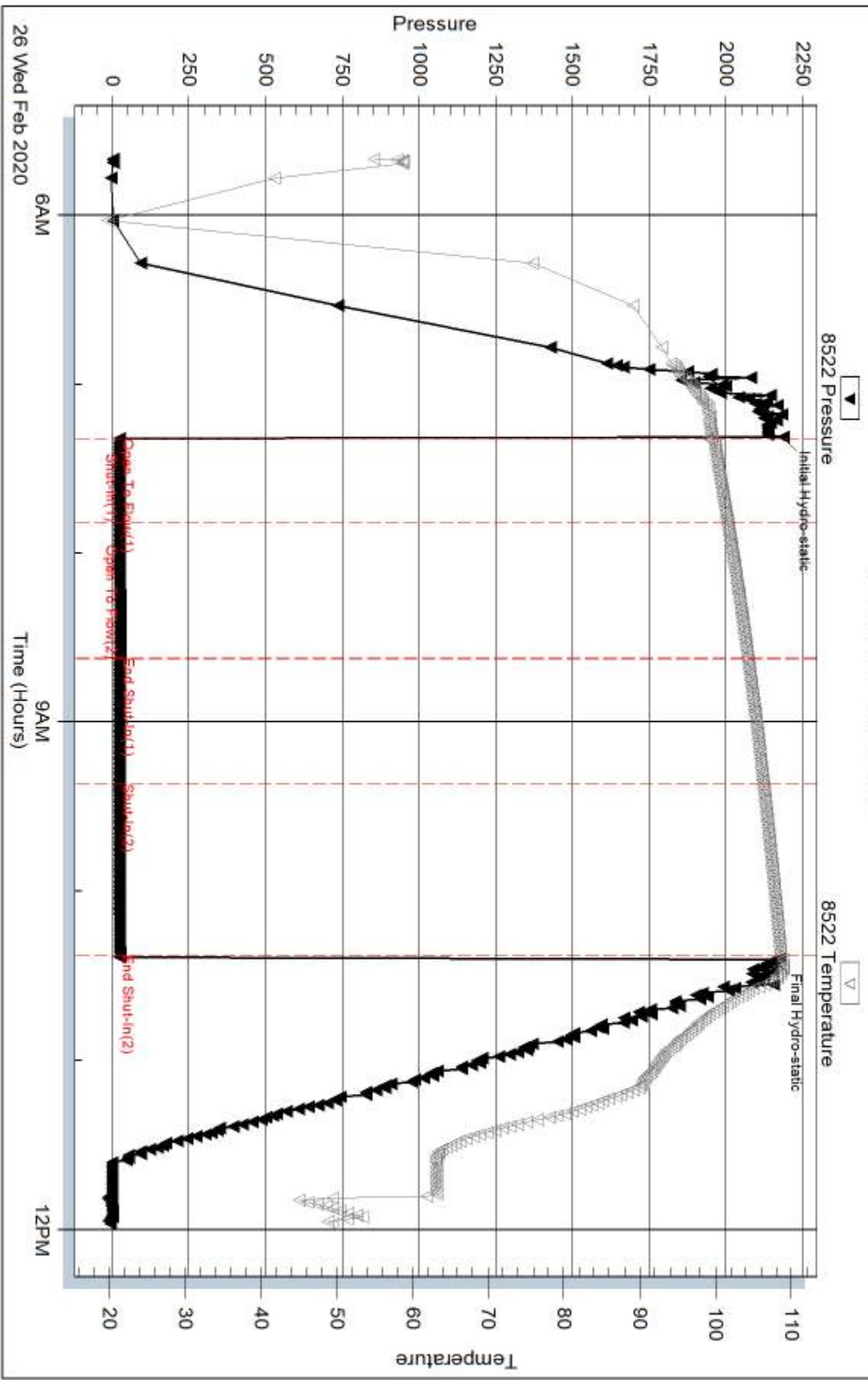
Laboratory Name:

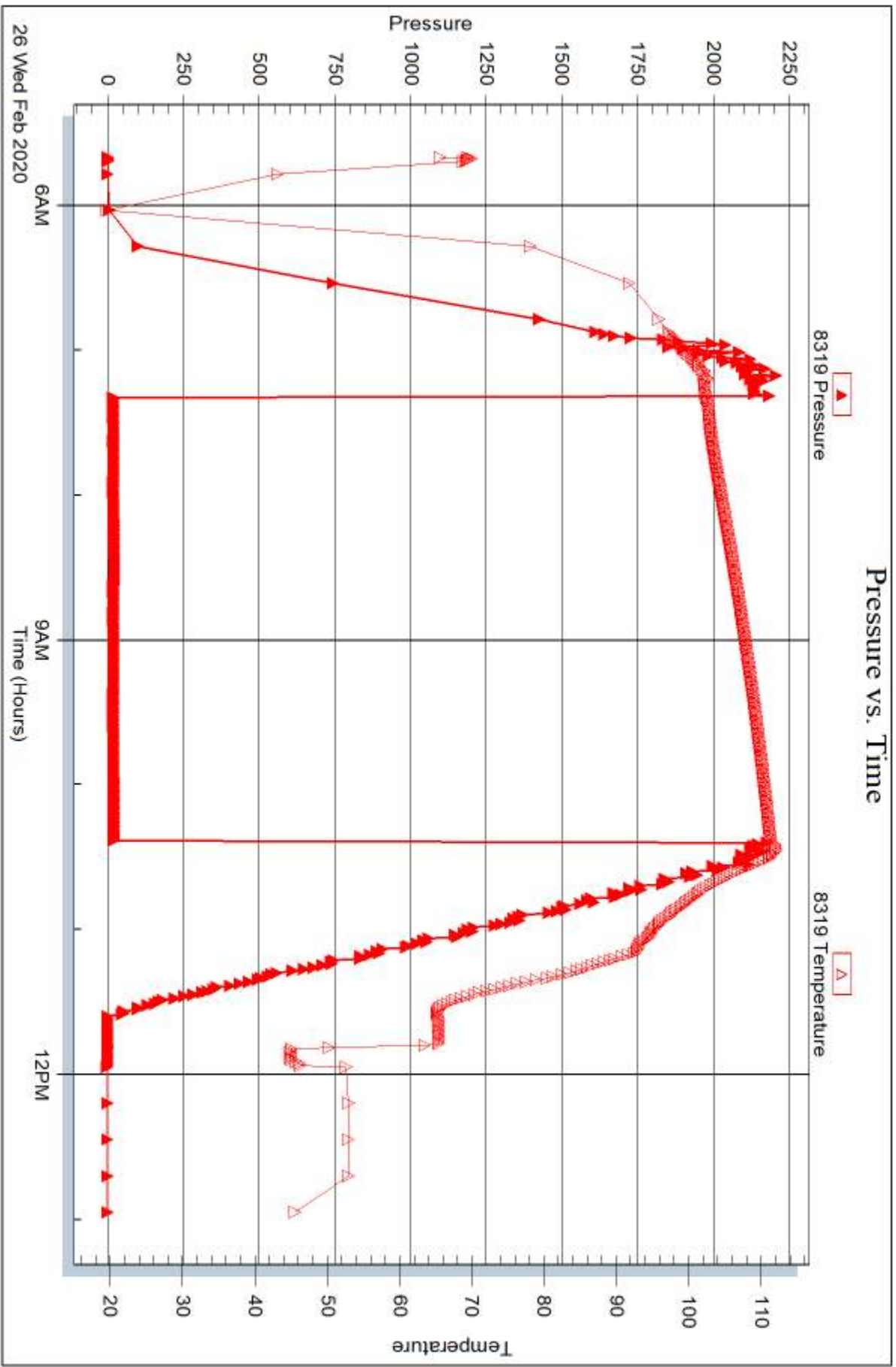
Laboratory Location:

Recovery Comments:



### Pressure vs. Time







## DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc.**

PO Box 783188  
Wichita, KS 67278

ATTN: Kent Matson

### **Whitham 35AB #2**

### **35-16s-37w Wichita,KS**

Start Date: 2020.02.27 @ 00:33:00

End Date: 2020.02.27 @ 06:57:45

Job Ticket #: 66189                      DST #: 8

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

Printed: 2020.02.28 @ 10:04:58

Ritchie Exploration, Inc.

35-16s-37w Wichita,KS

Whitham 35AB #2

DST # 8

Pawnee- Myric Statio

2020.02.27



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66189

**DST#: 8**

ATTN: Kent Matson

Test Start: 2020.02.27 @ 00:33:00

## GENERAL INFORMATION:

Formation: **Pawnee- Myric Statio**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:21:15

Time Test Ended: 06:57:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 78

**Interval: 4510.00 ft (KB) To 4568.00 ft (KB) (TVD)**

Reference Elevations: 3340.00 ft (KB)

Total Depth: 4568.00 ft (KB) (TVD)

3335.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8522**

**Inside**

Press@RunDepth: 26.69 psig @ 4511.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2020.02.27

End Date:

2020.02.27

Last Calib.:

2020.02.27

Start Time: 00:33:05

End Time:

06:57:44

Time On Btm:

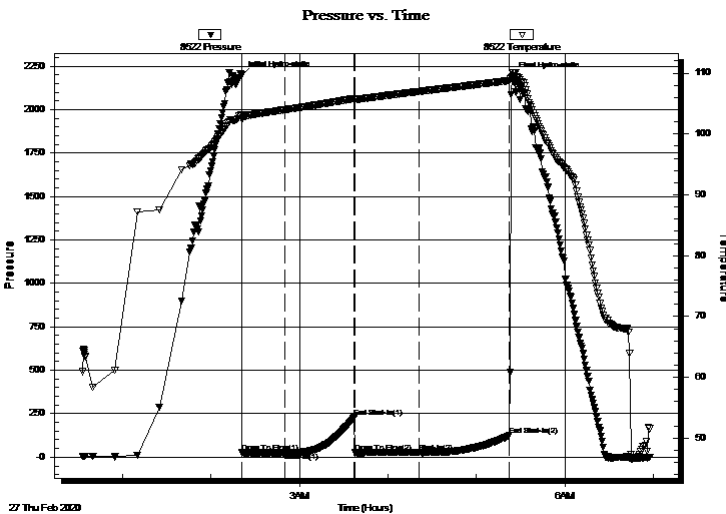
2020.02.27 @ 02:21:00

Time Off Btm:

2020.02.27 @ 05:24:30

**TEST COMMENT:** 30- IF: 1" blow .  
45- IS: No return.  
45- FF: No blow .  
60- FS: No return.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2197.96	103.10	Initial Hydro-static
1	24.94	102.41	Open To Flow (1)
30	26.01	103.98	Shut-In(1)
77	228.90	105.82	End Shut-In(1)
77	25.22	105.60	Open To Flow (2)
121	26.69	106.98	Shut-In(2)
182	124.82	108.78	End Shut-In(2)
184	2191.27	110.09	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100m (oil spots)	0.02

## Gas Rates

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

\* Recovery from multiple tests





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Ritchie Exploration, Inc.

**35-16s-37w Wichita,KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66189

**DST#: 8**

ATTN: Kent Matson

Test Start: 2020.02.27 @ 00:33:00

## Tool Information

Drill Pipe:	Length: 4388.00 ft	Diameter: 3.80 inches	Volume: 61.55 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 123.00 ft	Diameter: 2.25 inches	Volume: 0.60 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 62.15 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	28.00 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	4510.00 ft			Final 68000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	58.00 ft			
Tool Length:	85.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4484.00	
Shut In Tool	5.00		Fluid	4489.00	
Hydraulic tool	5.00			4494.00	
Jars	5.00			4499.00	
Safety Joint	2.00			4501.00	
Packer	5.00		Inside	4506.00	27.00 Bottom Of Top Packer
Packer	4.00			4510.00	
Stubb	1.00			4511.00	
Recorder	0.00	8522	Inside	4511.00	
Recorder	0.00	8319	Outside	4511.00	
Perforations	21.00			4532.00	
Change Over Sub	1.00			4533.00	
Drill Pipe	31.00			4564.00	
Change Over Sub	1.00			4565.00	
Bullnose	3.00			4568.00	58.00 Bottom Packers & Anchor

**Total Tool Length: 85.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Ritchie Exploration, Inc.

**35-16s-37w Wichita, KS**

PO Box 783188  
Wichita, KS 67278

**Whitham 35AB #2**

Job Ticket: 66189

**DST#: 8**

ATTN: Kent Matson

Test Start: 2020.02.27 @ 00:33:00

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbf

Water Loss: 9.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 9000.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbf
5.00	Mud 100m (oil spots)	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbf

Num Fluid Samples: 0

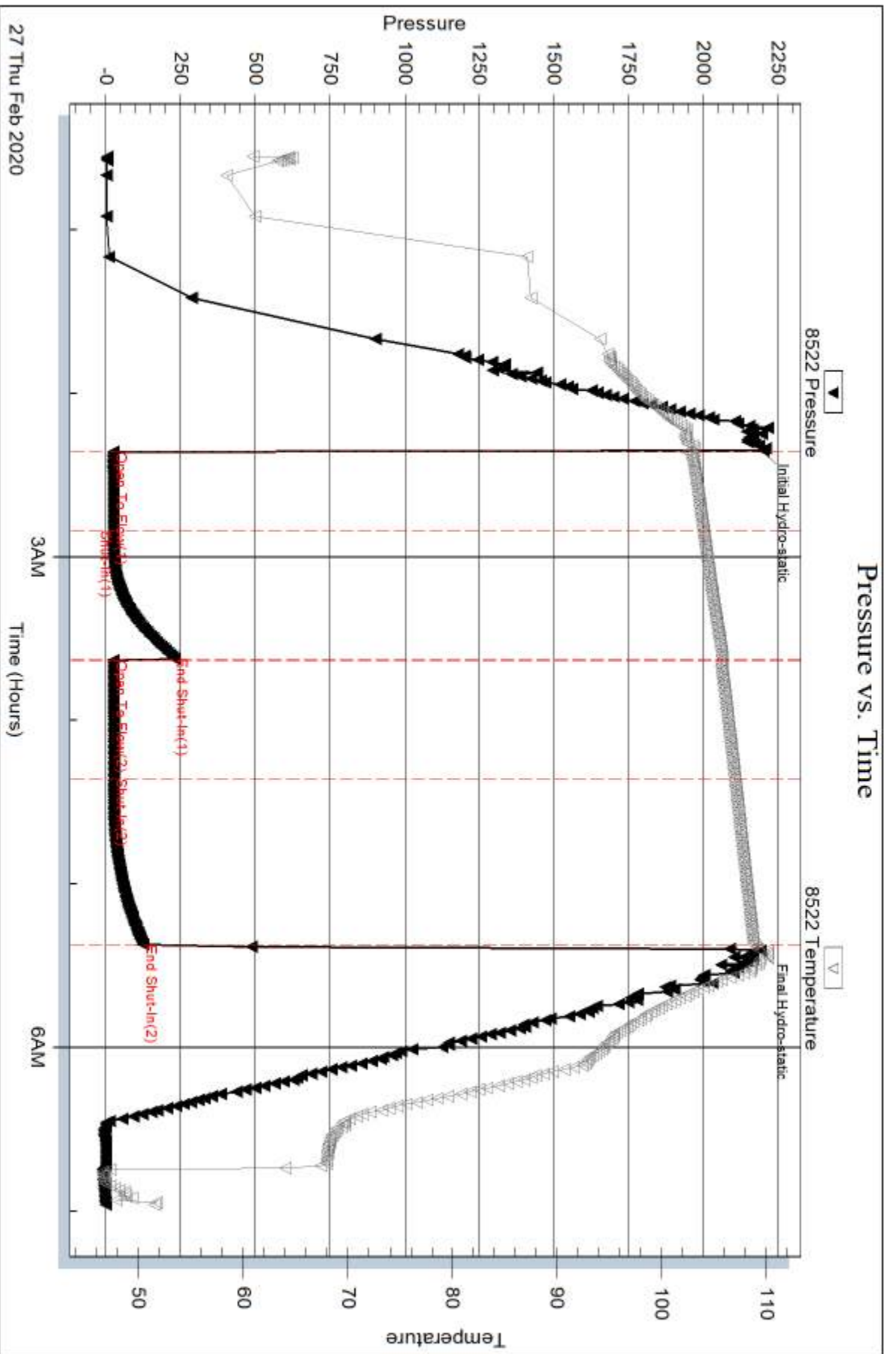
Num Gas Bombs: 0

Serial #:

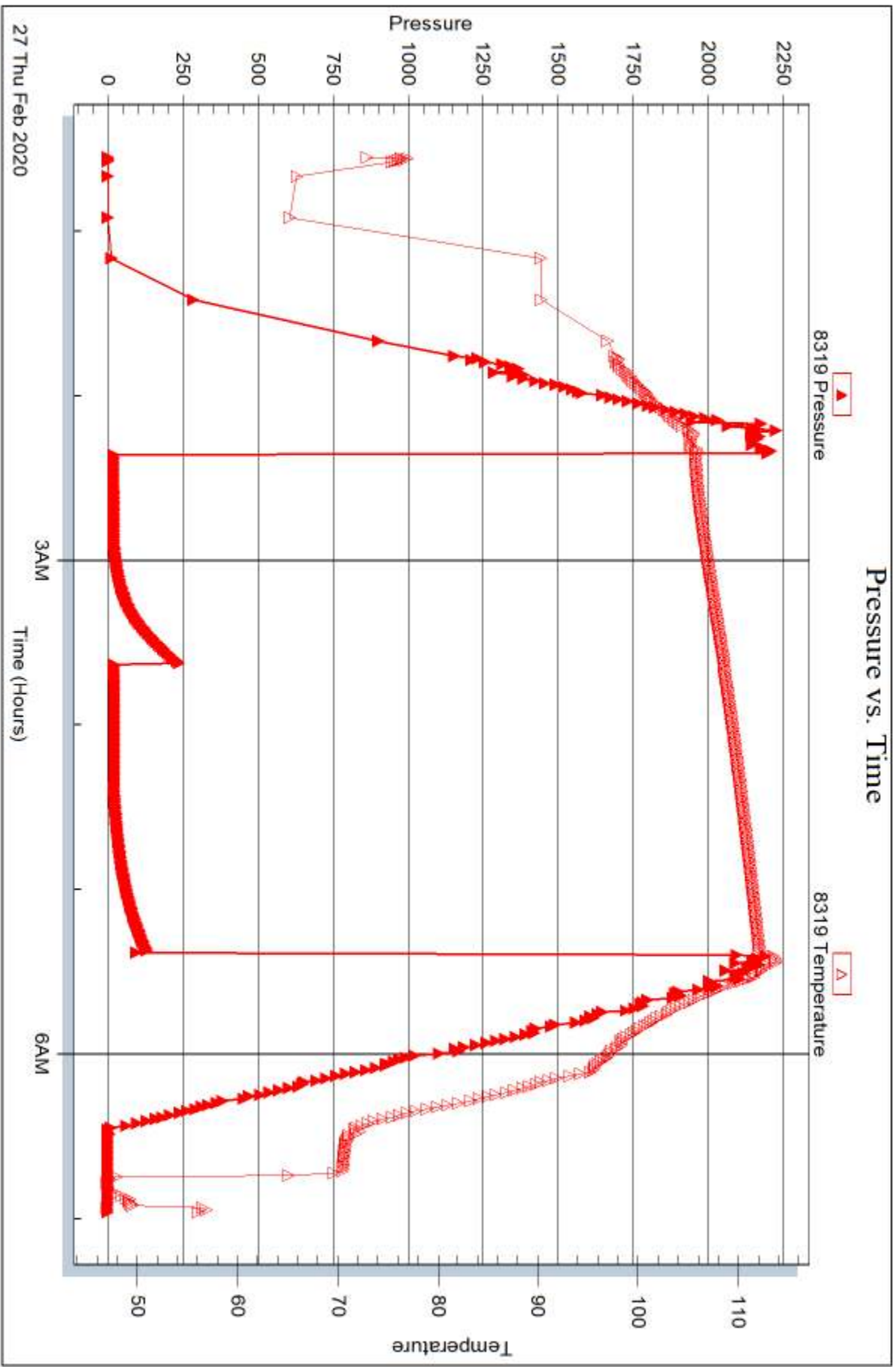
Laboratory Name:

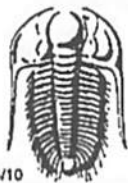
Laboratory Location:

Recovery Comments:









# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket 66182

NO.

Well Name & No. Whitham 35AB #2 Test No. 1 Date 2/22/2020  
 Company Rittke Explorations, Inc Elevation 8340 KB 9335 GL  
 Address PO Box 283188 Wichita, KS 67278  
 Co. Rep / Geo. Kent Matson Rig WW #10  
 Location: Sec. 35 Twp 16S Rge. 37W Co. Wichita State Ks

Interval Tested 4040 - 4070 Zone Tested LKC - C  
 Anchor Length 30' Drill Pipe Run 3906 Mud Wt. 9.2  
 Top Packer Depth 4035 Drill Collars Run 123 Vis 51  
 Bottom Packer Depth 4040 Wt. Pipe Run Ø WL 7.2  
 Total Depth 4070 Chlorides 2500 ppm System LCM 1#

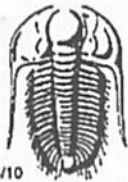
Blow Description IF BOB @ 4min built to 91"  
ISI No return.  
FF BOB @ 4min built to 95"  
PSI No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>1530</u>	<u>5' new</u>		<u>98</u>	<u>2</u>	
	<u>oil spots in tool</u>				

Rec Total 1530 BHT 116 Gravity — API RW 273 @ 43 °F Chlorides 42,000 ppm

(A) Initial Hydrostatic <u>1981</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>1900</u>
(B) First Initial Flow <u>65</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>2002</u>
(C) First Final Flow <u>406</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>2152 2/22</u>
(D) Initial Shut-In <u>1075</u>	<input checked="" type="checkbox"/> Circ Sub <u>NC</u>	T-Pulled <u>0052</u>
(E) Second Initial Flow <u>422</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>0233</u>
(F) Second Final Flow <u>704</u>	<input checked="" type="checkbox"/> Mileage <u>76 RT 76</u>	Comments
(G) Final Shut-In <u>1081</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1965</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> EM Tool
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>45</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>45</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1701</u>
	Sub Total <u>1701</u>	MP/DST Disc't

Approved By \_\_\_\_\_ Our Representative [Signature]  
 Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket 66183

NO.

Well Name & No. Whitham Whitham 35 AB #2 Test No. 2 Date 2/22/2020  
 Company Ritchie Exploration, Inc Elevation 3340 KB 3335 GL  
 Address PO Box 753188 Wichita, KS 67278  
 Co. Rep / Geo. Kent Matson Rig WABA #110  
 Location: Sec. 3.5 Twp 16S Rge. 37W Co. Wichita State KS

Interval Tested 4108 - 4146 Zone Tested 1KC E+P  
 Anchor Length 38' Drill Pipe Run 3970 Mud Wt. 8.9  
 Top Packer Depth 4103 Drill Collars Run 123 Vis 54  
 Bottom Packer Depth 4108 Wt. Pipe Run Ø WL 8.8  
 Total Depth 4146 Chlorides 5500 ppm System LCM 1#

Blow Description IF: BOB @ 13 min built to 22"  
FSI: Surface Return.  
FF: BOB @ 13 min. built to 32"  
FSI: No return.

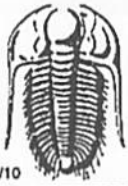
Rec	Feet of	%gas	%oil	%water	%mud
<u>20</u>	<u>Oil</u>	<u>100</u>			
<u>580</u>	<u>MCW w/oil spots</u>		<u>90</u>		<u>10</u>
	<u>90' GIP</u>				

Rec Total 600 BHT 116 Gravity 19 API RW 1240 @ 51 °F Chlorides 40,000 ppm

(A) Initial Hydrostatic <u>20.31</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>1350</u>
(B) First Initial Flow <u>30</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>1552</u>
(C) First Final Flow <u>157</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>1947</u>
(D) Initial Shut-In <u>1162</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>1847</u>
(E) Second Initial Flow <u>162</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>2048</u>
(F) Second Final Flow <u>293</u>	<input checked="" type="checkbox"/> Mileage <u>76mi</u> <u>76</u>	Comments _____
(G) Final Shut-In <u>1162</u>	<input type="checkbox"/> Sampler	_____
(H) Final Hydrostatic <u>1995</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> EM Tool
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>45</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>45</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1701</u>
	Sub Total <u>1701</u>	MP/DST Disc't _____

Approved By \_\_\_\_\_ Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket 66184

NO.

Well Name & No. Whitham 35AB #2 Test No. 3 Date 2/23/2020  
 Company Ritchie Exploration, Inc Elevation 3340 KB 3535 GL  
 Address PO Box 783188 Wichita, ks 67276  
 Co. Rep / Geo. Kent Matson Rig Wichita #10 Moran 110  
 Location: Sec. 35 Twp 16S Rge. 37W Co. Wichita State KS

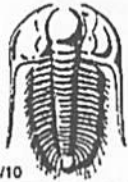
Interval Tested 4226 - 4260 Zone Tested LKC I  
 Anchor Length 34 Drill Pipe Run 5090 Mud Wt. 9.2  
 Top Packer Depth 4221 Drill Collars Run 123 Vis 56  
 Bottom Packer Depth 4226 Wt. Pipe Run 0 WL 8.0  
 Total Depth 4260 Chlorides 5800 ppm System LCM 1#  
 Blow Description IP 2 1/4" blow  
ISI No return.  
PF 3 1/2" blow  
PSI No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>150</u>	<u>ncw</u>			<u>60</u>	<u>40</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of <u>oil spots</u>	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 150 BHT 112 Gravity - API RW .390 @ 45 °F Chlorides 31000 ppm  
 (A) Initial Hydrostatic 2099  Test 1300 T-On Location 0950  
 (B) First Initial Flow 24  Jars 250 T-Started 0958  
 (C) First Final Flow 52  Safety Joint 75 T-Open 1143  
 (D) Initial Shut-In 1215  Circ Sub \_\_\_\_\_ T-Pulled 1443  
 (E) Second Initial Flow 55  Hourly Standby \_\_\_\_\_ T-Out 1632  
 (F) Second Final Flow 85  Mileage 76.24 76 Comments \_\_\_\_\_  
 (G) Final Shut-In 1212  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2066  Straddle \_\_\_\_\_  
 Initial Open 30  Shale Packer \_\_\_\_\_  
 Initial Shut-In 45  Extra Packer \_\_\_\_\_  
 Final Flow 45  Extra Recorder \_\_\_\_\_  
 Final Shut-In 60  Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_  
 Sub Total 1701 Sub Total \_\_\_\_\_  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket 66185

NO.

Well Name & No. Whitham 35 AB #2 Test No. 4 Date 2/24/2020  
 Company Ritchie Exploration, Inc Elevation 3340 KB 3335 GL  
 Address PO Box 783188 Wichita, KS 67276  
 Co. Rep / Geo. Kent Matson Rig WW #10 Mountain 110  
 Location: Sec. 35 Twp 16S Rge. 37W Co. Wichita State KS

Interval Tested 4284-4310 Zone Tested LXC I  
 Anchor Length 26' Drill Pipe Run 4161 Mud Wt. 9.2  
 Top Packer Depth 4279 Drill Collars Run 129 Vis 48  
 Bottom Packer Depth 4284 Wt. Pipe Run Ø WL 8.0  
 Total Depth 4310 Chlorides 5800 ppm System LCM 1#  
 Blow Description IF BOB @ 1.5 min, built to 195"  
ISI No return.  
FF BOB @ 2 min built to 33" before receding  
FSI No return.

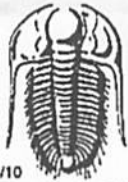
Rec	Feet of	%gas	%oil	%water	%mud
2310	SMCW			98%	2%
	Oil spots in tool				

Rec Total 2310 BHT 124 Gravity — API RW 209 @ 50 °F Chlorides 46,500 ppm  
 (A) Initial Hydrostatic 2125  Test 1300 T-On Location 0145  
 (B) First Initial Flow 138  Jars 250 T-Started 0158 0223  
 (C) First Final Flow 732  Safety Joint 75 T-Open 0223 0405  
 (D) Initial Shut-In 1231  Circ Sub \_\_\_\_\_ T-Pulled 0605  
 (E) Second Initial Flow 737  Hourly Standby \_\_\_\_\_ T-Out 0834  
 (F) Second Final Flow 1032  Mileage 76RT 76 Comments \_\_\_\_\_  
 (G) Final Shut-In 1233  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2038  Straddle \_\_\_\_\_  
 Initial Open 30  Shale Packer \_\_\_\_\_  
 Initial Shut-In 30  Extra Packer \_\_\_\_\_  
 Final Flow 30  Extra Recorder \_\_\_\_\_  
 Final Shut-In 30  Day Standby \_\_\_\_\_  
 Sub Total 1701  Accessibility \_\_\_\_\_  
 Sub Total 1701  EM Tool \_\_\_\_\_  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_  
 Sub Total 0  
 Total 1701  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket 66186

NO.

Well Name & No. Whitham 35 AB #2 Test No. 5 Date 2/25/2020  
 Company Ritchie Exploration, Inc Elevation 3340 KB 5335 GL  
 Address PO Box 753188 Wichita, KS 67276  
 Co. Rep / Geo. Keat Matson Rig Murphy 110  
 Location: Sec. 35 Twp 16S Rge. 37W Co. Wichita State KS

Interval Tested 4374 - 4395 Zone Tested Pleasanton  
 Anchor Length 19' Drill Pipe Run 4255 Mud Wt. 9.1  
 Top Packer Depth 4371 Drill Collars Run 123 Vis 53  
 Bottom Packer Depth 4376 Wt. Pipe Run 0 WL 8.0  
 Total Depth 4395 Chlorides 2000 ppm System LCM 1#

Blow Description FF 8 3/4" blow  
FSI No return  
FF 7 3/4" blow  
FSI No return.

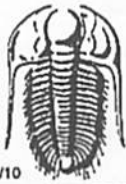
Rec	Feet of	%gas	%oil	%water	%mud
<u>330</u>	<u>snw</u>			<u>95</u>	<u>5</u>
	<u>oil spots</u>				

Rec Total 330 BHT 120 Gravity - API RW 1370 @ 53 °F Chlorides 24,000 ppm

(A) Initial Hydrostatic <u>2127</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>2000</u>
(B) First Initial Flow <u>25</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>2048</u>
(C) First Final Flow <u>95</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>2248</u>
(D) Initial Shut-In <u>1046</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>0148</u>
(E) Second Initial Flow <u>97</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>0328</u>
(F) Second Final Flow <u>136</u>	<input checked="" type="checkbox"/> Mileage <u>76RT</u> <u>76</u>	Comments
(G) Final Shut-In <u>945</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2108</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> EM Tool
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>45</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>45</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1701</u>
	Sub Total <u>1701</u>	MP/DST Disc't

Approved By \_\_\_\_\_ Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket 66187

NO.

Well Name & No. Whitham 35 AB #2 Test No. 6 Date 2/25/2020  
 Company Ritchie Exploration Inc Elevation 3340 KB 3335 GL  
 Address PO Box 783 188 Whitham ks 67276  
 Co. Rep / Geo. Kent Matson Rig Moran 110  
 Location: Sec. 35 Twp 16S Rge. 5FW Co. Wichita State ks

Interval Tested 4432 - 4470 Zone Tested Altamont A  
 Anchor Length 38 Drill Pipe Run 4288 Mud Wt. 9.3  
 Top Packer Depth 4427 Drill Collars Run 123 Vis 58  
 Bottom Packer Depth 4432 Wt. Pipe Run 8 WL 9.6  
 Total Depth 4470 Chlorides 8500 ppm System LCM 1#

Blow Description IF BOB@ 4 min - 67" blow  
ISI BOB@ 29 min - 17" return.  
EF BOB@ 4 min - 67" blow  
FSP 6 1/2" return.

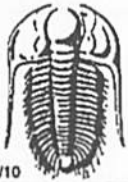
Rec	Feet of	%gas	%oil	%water	%mud
920	60	30	70		
180	60cm	35	25		40
	720' GTP				

Rec Total 1100 BHT 122 Gravity 28 API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>2160</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>1330</u>
(B) First Initial Flow <u>54</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>1423</u>
(C) First Final Flow <u>248</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>1636</u>
(D) Initial Shut-In <u>1163</u>	<input type="checkbox"/> Circ Sub <u>—</u>	T-Pulled <u>1936</u>
(E) Second Initial Flow <u>254</u>	<input type="checkbox"/> Hourly Standby <u>—</u>	T-Out <u>2210</u>
(F) Second Final Flow <u>415</u>	<input checked="" type="checkbox"/> Mileage <u>76 RT 76</u>	Comments <u>—</u>
(G) Final Shut-In <u>1144</u>	<input type="checkbox"/> Sampler <u>—</u>	
(H) Final Hydrostatic <u>2151</u>	<input type="checkbox"/> Straddle <u>—</u>	
Initial Open <u>30</u>	<input checked="" type="checkbox"/> Shale Packer <u>250</u>	<input type="checkbox"/> EM Tool <u>—</u>
Initial Shut-In <u>45</u>	<input type="checkbox"/> Extra Packer <u>—</u>	<input type="checkbox"/> Ruined Shale Packer <u>—</u>
Final Flow <u>45</u>	<input type="checkbox"/> Extra Recorder <u>—</u>	<input type="checkbox"/> Ruined Packer <u>—</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby <u>—</u>	<input type="checkbox"/> Extra Copies <u>—</u>
	<input type="checkbox"/> Accessibility <u>—</u>	Sub Total <u>0</u>
	Sub Total <u>1951</u>	Total <u>1951</u>

Approved By \_\_\_\_\_ Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket 66188

NO.

Well Name & No. Whitham 35AB #2 Test No. 7 Date 2/24/2020  
 Company Ritchie Exploration, Inc Elevation 3340 KB 3335 GL  
 Address Po Box 783188 Wichita, ks 67276  
 Co. Rep / Geo. Kent Matson Rig Martin 110  
 Location: Sec. 35 Twp 16S Rge. 57W Co. Wichita State Ks

Interval Tested 4469-4490 Zone Tested Allamont B  
 Anchor Length 21 Drill Pipe Run 4349 Mud Wt. 9.2  
 Top Packer Depth 4464 Drill Collars Run 123 Vis 43  
 Bottom Packer Depth 4469 Wt. Pipe Run Ø WL 9.6  
 Total Depth 4490 Chlorides 9,000 ppm System LCM .5#

Blow Description TF: 1" blow  
ISF: No return.  
FF: No blow  
FSI: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>mud</u>			<u>100</u>	
	<u>oil spots</u>				

Rec Total 5 BHT 108 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>2186</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>0430</u>
(B) First Initial Flow <u>25</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>0440</u>
(C) First Final Flow <u>25</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>0718</u>
(D) Initial Shut-In <u>28</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>1018</u>
(E) Second Initial Flow <u>24</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>1158</u>
(F) Second Final Flow <u>25</u>	<input checked="" type="checkbox"/> Mileage <u>76RT</u> <u>76</u>	Comments
(G) Final Shut-In <u>26</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2159</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> EM Tool
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
Initial Shut-In <u>45</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Final Flow <u>45</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
	<input type="checkbox"/> Accessibility	Total <u>1701</u>
	Sub Total <u>1701</u>	MP/DST Disc't

Approved By \_\_\_\_\_ Our Representative [Signature]

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# TRIBOLITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket 66189

NO.

Well Name & No. Whitham 35AB #2 Test No. 8 Date 2/27/2020  
 Company Ritche Exploration Inc Elevation 3540 KB 3335 GL  
 Address PO Box 783188 Wichita, KS 67276  
 Co. Rep / Geo. Kent Matson Rig Mifan 110  
 Location: Sec. 35 Twp 16s Rge. 57w Co. Wichita State KS

Interval Tested 4510 - 4568 Zone Tested Pawnee - Myric Station  
 Anchor Length 58 Drill Pipe Run 4388 Mud Wt. 9.2  
 Top Packer Depth 4505 Drill Collars Run 123 Vis 55  
 Bottom Packer Depth 4510 Wt. Pipe Run Ø WL 9.6  
 Total Depth 4568 Chlorides 9,000 ppm System LCM 2#

Blow Description IF 1" blow  
IST No return  
FF No blow  
FST No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>MUD</u>			<u>100</u>	
	<u>oil spots</u>				

Rec Total 3 BHT 109 Gravity — API RW — @ — °F Chlorides — ppm  
 (A) Initial Hydrostatic 2198  Test 1300 T-On Location 0000  
 (B) First Initial Flow 25  Jars 250 T-Started 0033  
 (C) First Final Flow 26  Safety Joint 75 T-Open 0122  
 (D) Initial Shut-In 229  Circ Sub \_\_\_\_\_ T-Pulled 0522  
 (E) Second Initial Flow 25  Hourly Standby \_\_\_\_\_ T-Out 0658  
 (F) Second Final Flow 27  Mileage 76Rt 76 +76 Comments \_\_\_\_\_  
 (G) Final Shut-In 125  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 2191  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Initial Open 30  EM Tool \_\_\_\_\_  
 Initial Shut-In 45  Ruined Shale Packer \_\_\_\_\_  
 Final Flow 45  Ruined Packer \_\_\_\_\_  
 Final Shut-In 60  Extra Copies \_\_\_\_\_  
 Sub Total 0  
 Total 1777  
 Sub Total 1777 MP/DST Disc \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative [Signature]  
 Tribolite 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.



**Scale 1:240 (5"=100') Imperial  
Measured Depth Log**

**Well Name:** WHITHAM 35AB  
**Well Id:** #2  
**Location:** 1339' FNL, 682' FEL, Sec 35-T16S-R37W, Wichita County, Kansas  
**License Number:** API: 15-203-20363 **Region:** Wichita County  
**Spud Date:** 02/17/2020 **Drilling Completed:** 02/28/2020  
**Surface Coordinates:** Lat: 38.6231599  
Long: -101.3703599  
**Bottom Hole Vertical hole**  
**Coordinates:**  
**Ground Elevation (ft):** 3335' **K.B. Elevation (ft):** 3340'  
**Logged Interval (ft):** 3700' **To:** RTD **Total Depth (ft):** 4930'  
**Formation:** Mississippian at RTD  
**Type of Drilling Fluid:** Chemical

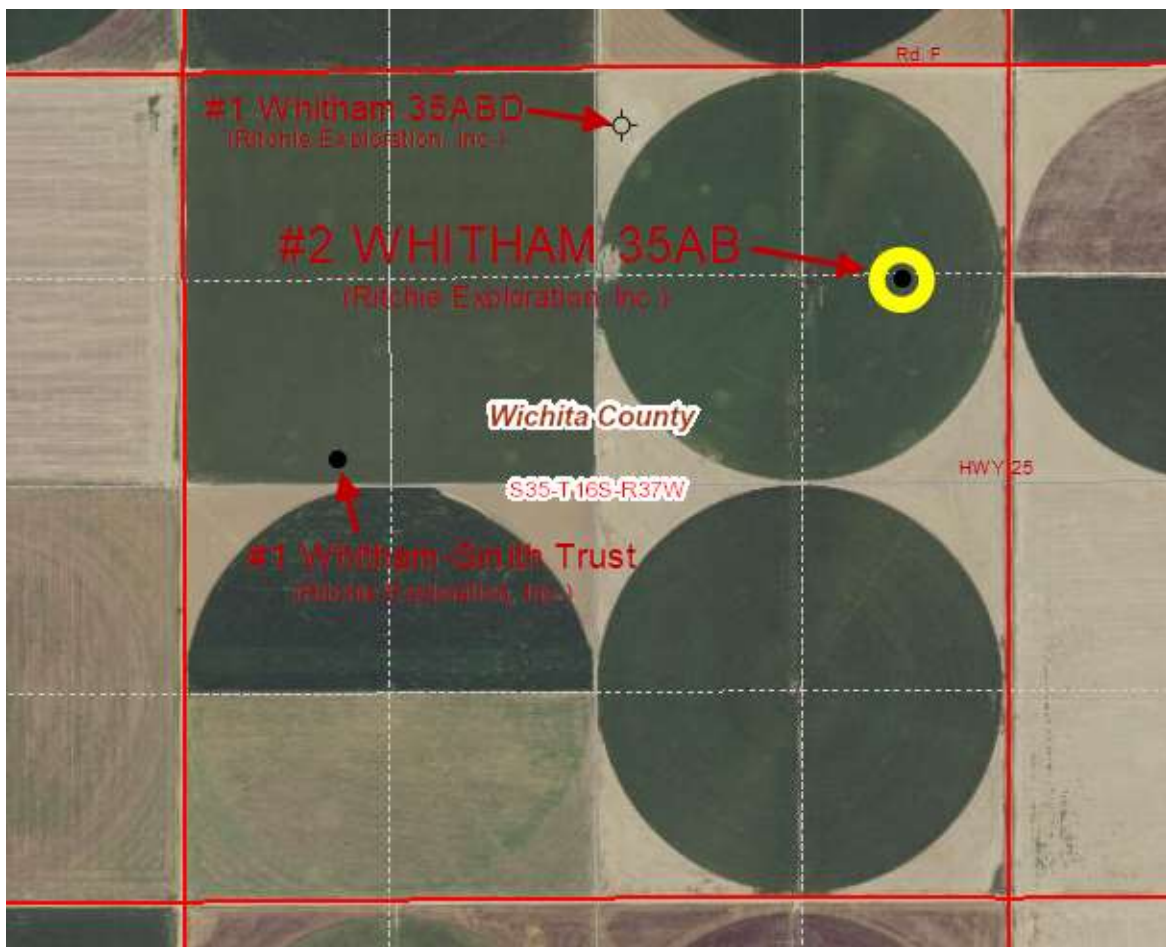
Printed by MUD.LOG from WellSight Systems 1-800-447-1534 [www.WellSight.com](http://www.WellSight.com)

**OPERATOR**

**Company:** Ritchie Exploration, Inc.  
**Address:** 8100 E. 22nd Street N., Bldg 700  
Wichita, KS 67226  
316-691-9500

**GEOLOGIST**

**Name:** Kent R. Matson  
**Company:** Matson Geological Services, LLC  
**Address:** 33300 W. 15th Street S.  
Garden Plain, Kansas 67050  
316-644-1975; [kent4m@hotmail.com](mailto:kent4m@hotmail.com)



### COMMENTS

Ritchie Exploration Company Geologist: John Goldsmith, 316-640-0236 (cell).

Contractor: WW Drilling Company, Rig #110.

Tool Pusher: Ricky Hilgers, 785-743-8492 (cell).

Surface Casing: 8 5/8" set at 263' (KB) w/200sx cement.

Production Casing: Based on field observations of drill cuttings, DST results and electric log evaluation, 5.5" production casing was installed.

Mud by: Mud-Co/Service Mud, Inc., Reid Atkins, 785-694-3741 (cell); and Tony Maestas, 316-772-6679 (cell).

DST's by: Trilobite Testing, Bradley Walter (Walt), 785-623-1407 (cell).

Logs by: Pioneer (DI w/GR, CND, Micro, and Sonic), M. Hiss and T. Martin, 785-625-3858 (office).

RTD= 4930'

LTD= 4927'

## FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Stotler	3595'	-282	3599'	-286
Heebner Shale	3964'	-624	3961'	-621
Lansing	4017'	-677	4013'	-673
Muncie Creek Shale	4196'	-856	4194'	-854
Stark Shale	4288'	-948	4284'	-944
Hushpuckney Shale	4332'	-992	4329'	-989
Base of KC	4376'	-1036	4374'	-1034
Marmaton	4420'	-1080	4419'	-1079
Altamont	4437'	-1097	4435'	-1095
Pawnee	4516'	-1176	4512'	-1172
Myrick Station	4556'	-1216	4552'	-1212
Fort Scott	4568'	-1228	4564'	-1224
Cherokee Shale	4598'	-1258	4592'	-1252
Johnson	4690'	-1350	4686'	-1346
Morrow	4754'	-1414	4750'	-1410
Mississippian	4852'	-1512	4849'	-1509
RTD	4930'	-1590		
LTD			4927'	-1587

## ROCK TYPES

### LITHOLOGY

	Anhy
	Cht
	Coal
	Congl
	Dol
	Gyp
	Lmst
	Salt
	Shale
	Shcol
	Shgy
	Sltst
	Ss
	Carb sh
	Dol
	Dtd
	Gry sh
	Sandy lms
	Shale
	Sltstn
	Shlyslts

	Sitysh
	Sdy dolo
	Silty dolo
	Shy dolo
	Shaly ls

### FOSSIL

	Algae
	Amph
	Belm
	Bioclst
	Brach
	Bryozoa
	Cephal
	Coral
	Crin
	Echin
	Fish
	Foram
	Fossil
	Gastro
	Oolite

### MINERAL

	Ostra
	Pelec
	Pellet
	Pisolite
	Plant
	Strom
	Fuss
	Oomold
	Anhy
	Arggrn
	Arg
	Bent
	Bit
	Brecfrag
	Calc
	Carb
	Chtdk
	Chtlt
	Dol
	Feldspar

	Ferrpel
	Ferr
	Glau
	Gyp
	Hvymin
	Kaol
	Marl
	Minxl
	Nodule
	Phos
	Pyr
	Salt
	Sandy
	Silt
	Sil
	Sulphur
	Tuff
	Chlorite
	Dol
	Sand
	Sity

Rate of Penetration (ROP) ROP (min/ft)	Depth	Lithology	CFS Point	Oil Shows	Geological Descriptions	Remarks
0	34				<b>Morning Report Depth/Activity (7:00 am)</b>	Mud-Co/Service Mud Inc. Check #1 @ 0' 02/17/20, predrilling instructions.
ROP (min/ft)	10				02/17/2020, Finished MIRU/Spud; set surface casing @ 263'KB.	Mud-Co/Service Mud Inc. Check #2 @ 2268' 02/19/20 07:10am
					02/18, waiting on cement @ 263'.	wt vis pH chl
					02/19, drilling @ 2242'.	9.3 32 7 120
					02/20, drilling @ 3321'.	Filt LCM
					02/21, CFS @ 4000'.	n/c 1
					02/22, CFS @ 4090'.	Mud-Co/Service Mud Inc. Check #3 @ 3348' 02/20/20 07:40am
					02/23, CFS @ 4250'.	wt vis pH chl
					02/24, TOH for DST #4 @ 4310'.	9.3 30 7 77000
					02/25, drilling @ 4419'.	Filt LCM
					02/26, DST #7 @ 4490'.	n/c 4
					02/27, DST #8 @ 4568'.	Mud-Co/Service Mud Inc. Check #4 @ 4038' 02/21/20 11:20am
					02/28, CFS @ 4800'.	wt vis pH chl
					02/29, TD @ 4930'; Electric Logged.	9.1 53 11.5 2500
						Filt LCM
						7.2 1
						Mud-Co/Service Mud Inc. Check #5 @ 4146' 02/22/20 12:30pm
						wt vis pH chl
						9.3 57 10.0 5500
						Filt LCM
						8.8 2
						Mud-Co/Service Mud Inc. Check #6 @ 4260' 02/23/20 11:20am
						wt vis pH chl
						9.2 56 10.0 5800
						Filt LCM
						8.0 1
						Mud-Co/Service Mud Inc. Check #7 @ 4310' 02/24/20 09:00am
						wt vis pH chl
						9.2 49 11.0 6000
						Filt LCM
						8.0 1
						Mud-Co/Service Mud Inc. Check #8 @ 4441' 02/25/20 08:30am
						wt vis pH chl
						9.0 58 10.5 8500
						Filt LCM
						9.6 1
						Mud-Co/Service Mud Inc. Check #9 @ 4490' 02/26/20 08:30am
						wt vis pH chl
						9.2 43 10.5 9000
						Filt LCM
						9.6 0.5
						Mud-Co/Service Mud Inc. Check #10 @ 4568' 02/27/20 08:30am
						wt vis pH chl
						9.0 75 11.5 8500
						Filt LCM
						9.6 1
						Mud-Co/Service Mud Inc. Check #11 @ 4812' 02/28/20 08:45am
						wt vis pH chl
						9.3 54 10.0 8700
						Filt LCM
						8.8 1
						Mud-Co/Service Mud Inc. Check #12 @ 4930' 02/29/20 08:30am
						Final report/skid inventory.

**Morning Report Depth/Activity (7:00 am)**

02/17/2020, Finished MIRU/Spud; set surface casing @ 263'KB.  
 02/18, waiting on cement @ 263'.  
 02/19, drilling @ 2242'.  
 02/20, drilling @ 3321'.  
 02/21, CFS @ 4000'.  
 02/22, CFS @ 4090'.  
 02/23, CFS @ 4250'.  
 02/24, TOH for DST #4 @ 4310'.  
 02/25, drilling @ 4419'.  
 02/26, DST #7 @ 4490'.  
 02/27, DST #8 @ 4568'.  
 02/28, CFS @ 4800'.  
 02/29, TD @ 4930'; Electric Logged.

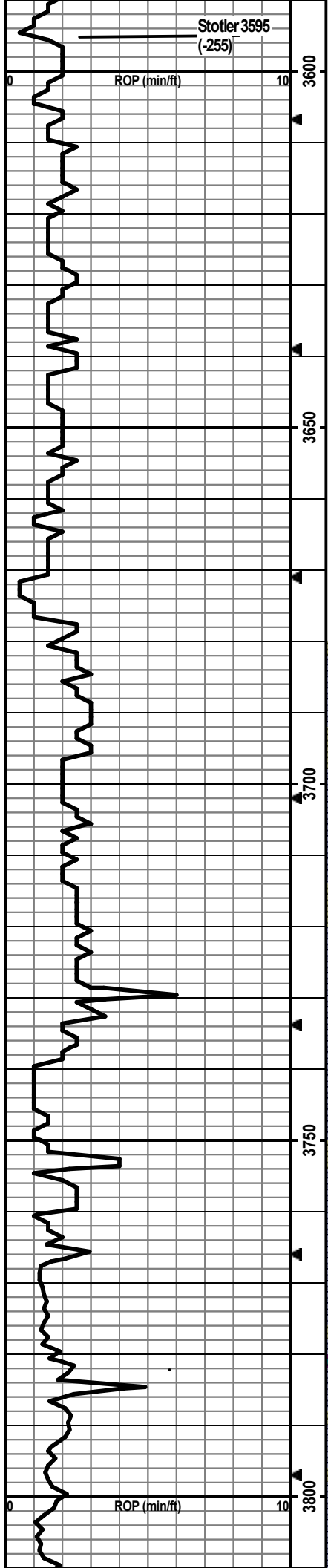
**Anhydrite: Top @ 2504', Base @ 2524' (based on drill time).**

Oil Shows indicator: Left Block 0-10 tray pcs w/show, Middle Block 10-20 tray pcs w/show, Right Block 20+ tray pcs w/show.

ROP Data begins @ 3500' on 02/20/2020

Formation tops and lithologies have been adjusted to correlate to the electric log.

Mud-Co/Service Mud Inc. Check #1 @ 0' 02/17/20, predrilling instructions.  
 Mud-Co/Service Mud Inc. Check #2 @ 2268' 02/19/20 07:10am  
 wt vis pH chl  
 9.3 32 7 120  
 Filt LCM  
 n/c 1  
 Mud-Co/Service Mud Inc. Check #3 @ 3348' 02/20/20 07:40am  
 wt vis pH chl  
 9.3 30 7 77000  
 Filt LCM  
 n/c 4  
 Mud-Co/Service Mud Inc. Check #4 @ 4038' 02/21/20 11:20am  
 wt vis pH chl  
 9.1 53 11.5 2500  
 Filt LCM  
 7.2 1  
 Mud-Co/Service Mud Inc. Check #5 @ 4146' 02/22/20 12:30pm  
 wt vis pH chl  
 9.3 57 10.0 5500  
 Filt LCM  
 8.8 2  
 Mud-Co/Service Mud Inc. Check #6 @ 4260' 02/23/20 11:20am  
 wt vis pH chl  
 9.2 56 10.0 5800  
 Filt LCM  
 8.0 1  
 Mud-Co/Service Mud Inc. Check #7 @ 4310' 02/24/20 09:00am  
 wt vis pH chl  
 9.2 49 11.0 6000  
 Filt LCM  
 8.0 1  
 Mud-Co/Service Mud Inc. Check #8 @ 4441' 02/25/20 08:30am  
 wt vis pH chl  
 9.0 58 10.5 8500  
 Filt LCM  
 9.6 1  
 Mud-Co/Service Mud Inc. Check #9 @ 4490' 02/26/20 08:30am  
 wt vis pH chl  
 9.2 43 10.5 9000  
 Filt LCM  
 9.6 0.5  
 Mud-Co/Service Mud Inc. Check #10 @ 4568' 02/27/20 08:30am  
 wt vis pH chl  
 9.0 75 11.5 8500  
 Filt LCM  
 9.6 1  
 Mud-Co/Service Mud Inc. Check #11 @ 4812' 02/28/20 08:45am  
 wt vis pH chl  
 9.3 54 10.0 8700  
 Filt LCM  
 8.8 1  
 Mud-Co/Service Mud Inc. Check #12 @ 4930' 02/29/20 08:30am  
 Final report/skid inventory.



Displaced drilling mud @3575'-3607'; 560 bbls.

Survey Record  
 Deg @ Ft  
 0.75 @ 263'  
 1.25 @ 4070'  
 0.75 @ 4930'

Drill cutting samples at 10' intervals start at 3700'.

SH: lt-m gry, vry silty, carb, soft-firm, no odor, ns.

LS: cm/lt gry, micro-med xtal, silty/sndy, foss frags/fusln, ppt-f in-xtal por, no odor, ns.

SH: lt-med gry, vry silty, slt carb, firm, fissile, no odor, ns.

LS: cm/lt bm, micro-m xtal, silty/sndy, foss frags, ppt-f in-xtal por, no odor, ns.

LS: cm/lt bm/gry, micro-med, vry silty/sndy, foss frags, min ppt-vf in-xtal por, no odor, ns.

LS: cm/lt bm, micro-m xtal, silty/sndy, foss frags, f-m in-xtal por, no odor, ns.

SH: lt gry, silty/sndy, carb, firm, no odor, ns.

LS: lt bm/gry, micro-med xtal, vry silty, foss frags, min vf-f in-xtal por, no odor, ns.

LS: cm/lt bm/gry, micro-m xtal, vry silty/sndy, foss frags, ppt-f in-xtal por, no odor, ns.

SH: med gry/bm, some vry silty, carb, soft-firm, no odor, ns.

LS: lt bm/dk gry mottling, micro-med xtal, some vry silty/sndy, foss frags, ppt-f in-xtal por, no odor, ns.

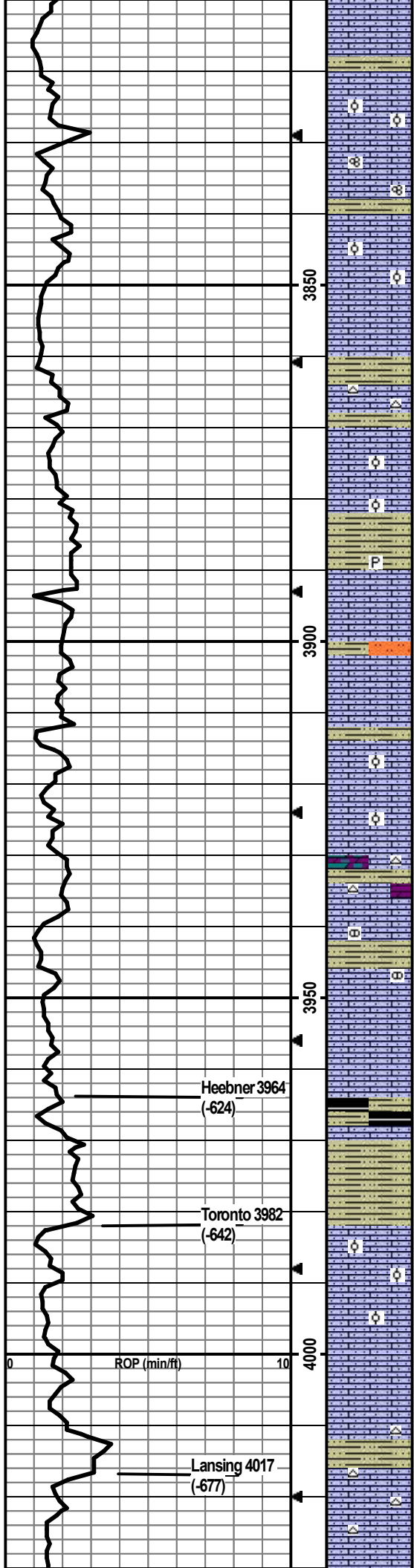
LS: cm/lt bm, micro-med xtal, some silty/sndy, foss frags, f-crs in-xtal por, no odor, ns.

LS: cm/lt bm, micro-m xtal, vry silty/sndy, some dolomitic, abund foss frags/grainy, ppt-m in-xtal por, no odor, ns.

LS: as above, some chalky, no odor, ns.

LS: cm/lt bm, micro-m xtal, sndy, foss frags/some grainy, v-m in-xtal por, no odor, ns.





LS: cm/lt bm, micro-m xtal, some vry silty/sndy, foss frags, some ppt-f in-xtal por, no odor, ns.

LS: cm/lt-m bm, micro-m xtal, silty/sndy, foss frags/dense ool, some ppt-f in-xtal por, no odor, ns.

LS: cm/lt bm, micro-m xtal, silty/sndy, foss frags/fusin/grainy, some ppt-f in-xtal por, no odor, ns.

SH: lt-m gry, vry silty, carb, soft-firm, no odor, ns.

LS: cm/lt bm, micro-m xtal, silty/sndy, min chalky, foss frags/grainy/some dense ool, ppt-f in-xtal por, no odor, ns.

LS: cm/lt bm/some gry, micro-med xtal, silty/sndy, chalky, foss frags, ppt-m in-xtal por, no odor, ns.

LS: cm/lt bm/min gry, micro-m xtal, silty/sndy, min chalky, some wht chert, foss frags/some grainy, min ppt-f in-xtal por, no odor, ns.

LS: cm/lt bm/gry, micro-med xtal, vry silty/sndy, some chalky, foss frags/min dense ool, min ppt-vf in-xtal por, no odor, ns.

LS: cm/lt-m bm, micro-med xtal, silty/sndy, min chalky, foss frags/min dense ool, no vis por, no odor, ns.

SH: lt-m gry, silty, slt carb, soft-firm, slt pyritic.

LS: cm/lt-m bm, micro-med xtal, sndy, some chalky, foss frags, min ppt-vf in-xtal por, no odor, ns.

SH: lt-m gry, vry silty/sndy, carb, soft-f; Some sltstn, lt brn-gry, pred qtz, friable, no odor, ns.

LS: cm/lt bm, micro-med, vry silty/sndy, foss frags/grainy, ppt-f in-xtal por, no odor, ns.

LS: cm/lt bm, micro-m xtal, silty/sndy, foss frags/min dense ool, min ppt-f in-xtal por, no odor, ns.

LS: cm/lt bm/min gry, micro-m xtal, silty/sndy, min chalky, foss frags/min dense ool, f-m in-xtal por, no odor, ns.

LS: cm/lt bm/lt gry, micro-m xtal, silty/sndy, some dolomitic, some wht chert, vf-m in-xtal por, no odor, ns.

LS: cm/lt-m bm, vf-m xtal, silty/sndy, some chalky, sandy LS nodules, some ppt-f in-xtal por, no odor, ns.

LS: cm/lt-m bm, micro-m xtal, silty/sndy, some chalky, foss frags, some ppt-f in-xtal por, no odor, ns.

SH: med-dk gry, slt carb, firm, fissile, no odor, ns.

SH: lt-m bm/lt gry, vry silty, slt carb, soft-firm, no odor, ns.

LS: cm/lt bm/lt gry, micro-med, silty/sndy/some vry sndy, foss frags/dense ool, min ppt-f in-xtal por, no odor, ns.

LS: cm/lt bm, micro-med xtal, some silty/sndy, some chalky, foss frags/min dense ool, min ppt-f in-xtal por, no odor, ns.

LS: cm/lt bm, micro-med xtal, some silty/sndy, wht chert, foss frags, some ppt-f in-xtal por, no odor, ns.

LS: cm/lt bm/lt gry mottling, micro-med xtal, silty/sndy, some chalky, foss frags/some grainy, min ppt-f in-xtal por, no odor, ns.

LS: cm/lt bm, micro-f w/min med xtal, silty/sndy, chalky, wht chert, some ppt-f in-xtal por, no odor, ns.

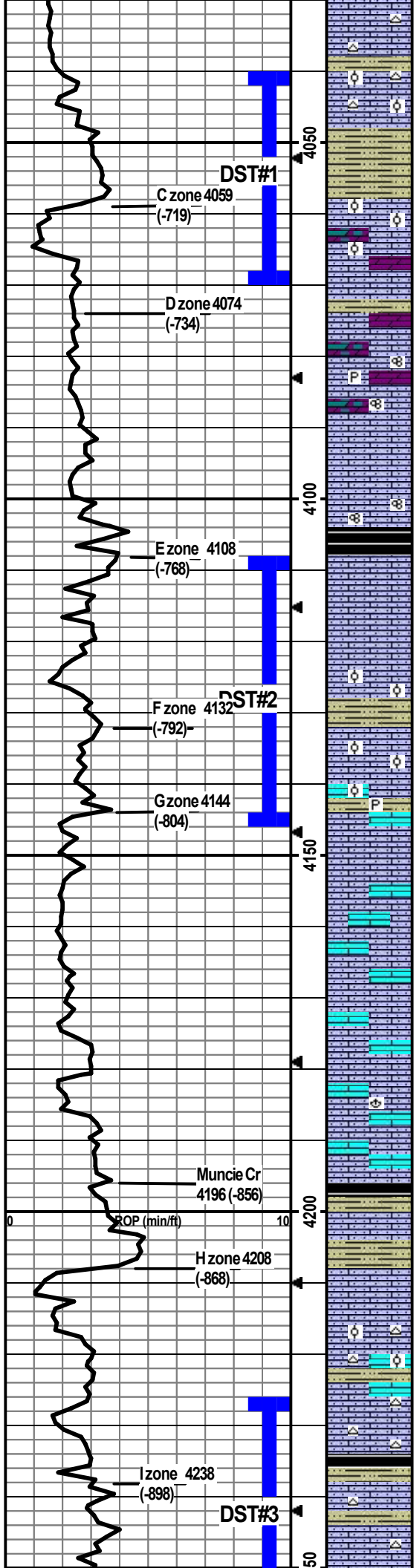
SH: lt-m gry/copper-bm, min silty, slt carb, soft-firm.

LS: cm/lt bm, micro-med xtal, some silty/sndy, wht chert, foss frags, some ppt-f in-xtal por, no odor, ns.

CFS @ 4000'  
Stop/30"/60"

CFS @ 4020'  
Stop/30"/60"

CFS @ 4030'  
30"/60"



LS: cm/lt-m bn, micro-med xtal, some vry silty, some vry chalky, wht chert, foss frags, mostly dense w/few pcs w/med-crs in-xtal por, no odor, ns.

LS: cm/lt brn, micro-med xtal, some silty/sndy, some chalky, some wht chert, foss frags/dense ool, no vis por, no odor, ns.

SH: lt-med gry, some vry silty, carb, soft-firm, no odor, ns.

SH: lt-dk gry, silty, slt carb, soft-firm, no odor, ns.

LS: cm/lt brn, micro-m xtal, silty/sndy, chalky, foss frags/few dense ool pcs, mostly dense w/few pcs w/ppt-f in-xtal por, no odor; 1 pce in 60min smpl of carb SS w/sfo, good cut, yel flor.

LS: cm/lt brn, micro-med xtal, some silty/sndy, some chalky, some dolomitic, foss frags/min dense ool, ppt-f w/min med in-xtal por, 7 pcs w/sfo, thick dk brn/blk oil, some tar, yel flor/cut, slt crush odor, sfo.

LS: cm/lt brn, micro-med xtal, some silty/sndy, min chalky, dolomitic, foss frags, min ppt-f in-xtal por, no odor, ns.

LS: wht/cm/lt brn, micro-med xtal, some silty/sndy, some chalky, some dolomitic, slt pyritic, foss frags/fusn, min ppt-f in-xtal por, no odor, ns.

LS: cm/lt brn, micro-m xtal, some 2ndary xtals, silty/sndy, chalky, some f-m in-xtal por, no odor, ns.

LS: cm/lt brn, lt gry-brn, micro-med xtal, silty/sndy, some chalky, foss frags/fusn, some vf-f in-xtal por, no odor, ns.

SH: lt-dk gry/blk/min lt green-gry, some vry silty/sndy, slt carb, soft-firm, fissile.

LS: cm/lt-m brn/min lt gry, micro-med xtal, silty/sndy, some chalky, foss frags, min ppt-f in-xtal por, no odor, ns.

60min sample had 4 pcs sfo, ool, f-m in-ool por, dul yel flor, strong odor.

LS: cm/lt brn, micro-med xtal, some sndy, chalky, foss frags/ool, some vf-m in-xtal por, 11 pcs w/sfo, dul yel flor, good odor, gsfo.

12 pcs of show in 60min sample, strong odor.  
SH: m-dk gry/lt green-gry, silty, slt carb, slt pyritic, soft-firm, fissile.

LS: cm/lt brn, micro-m xtal, some silty/sndy, some chalky, foss frags, min ppt-f in-xtal por, 2 pce w/sfo (poss from above), dul yel flor, slt odor, ssfo.

LS: cm/lt brn, micro-med xtal, some silty/sndy, smpl fairly chalky, foss frags, some ppt-f in-xtal por, no odor, ns.

LS: cm/lt brn/min lt gry, micro-f xtal, some silty/sndy, some grainy, smpl fairly chalky, foss frags, min ppt-m in-xtal por, no odor, ns.

LS: cm/lt brn, mostly micro-f xtal w/some med, some silty/sndy, some chalky, min foss frags/brac, some ppt-m in-xtal por, no odor, ns.

LS: cm/lt brn/min lt gry, micro-f w/some med xtal, some silty/sndy, some chalky, min foss frags, no vis, no odor, ns.  
SH: med-dk gry, some silty, carb, soft-firm, fissile.

SH: med-dk gry/dk red brn, vry silty/sndy, carb, soft-firm, fissile.

LS: cm/lt brn/lt-m gry/some gry inclusions, micro-m xtal, vry silty/sndy, foss frags, min ppt-m in-xtal por, no odor, ns.

LS: cm/lt brn/lt gry/gry mottling, micro-med xtal, some chalky, some sndy, foss frags/min dense ool, wht chert, min ppt-f in-xtal por, no odor, ns.

LS: cm/lt gry/lt-m brn, micro-med xtal, silty/sndy, chalky, foss frags, wht/cm chert, no vis por, no odor, ns.  
SH: lt-dk gry/blk, silty, slt carb, soft-firm.

LS: cm/lt-m brn/lt gry, micro-m xtal, silty/sndy, chalky, slt pyritic, wht/lt gry chert, foss frags, no vis por, no odor, ns.

**DST1) 4050-4070 Lansing C-zone**

30/45/45/60  
1st) built to BOB in 4min w/91" total blow; no BB.  
2nd) built to BOB in 4min w/95" total blow; no BB.  
IFP 65-406#  
ISIP 1075#  
FFP 422-704#  
FSIP 1081#  
HP 1981-1965#  
Recvd: 1530' MCW (2%M, 98%W).

CFS @ 4062  
Stop/30"/60"

CFS @ 4070'  
30"/60"

Made wiper/short trip at DST #1; 4070'. Ran straight hole survey.

CFS @ 4090'  
Stop/30"/60"

Pipe strap TOH for DST #1 at 4070' was 1.71' long to the board.

CFS @ 4130'  
Stop/30"/60"

CFS @ 4146'  
Stop/30"/60"

**DST2) 4108-4146 Lansing E and F-zones**

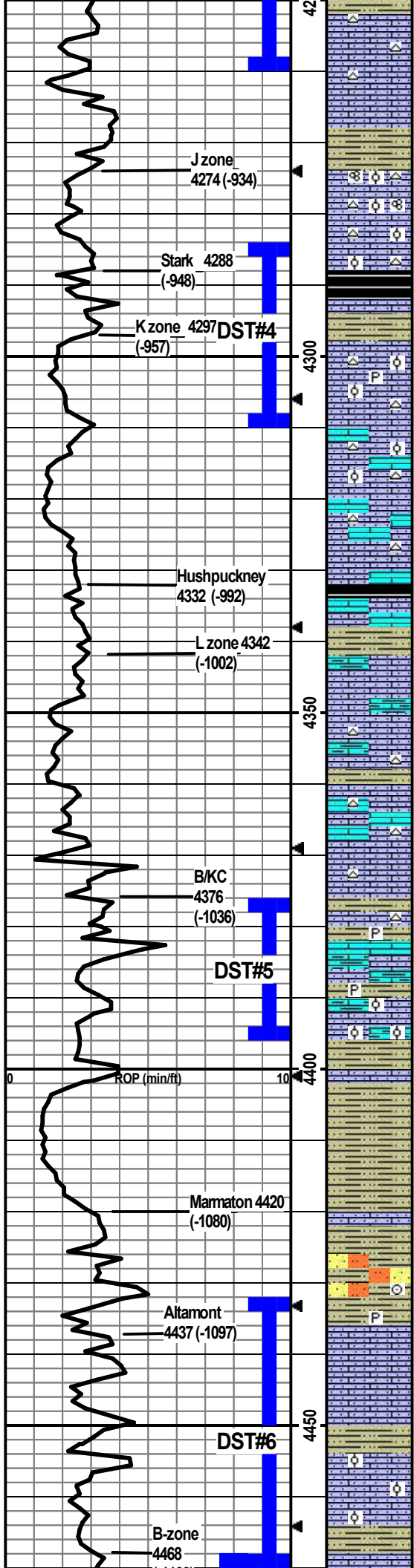
30/45/45/60  
1st) built to BOB in 13min w/22" total blow; surface BB.  
2nd) built to BOB in 13min w/32" total blow; no BB.  
IFP 30-157#  
ISIP 1162#  
FFP 162-293#  
FSIP 1162#  
HP 2031-1995#  
Recvd: 80' GIP, 20' O, 580' MCW w/oil spots (10%M, 90%W).

CFS @ 4220'  
Stop/30"/60"

**DST3) 4226-4260 Lansing I-zone**

30/45/45/60  
1st) built to 2.25"; no BB.  
2nd) built to 3.5"; no BB.  
IFP 24-52#  
ISIP 1215#  
FFP 55-85#  
FSIP 1212#  
HP 2099-2066#  
Recvd: 150' MCW w/oil spots (40%M, 60%W).





LS: cm/lt bm/min lt gry, micro-m xtal, some silty/sndy, chalky, wht chert, 10 pcs w/sfo, dul yel flor, f-m por, gd odor, sfo.

LS: cm/lt-m bm, micro-m xtal, silty/sndy, chalky, some wht chert, vf-m por, 5 pcs w/sfo, dul yel flor, slit odor, sfo.

SH: lt-dk gry/blk, silty, carb, soft-firm.

LS: cm/lt-med bm/lt gry, micro-med, some silty/sndy, some chalky, some wht chert, foss frags/fusln/min dense ool, 2 pcs w/sfo/4 pcs w/staining, ppt-m in-xtal por, no odor, sfo.

LS: cm/lt gry/lt-med brn, micro-med xtal, silty/sndy, some chalky, wht chert, foss frags/min dense ool, 3 pcs w/dk brn oil staining, min ppt-f in-xtal por, no odor.

SH: lt-dk gry/blk, some silty, slit carb, soft-firm, fissile.

SH: lt-dk gry/lt green-gry/blk, some silty, slit carb, soft-firm, fissile.

LS: cm/lt-gry/lt bm, micro-med xtal w/crs 2ndary xtals, silty/sndy, vry chalky, min pyritic, wht chert, foss frags/ool, 29 pcs w/sfo, f-crs/vug in-xtal por, gd odor, gsfo.

LS: cm/lt-m bm, micro-med xtal, some silty/sndy, vry chalky, wht chert, foss frags/min dense ool, 10 pcs w/sfo thk dk bm w/f-crs in-xtal por, several soft oil sat chalk balls, gd odor, sfo.

LS: cm/lt bm, micro-med xtal, some chalky, some silty/sndy, foss frags, wht chert, few pcs assume from above w/thk dk bm oil, min ppt-vf in-xtal por, no odor.

SH: med-dk gry/blk, silty, slit carb, soft-firm, fissile.

LS: cm/lt gry/ish-cm/lt brn, micro-med xtal, some chalky, some silty/sndy, foss frags/grainy, few pcs assume from above w/th dk brn oil, some ppt-vf in-xtal por, no odor.

SH: m-dk gry/green-gry/dk gry-brn/min dk maroon-brn, some vry silty, carb, soft-firm, no odor, ns.

LS: cm/lt-m bm/lt gry-bm, micro-med xtal, some chalky, some silty/sndy, some arg, foss frags, cm/lt bm chert, no vis por, no odor, ns.

LS: cm/lt-m bm/lt-m gry, micro-med xtal, some silty/sndy, some chalky, wht chert, foss frags, no vis por, no odor, ns.

LS: cm/lt-m bm/gry mottling, micro-med xtal, silty/sndy, some chalky, wht chert, foss frags, dense w/2 pcs w/sfo w/ppt-f in-xtal por, dul yel flor, no odor, ssfo.

SH: lt-dk gry/lt green-gry, carb, min pyritic, soft-firm.

LS: cm/lt-m brn, micro-med xtal, some silty/sndy, some chalky, some arg, foss frags, no vis por, 1 pce w/ppt-f in-xtal por w/sfo, no odor.

LS: cm/lt-m brn, micro-m xtal, vry silty/sndy, chalky, arg, foss frags/few dense ool, mostly no vis por, 6 pcs w/ppt-f in-xtal w/sfo, 1 pce w/blk tar oil, dul yel flor, slit crush odor, sfo.

LS: cm/lt brn/lt gry, micro-m xtal, vry silty/sndy, arg, foss frags/ool, 27 pcs w/sfo w/f-crs in-xtal/in-ool por, yel flor, gd odor, sfo.

SH: lt-m gry/red brn/lt green-gry, some vry silty/sndy, carb, firm.

SH: lt-dk gry/lt-m brn/red-brn/lt green-gry, vry silty/sndy, soft-firm, no odor, ns.

SH: lt-dk gry/lt-m brn/red-brn, some vry silty/sndy, soft-firm, no odor, ns.

SH: lt-m gry/lt-m brn, vry silty/sndy, carb, soft-firm. Sitstn/SS: wht/lt-m gry, vf-f, pred qtz, friable, no odor, ns.

SH: lt-m gry/lt green-gry/bm, vry silty/sndy, carb, crin foss/frags, some pyritic, soft-firm, fissile. Sitstn/SS as above, no odor, ns.

LS: cm/lt-m bm, micro-med xtal, some chalky, some silty/sndy, foss frags, no vis por, no odor, ns.

LS: cm/lt-m bm/lt gry, micro-med xtal, some silty/sndy, some chalky, foss frags/ool, 9 pcs w/sfo w/ppt-f in-xtal/in-ool por, dul yel flor, slit odor, sfo.

LS: cm/lt brn, micro-med xtal, some vry silty/sndy, some chalky, foss frags/ool, 8 pcs w/sfo w/ppt-m in-xtal/in-ool por, dul yel flor, slit odor, sfo.

SH: lt-dk gry/lt green-gry/dk maroon-brn, some vry silty/sndy, carb, soft-firm, fissile.

CFS @ 4250'  
Stop/30"/60"

CFS @ 4260'  
30"/60"

CFS @ 4280'  
30"/60"

CFS @ 4310'  
Stop/30"/60"

**DST4) 4284-4310**  
**Lansing K-zone**  
30/30/30/30  
1st) built to BOB in 1.5min w/193" total blow; no BB.  
2nd) built to BOB in 2min w/33" total blow before starting to recede; no BB.  
IFP 138-732#  
ISIP 1231#  
FFP 737-1032#  
FSIP 1233#  
HP 2125-2038#  
Recvd: 2310' MCW (2%M, 98%W).

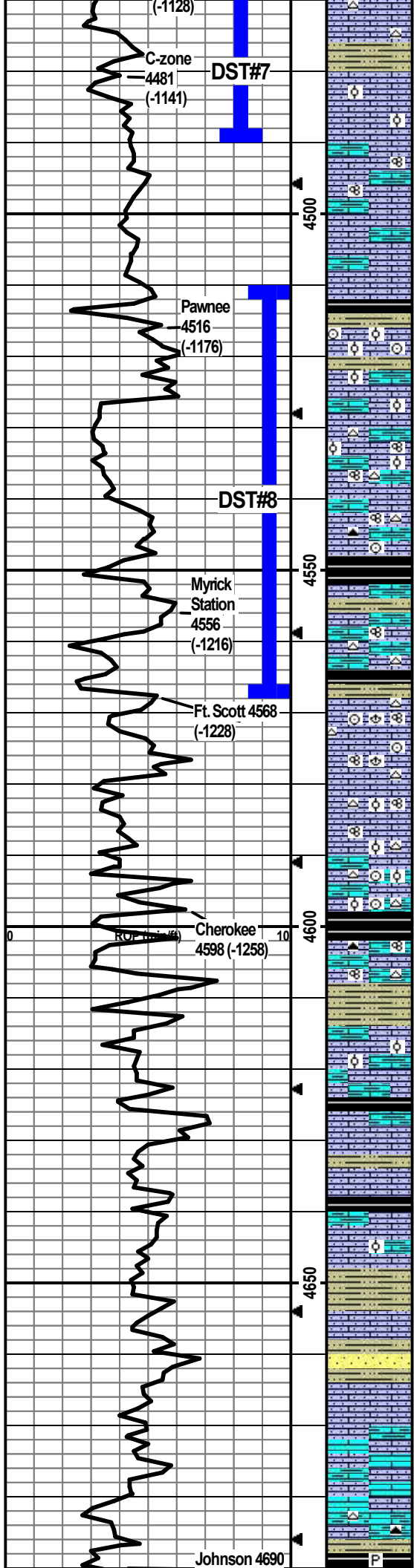
CFS @ 4362'  
Stop/30"/60"

**DST5) 4376-4395**  
**Pleasanton**  
30/45/45/60  
1st) built to 8.75" blow; no BB.  
2nd) built to 7.75" blow; no BB.  
IFP 25-95#  
ISIP 1046#  
FFP 97-136#  
FSIP 945#  
HP 2127-2108#  
Recvd: 330' MCW (5%M, 95%W).

CFS @ 4395'  
Stop/30"/60"

**DST6) 4432-4470**  
**Altamont A-zone**  
30/45/45/60  
1st) built to BOB in 4 min w/67" total blow; BB built to BOB in 29 min w/17" total BB.  
2nd) built to BOB in 4 min w/67" total blow; BB built to 6.5".  
IFP 54-248#  
ISIP 1163#  
FFP 254-415#  
FSIP 1144#  
HP 2160-2151#  
Recvd: 720' GIP, 920' GO (30%G, 70%O), 180' GOCM (25%O, 35%G, 40%M).

CFS @ 4470'  
Stop/30"/60"



LS: crm/lt-m brn w/some wht mottling, micro-med xtal, some vry silty/sndy, some chalky, min wht chert, foss frags, mostly dense w/2 pcs w/ppt-f in-xtal por w/sfo, slit odor, ssfo.

LS: crm/lt-m bm, micro-m xtal, some silty/sndy, some chalky, foss frags/ool, 3 ool pcs w/ppt-m in-ool por, slit odor, ssfo.

LS: crm/lt-m bm/lt-m gry, micro-m xtal, some silty/sndy, some chalky, some arg, foss frags/fusln, no vis por, no odor, ns.

LS: crm/lt-m bm/lt-m gry, micro-m xtal, some silty, some chalky, some arg, foss frags, no vis por, no odor, ns.

SH: med-dk gry/blk, some silty, slit carb, soft-firm, no odor, ns.

LS: crm/lt-m brn, micro-med xtal, some silty/sndy, min chalky, abund foss frags/crin/dense ool, dense/hard, no vis por, no odor, ns.

LS: crm/lt-m bm/lt-m gry, micro-m xtal, some silty/sndy, some chalky, some arg, abund foss frags/fusln/min dense ool, no vis por, no odor, ns.

LS: crm/lt-m bm/gry, micro-m xtal, some silty/sndy, some chalky, some arg, wht/lt gry chert, abund foss frags/fusln/ool, 12 pcs w/ppt-vf in-xtal por w/oil staining/fo on break, dul yel floor/cut, slit crush odor, sfo.

LS: crm/lt-m brn/lt-m gry, micro-med xtal, some silty/sndy, some chalky, some arg, wht/lt gry/dk brn chert, abund foss frags/fusln/crin, 5 pcs w/ppt-vf inxtal por w/staining/w/fo on break, no odor, ssfo.

SH: med-dk gry/blk, some silty, carb, soft-firm, fissile.

LS: crm/lt-dk brn/lt-m gry, micro-m xtal, silty/sndy, some vry arg, abund foss frags/fusln, 2 pcs w/ppt in-xtal por w/staining/fo on break, no odor, ssfo. SH: m-dk gry/blk, some vry silty, carb, firm.

LS: crm/lt-m brn/lt-m gry/gry mottling, micro-med, silty/sndy, some chalky, some arg, wht/brn chert, foss frags, 3 pcs w/ppt in-xtal por w/staining/fo on break, no odor, ssfo.

SH: m-dk gry/blk, some vry silty, slit carb, firm, no odor, ns.

LS: crm/lt-dk gry-bm, micro-med, some silty/sndy, brn chert, some chalky pcs w/dk gry foss frags, foss frags/crin/brac/fusln, no vis por, no odor, ns.

LS: crm/lt gry-brn/lt-m brn, micro-m xtal, some silty/sndy, some crm chalky pcs w/lt brn gry inclusions, foss/ool brn chert, foss frags/fusln, 3 chalky pcs w/staining/fo on break, no odor, ssfo.

LS: crm/lt-m bm/lt-m gry, micro-m xtal, some silty/sndy, some arg, some chalky, brn/lt gry chert, foss frags/crin/ool, no vis por, no odor, ns.

SH: m-dk gry/dk gry-bm/blk, carb, silty, firm, no odor, ns.

LS: lt-dk brn/dk gry-brn, micro-m xtal, vry silty, some chalky, arg, some lt brn pcs w/dk brn/gry inclusion, min dk brn/gry chert, min foss frags/fusln, no vis por, no odor, ns.

SH: med-dk gry/blk, some blk w/brn inclusions, carb, some silty, firm.

LS: lt-dk brn/dk gry-brn, micro-med xtal, silty/sndy, some arg, some chalky, foss frags/min dense ool, no vis por, no odor, ns.

SH: m-dk gry/blk/blk w/brn mottling, some silty, slit carb, pyritic, soft-firm.

LS: crm/lt-m brn, micro-m xtal, some vry silty/sndy, some arg, foss frags, no vis por, no odor, ns.

LS: lt-m brn, micro-m xtal, some vry silty/sndy, some arg, foss frags, no vis por, no odor, ns.

SH: med-dk gry/blk/dk brn, some vry silty/sndy, carb, firm-hard, fissile.

LS: crm/lt-m bm, micro-med xtal, vry silty/sndy, arg, foss frags/min dense ool, no vis por, no odor, ns.

SH: lt-dk gry, some silty, carb, firm, no odor, ns.

LS: crm/lt-m brn/lt gry-brn, some crm w/dk inclusions, micro-m xtal, vry silty/sndy, some arg, some chalky, foss frags, no vis por, no odor, ns.

SH: m-dk gry, some silty/sndy, carb, firm; SS: gry, vf, pred qtz, glau, chalky, arg, hard, some friable, no vis por, no odor, ns.

LS: crm/lt-m bm, micro-med xtal, some vry silty/sndy, some chalky, some arg, foss frags, no vis por, no odor, ns.

LS: crm/lt-m bm/dk gry-brn, micro-med xtal, some vry silty/sndy, some chalky, some arg, foss frags, no vis por, no odor, ns.

LS: crm/lt-m brn/m-dk gry, micro-m xtal, some vry silty/sndy, some chalky, some arg, lt gry/brn chert, min foss frags, no vis por, no odor, ns.

SH: lt-dk gry/blk, some vry silty, carb, min pyritic, firm

CFS @ 4490'  
Stop/30"/60"

**DST7) 4469-4490  
Altamont B-zone**

30/45/45/60  
1st) built to 1" total blow; no BB.  
2nd) no blow; no BB.  
IFP 25-25#  
ISIP 28#  
FFP 24-25#  
FSIP 26#  
HP 2186-2159#  
Recvd: 5' M w/oil spots.

CFS @ 4540'  
Stop/30"/60"

**DST8) 4510-4568  
Pawnee and  
Myrick Station**

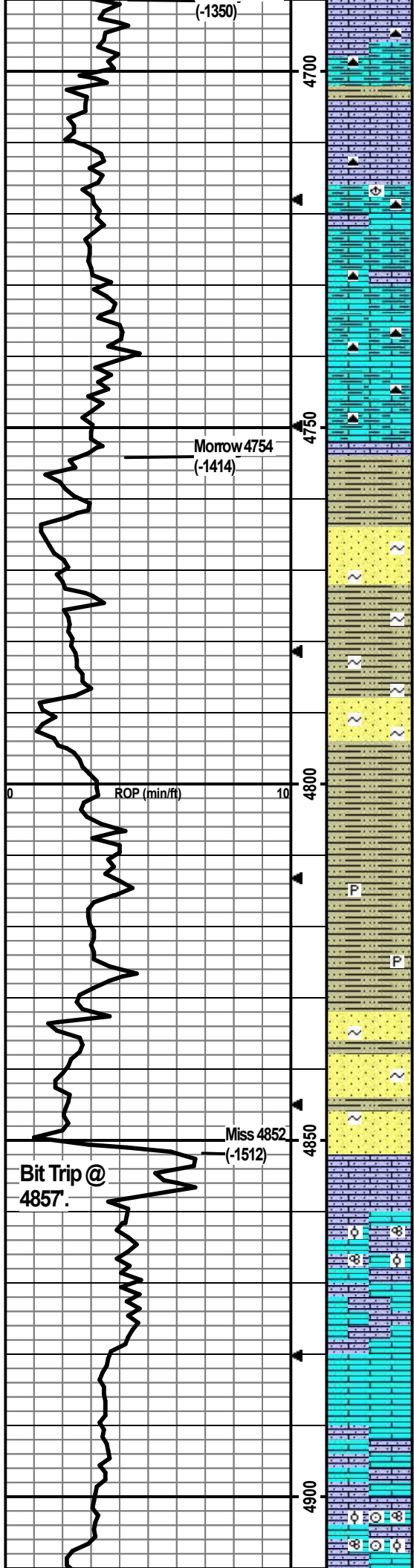
30/45/45/60  
1st) built to 1" blow; no BB.  
2nd) no blow; no BB.  
IFP 25-26#  
ISIP 229#  
FFP 25-27#  
FSIP 125#  
HP 2198-2191#  
Recvd: 5' M w/oil spots.

CFS @ 4568'  
Stop/30"/60"

CFS @ 4590'  
Stop/30"/60"

CFS @ 4620'  
Stop/30"/60"

CFS @ 4680'  
Stop/30"/60"



LS: lt-dk bm/gry-bm, micro-med xtal, vry silty, min chaly, some arg, bm chert, foss frags, no vis por, no odor, ns.

LS: cm/lt-dk bm, some vry silty, some arg, some chalky, min foss frags, no vis por, no odor, ns.

LS: lt-m bm/gry-bm, micro-m xtal, some silty, some chalky, some arg, dk bm chert, min foss frags/brac, no vis por, no odor, ns.

LS: cm/lt-dk bm, micro-m xtal, some silty, some chalky, some arg, min dk bm chert, min foss frags, no vis por, no odor, ns.

LS: cm/lt-m bm/gry, micro-m xtal, some chalky, some arg, min dk bm chert, min foss frags, no vis por, no odor, ns.  
Some dk gry/blk chert in 60min sample.

LS: cm/lt-m gry-bm, micro-m xtal, some silty/chalky/arg, dk bm/blk chert, no vis por, no odor, ns.

SH: m-dk gry/lt green-gry/blk, some vry silty, carb, firm, no odor, ns. (Flood of LS as above.)  
SH: m-dk gry/lt green-gry/dk maroon-brn, some silty, slt carb, soft-firm, no odor, ns.  
min SS: dk green, vf-f, pred qtz, glauc, arg, friable, no odor, ns. (Flood of SH and LS as above.)  
SS: wht/lt gry/dk green, vf-f, pred qtz, glauc, arg, friable, no odor, ns. (Flood of SH and LS as above.)  
SS: wht/lt gry/green, vf-m, sr-wr, pred qtz, some glauc, chalky, hard, some friable, no vis por, no odor, ns. (Cont flood of SH and LS as above.)  
SS: as above w/cont flood of SH and LS.

SH: lt-dk gry, some vry silty/sndy, carb, soft-firm.

SH: m-dk gry/lt gry-green/blk, slt carb, silty/sndy, pyritic, soft-firm.

SS: wht/lt-m gry/green, some opaque, vf-m, sr-wr, glauc, arg, hard, friable, no odor, ns.

SS: wht/lt-med green, some opaque, f-crs, sr-wr, glauc, some arg, hard, friable, no odor, ns.

LS: wht/cm/lt-m bm, vf-m xtal, some vry sndy, some chalky, some friable, min foss frags, no vis por, no odor, ns. (Flood of SH and SS from above.)

LS: lt-m bm, micro-m xtal, some silty/sndy, foss frags/fusin/min dense ool, no vis por, no odor, ns. (Cont flood of SH/SS from above.)

LS: cm/lt-m bm/lt gry-bm, micro-med xtal, some silty/sndy, foss frags, no vis por, no odor, ns. (Cont flood of SH/SS from above.)

LS: lt-m bm, micro-med xtal, foss frags, dense, no vis por, no odor, ns.

LS: cm/lt-m bm/gry-bm, micro-med xtal, some silty/sndy, some chalky, foss frags, dense, no vis por, no odor, ns.

LS: cm/lt-m bm/gry-bm, micro-med xtal, some silty/sndy, some chalky, foss frags/fusin/crin/dense ool, dense no vis por, no odor, ns.

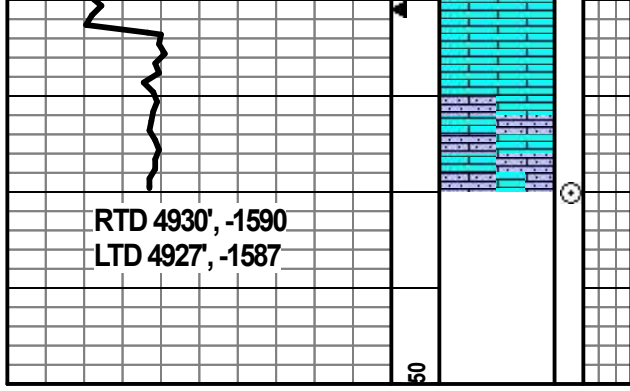
CFS @ 4740'  
Stop/30"/60"

CFS @ 4800'  
Stop/30"/60"

CFS @ 4840'  
Stop/30"/60"

CFS @ 4857'  
Stop/30"/60"

**Bit trip @ 4857'. Bit was damaged.**



RTD 4930', -1590  
 LTD 4927', -1587

LS: cm/lt-m bm, micro-med, min foss frags, dense, no vis por, no odor, ns.

LS: cm/lt bm/gry, micro-m xtal, some silty/sndy, min chalky, min foss frags, dense no vis por, no odor, ns.

TD @4930'

CFS @4930'  
 Stop/30'/60"  
 1.5 hr total, TOH for logging.