

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

Form must be Typed

Form must be Signed

All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

New Well Re-Entry Workover

Oil WSW SWD

Gas DH EOR

OG GSW

CM (Coal Bed Methane)

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

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

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

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

Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

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

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

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

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

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

County: _____ Permit #: _____

AFFIDAVIT

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

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

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

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

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

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

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

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

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

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

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

TUBING RECORD:	Size:	Set At:	Packer At:	
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DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc**

8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278

ATTN: John Goldsmith

Blau - Schroeder #1

16-15s-36w Logan,KS

Start Date: 2017.08.29 @ 19:53:00

End Date: 2017.08.30 @ 01:59:30

Job Ticket #: 63348 DST #: 1

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

Printed: 2017.09.05 @ 08:57:20



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Ritchie Exploration, Inc
8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278
ATTN: John Goldsmith

16-15s-36w Logan, KS

Blau - Schroeder #1

Job Ticket: 63348

DST#: 1

Test Start: 2017.08.29 @ 19:53:00

GENERAL INFORMATION:

Formation: **Toronto**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:32:15

Time Test Ended: 01:59:30

Test Type: Conventional Bottom Hole (Initial)

Tester: James Winder

Unit No: 83

Interval: 4054.00 ft (KB) To 4094.00 ft (KB) (TVD)

Reference Elevations: 3344.00 ft (KB)

Total Depth: 4094.00 ft (KB) (TVD)

3339.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 6625 Inside

Press@RunDepth: 88.22 psig @ 4055.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.08.29

End Date:

2017.08.30

Last Calib.:

2017.08.30

Start Time:

19:53:05

End Time:

01:59:29

Time On Btm:

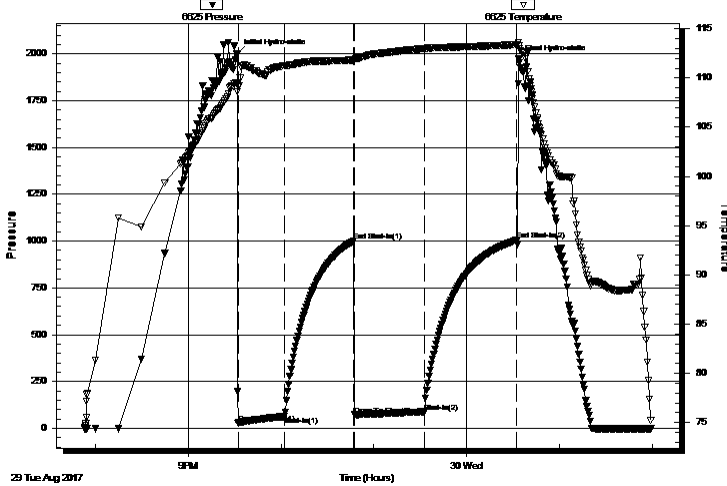
2017.08.29 @ 21:31:45

Time Off Btm:

2017.08.30 @ 00:33:45

TEST COMMENT: 30 - IF: Blow built to 4"
45 - IS: No blow back
45 - FF: Blow built to 3"
60 - FS: No blow back

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1998.84	109.51	Initial Hydro-static
1	27.58	109.14	Open To Flow (1)
31	64.17	111.26	Shut-In(1)
76	999.61	111.81	End Shut-In(1)
76	71.72	111.84	Open To Flow (2)
121	88.22	112.98	Shut-In(2)
181	1004.20	113.39	End Shut-In(2)
182	1970.76	113.30	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
119.00	MCW w/trace oil 66%w, 34%m	0.59
51.00	WM w/trace oil 56%m, 44%w	0.72

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration, Inc

16-15s-36w Logan,KS

8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278
ATTN: John Goldsmith

Blau - Schroeder #1

Job Ticket: 63348

DST#: 1

Test Start: 2017.08.29 @ 19:53:00

Tool Information

Drill Pipe:	Length: 3918.00 ft	Diameter: 3.80 inches	Volume: 54.96 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: 119.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose: 70000.00 lb
			<u>Total Volume: 55.55 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	4054.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	40.00 ft			
Tool Length:	69.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			4026.00	
Shut In Tool	5.00			4031.00	
Hydraulic tool	5.00			4036.00	
Jars	5.00			4041.00	
Safety Joint	3.00			4044.00	
Packer	5.00			4049.00	29.00 Bottom Of Top Packer
Packer	5.00			4054.00	
Stubb	1.00			4055.00	
Recorder	0.00	6625	Inside	4055.00	
Recorder	0.00	8017	Outside	4055.00	
Perforations	36.00			4091.00	
Bullnose	3.00			4094.00	40.00 Bottom Packers & Anchor

Total Tool Length: 69.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration, Inc
8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278
ATTN: John Goldsmith

16-15s-36w Logan,KS

Blau - Schroeder #1

Job Ticket: 63348 **DST#: 1**

Test Start: 2017.08.29 @ 19:53:00

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	12500 ppm
Viscosity: 59.00 sec/qt	Cushion Volume: bbl		
Water Loss: 7.95 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 4200.00 ppm			
Filter Cake: 1.00 inches			

Recovery Information

Recovery Table

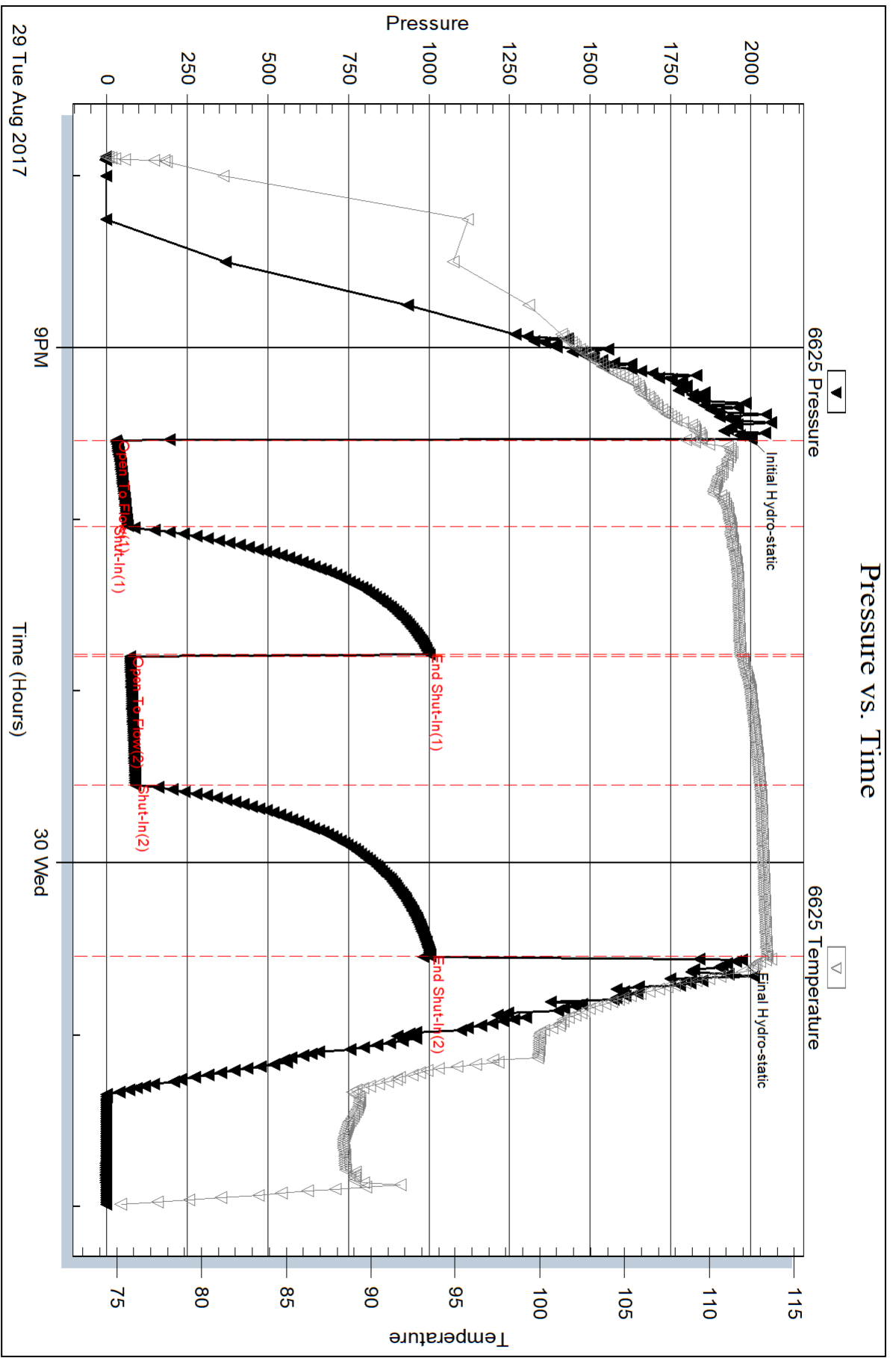
Length ft	Description	Volume bbl
119.00	MCW w/trace oil 66%w , 34%m	0.585
51.00	WM w/trace oil 56%m, 44%w	0.715

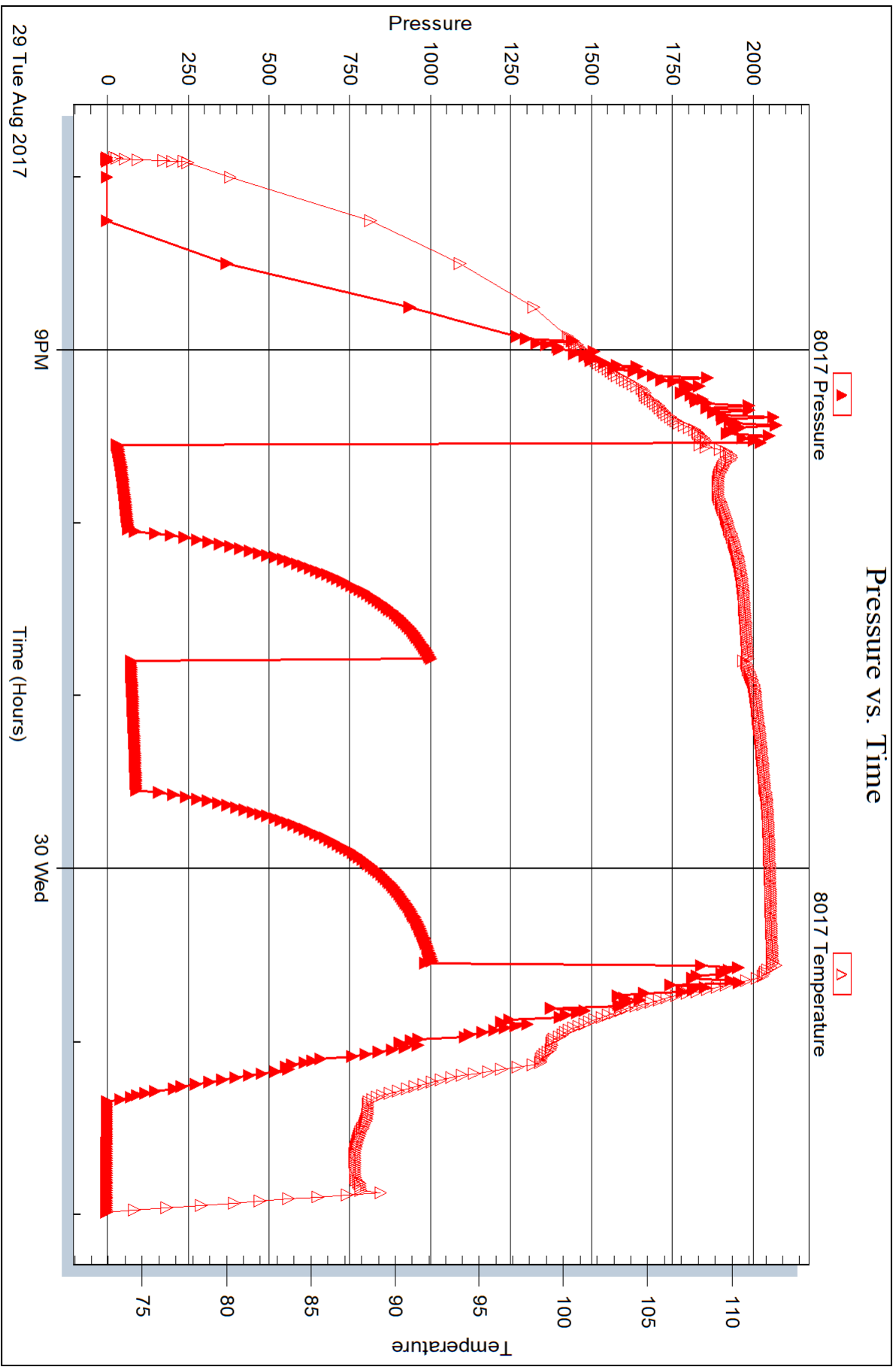
Total Length: 170.00 ft Total Volume: 1.300 bbl

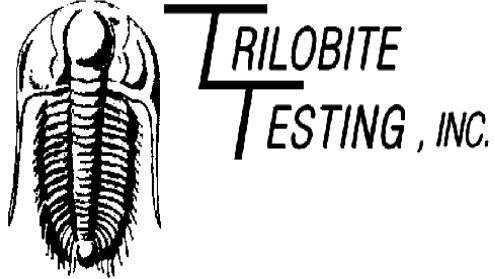
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments: RW = .586 ohms @ 62.5 deg F
Chlorides = 12,500 ppm







DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc**

8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278

ATTN: John Goldsmith

Blau - Schroeder #1

16-15s-36w Logan,KS

Start Date: 2017.08.30 @ 13:48:00

End Date: 2017.08.30 @ 20:28:45

Job Ticket #: 63349 DST #: 2

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

Printed: 2017.09.05 @ 08:49:56

Ritchie Exploration, Inc

16-15s-36w Logan,KS

Blau - Schroeder #1

DST # 2

LKC "A - D"

2017.08.30



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration, Inc

16-15s-36w Logan,KS

8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278
ATTN: John Goldsmith

Blau - Schroeder #1

Job Ticket: 63349

DST#: 2

Test Start: 2017.08.30 @ 13:48:00

Tool Information

Drill Pipe:	Length: 3981.00 ft	Diameter: 3.80 inches	Volume: 55.84 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: 119.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose: 88000.00 lb
			<u>Total Volume: 56.43 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	33.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4096.00 ft			Final 76000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	88.00 ft			
Tool Length:	117.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			4068.00	
Shut In Tool	5.00			4073.00	
Hydraulic tool	5.00			4078.00	
Jars	5.00			4083.00	
Safety Joint	3.00			4086.00	
Packer	5.00			4091.00	29.00 Bottom Of Top Packer
Packer	5.00			4096.00	
Stubb	1.00			4097.00	
Recorder	0.00	6625	Inside	4097.00	
Recorder	0.00	8017	Outside	4097.00	
Perforations	20.00			4117.00	
Blank Spacing	64.00			4181.00	
Bullnose	3.00			4184.00	88.00 Bottom Packers & Anchor

Total Tool Length: 117.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration, Inc
8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278
ATTN: John Goldsmith

16-15s-36w Logan,KS

Blau - Schroeder #1

Job Ticket: 63349

DST#: 2

Test Start: 2017.08.30 @ 13:48:00

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 56.00 sec/qt
Water Loss: 9.55 in³
Resistivity: ohm.m
Salinity: 7000.00 ppm
Filter Cake: 1.00 inches

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

Oil API: deg API
Water Salinity: 12000 ppm

Recovery Information

Recovery Table

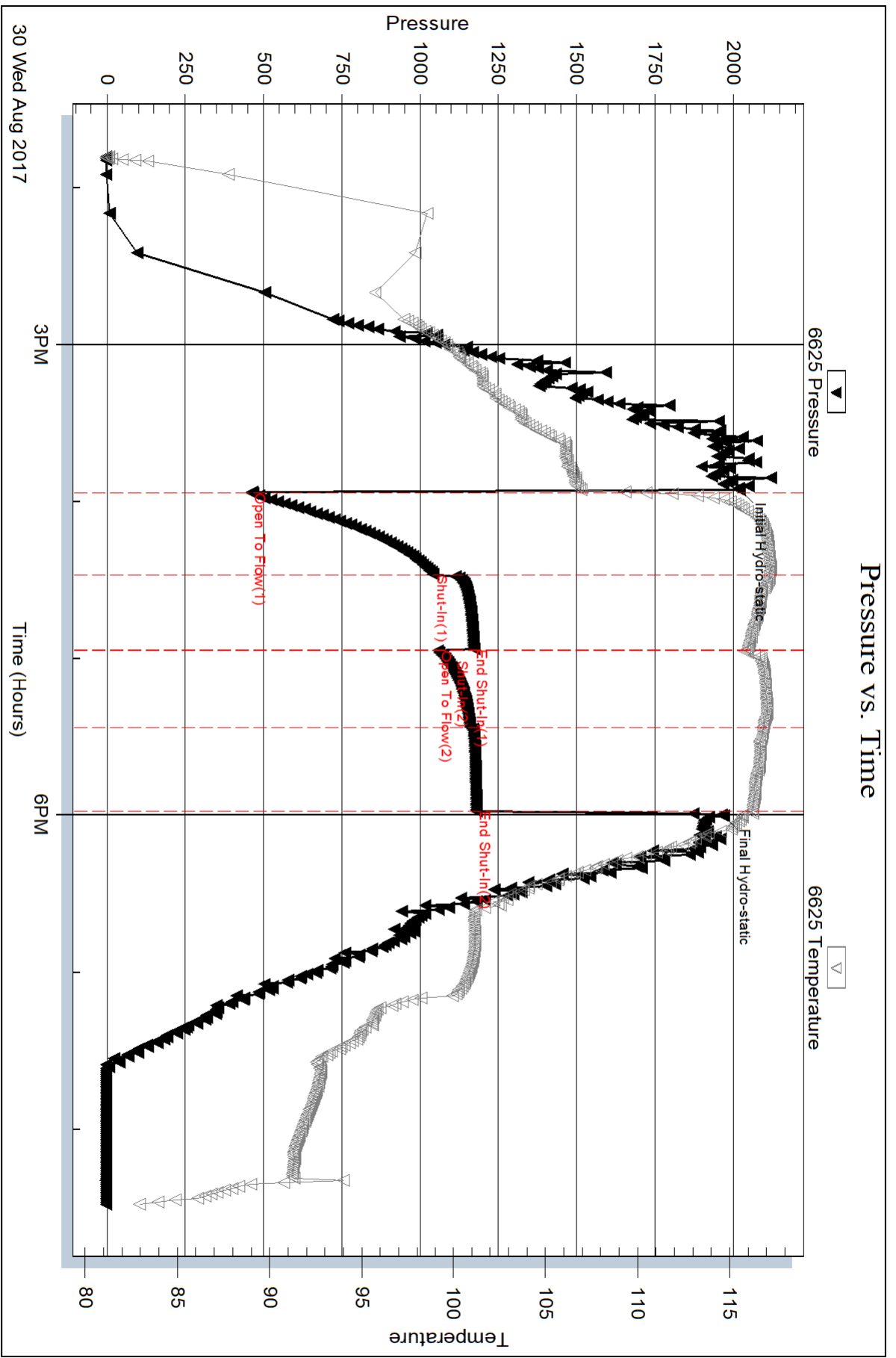
Length ft	Description	Volume bbl
1250.00	Water 99%w , 1%m	16.450
250.00	SMCW 94%w , 6%m	3.507
500.00	MCW 79%w , 21%m	7.014
550.00	MCW 64%w , 36%m	7.715

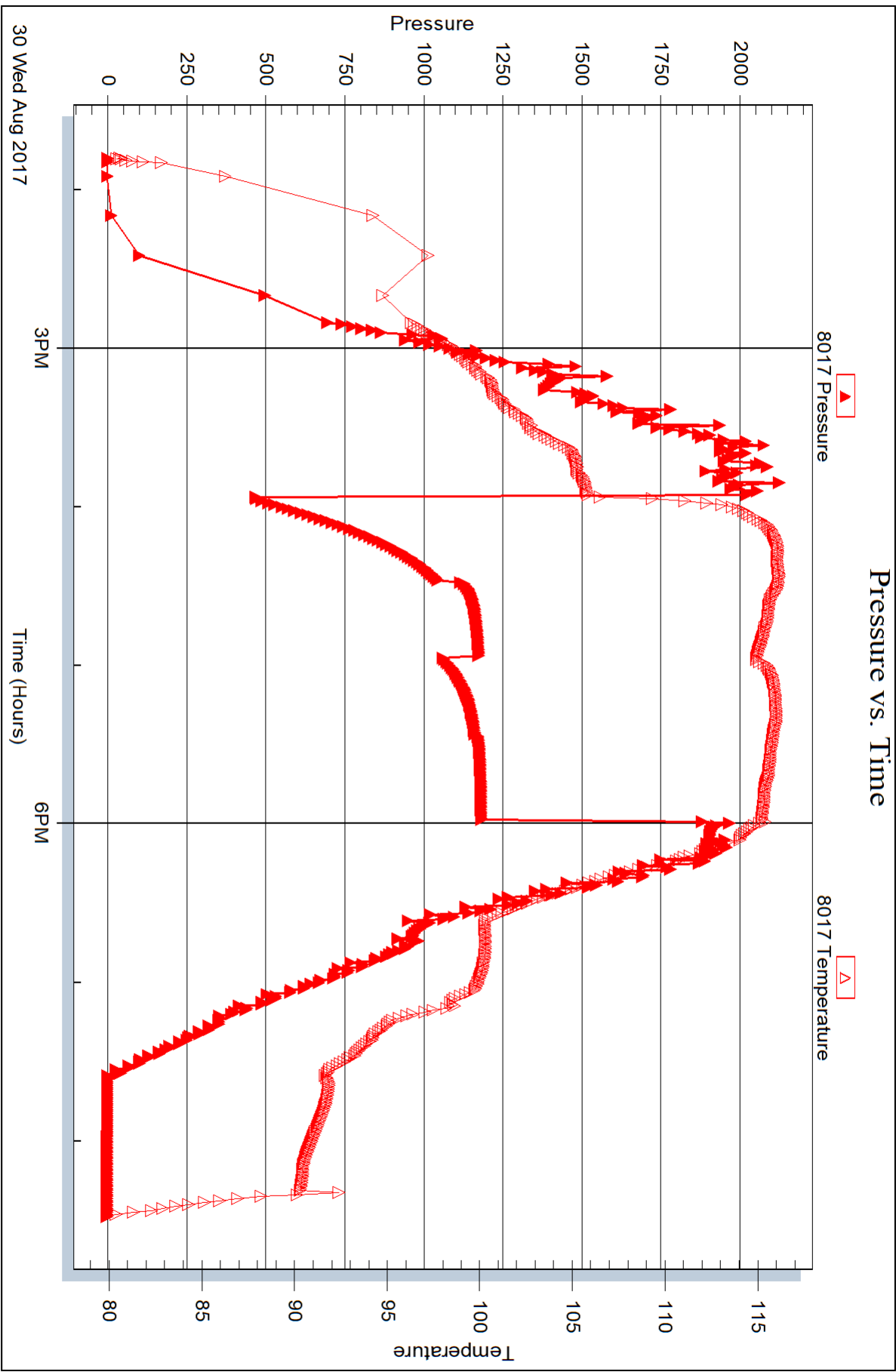
Total Length: 2550.00 ft Total Volume: 34.686 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments: RW = .448 ohms @ 85.4 deg F
Chlorides = 12,000 ppm







DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc**

8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278

ATTN: John Goldsmith

Blau - Schroeder #1

16-15s-36w Logan,KS

Start Date: 2017.08.31 @ 04:17:00

End Date: 2017.08.31 @ 10:30:45

Job Ticket #: 63350 DST #: 3

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

Printed: 2017.09.05 @ 08:42:38

Ritchie Exploration, Inc

16-15s-36w Logan,KS

Blau - Schroeder #1

DST # 3

LKC "E - F"

2017.08.31



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Ritchie Exploration, Inc
8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278
ATTN: John Goldsmith

16-15s-36w Logan, KS

Blau - Schroeder #1

Job Ticket: 63350

DST#: 3

Test Start: 2017.08.31 @ 04:17:00

GENERAL INFORMATION:

Formation: **LKC "E - F"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:04:45

Time Test Ended: 10:30:45

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4191.00 ft (KB) To 4234.00 ft (KB) (TVD)

Reference Elevations: 3344.00 ft (KB)

Total Depth: 4234.00 ft (KB) (TVD)

3339.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 6625

Inside

Press@RunDepth: 79.55 psig @ 4192.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.08.31

End Date:

2017.08.31

Last Calib.:

2017.08.31

Start Time:

04:17:05

End Time:

10:30:44

Time On Btm:

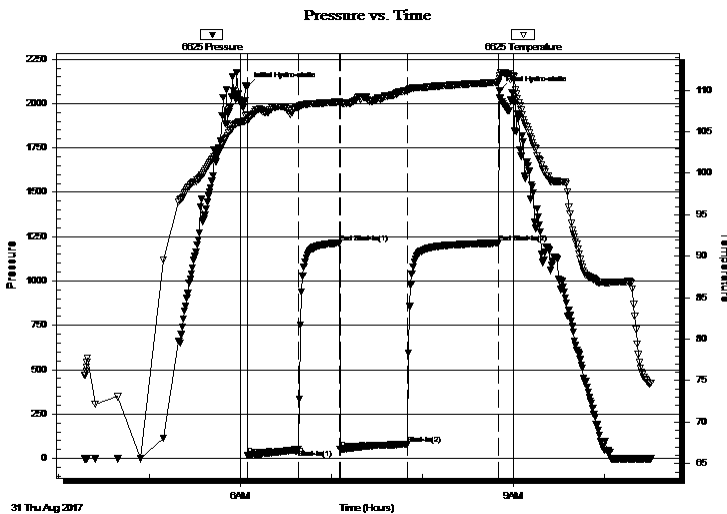
2017.08.31 @ 06:04:30

Time Off Btm:

2017.08.31 @ 08:51:00

TEST COMMENT: 30 - IF: 1/4" Blow at open, built to 2 1/2"
30 - IS: No blow back
45 - FF; Blow started at 2 1/2 min., built to 2 3/4"
60 - FS: No blow back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2095.20	106.97	Initial Hydro-static
1	16.97	106.36	Open To Flow (1)
34	49.70	108.08	Shut-In(1)
61	1214.97	108.62	End Shut-In(1)
61	51.48	108.36	Open To Flow (2)
106	79.55	109.99	Shut-In(2)
166	1213.51	110.98	End Shut-In(2)
167	2071.58	111.71	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
140.00	WCM w/trace oil 85%w, 15%w	0.88

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

16-15s-36w Logan,KS

8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278
ATTN: John Goldsmith

Blau - Schroeder #1

Job Ticket: 63350

DST#: 3

Test Start: 2017.08.31 @ 04:17:00

Tool Information

Drill Pipe:	Length: 4074.00 ft	Diameter: 3.80 inches	Volume: 57.15 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: 119.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose: 74000.00 lb
			<u>Total Volume: 57.74 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	31.00 ft			String Weight: Initial 63000.00 lb
Depth to Top Packer:	4191.00 ft			Final 63000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	43.00 ft			
Tool Length:	72.00 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			4163.00	
Shut In Tool	5.00			4168.00	
Hydraulic tool	5.00			4173.00	
Jars	5.00			4178.00	
Safety Joint	3.00			4181.00	
Packer	5.00			4186.00	29.00 Bottom Of Top Packer
Packer	5.00			4191.00	
Stubb	1.00			4192.00	
Recorder	0.00	6625	Inside	4192.00	
Recorder	0.00	8017	Outside	4192.00	
Perforations	6.00			4198.00	
Blank Spacing	33.00			4231.00	
Bullnose	3.00			4234.00	43.00 Bottom Packers & Anchor

Total Tool Length: 72.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration, Inc
8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278
ATTN: John Goldsmith

16-15s-36w Logan,KS

Blau - Schroeder #1

Job Ticket: 63350 **DST#: 3**

Test Start: 2017.08.31 @ 04:17:00

Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API:	deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity:	9000 ppm
Viscosity: 45.00 sec/qt	Cushion Volume: bbl		
Water Loss: 9.57 in ³	Gas Cushion Type:		
Resistivity: ohm.m	Gas Cushion Pressure: psig		
Salinity: 8000.00 ppm			
Filter Cake: 1.00 inches			

Recovery Information

Recovery Table

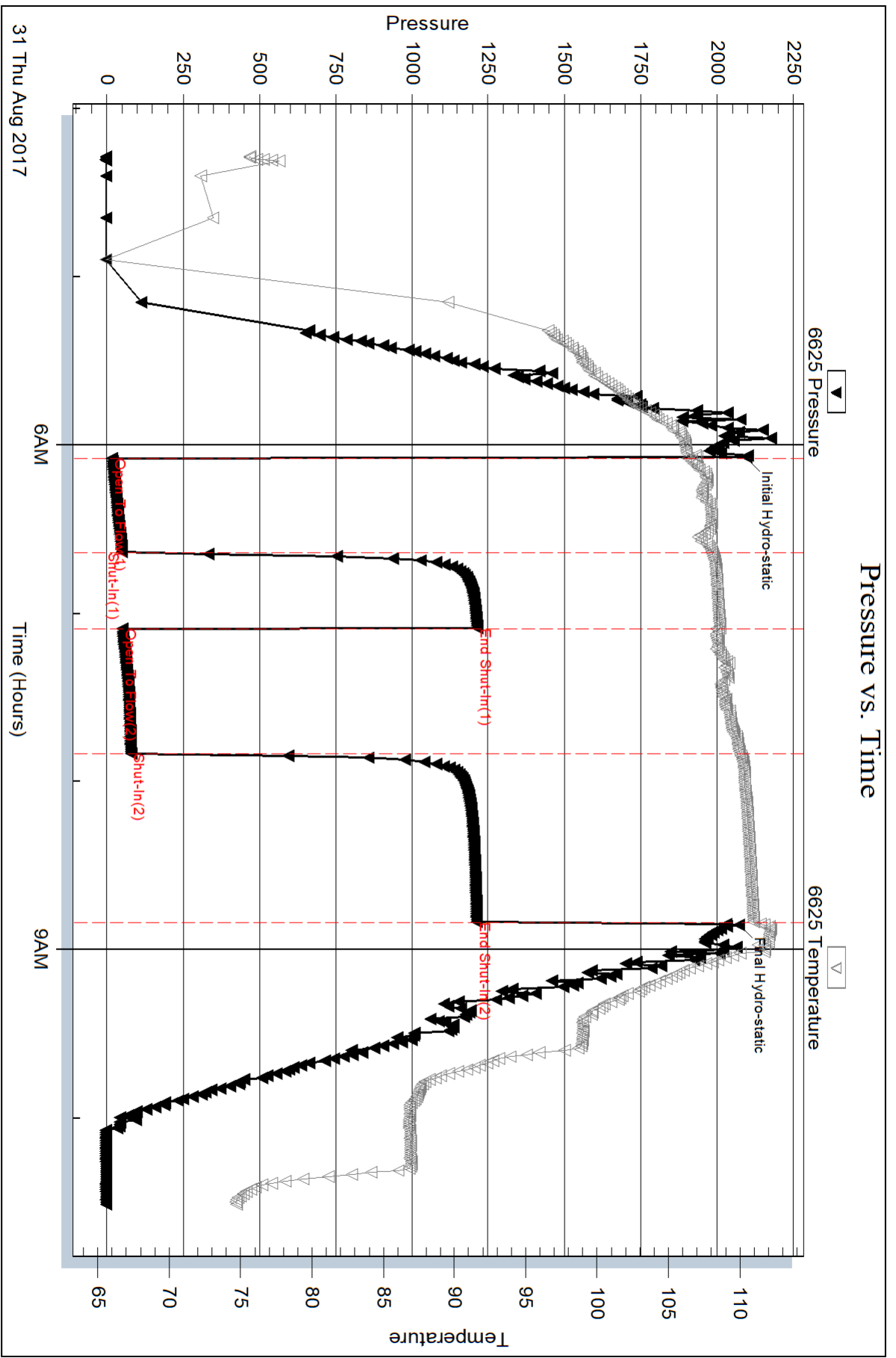
Length ft	Description	Volume bbl
140.00	WCM w/trace oil 85%w, 15%w	0.880

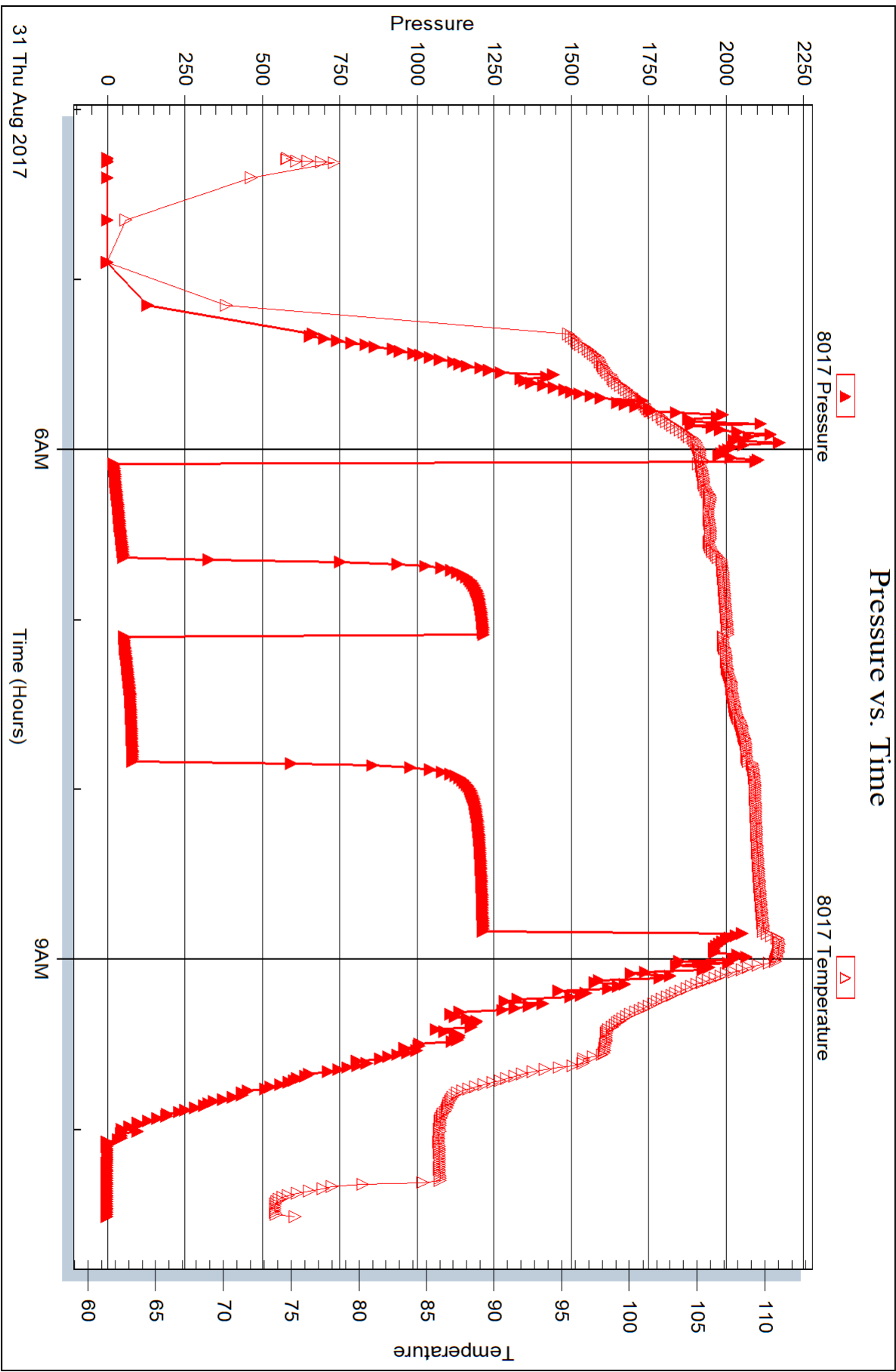
Total Length: 140.00 ft Total Volume: 0.880 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments: RW = .672 ohms @ 73.1 deg F
Chlorides = 9000 ppm







DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc**

8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278

ATTN: John Goldsmith

Blau - Schroeder #1

16-15s-36w Logan,KS

Start Date: 2017.09.01 @ 14:53:00

End Date: 2017.09.01 @ 20:26:30

Job Ticket #: 63301 DST #: 4

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

Printed: 2017.09.05 @ 08:42:03

Ritchie Exploration, Inc

16-15s-36w Logan,KS

Blau - Schroeder #1

DST # 4

Atamont A

2017.09.01



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Ritchie Exploration, Inc
8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278
ATTN: John Goldsmith

16-15s-36w Logan, KS

Blau - Schroeder #1

Job Ticket: 63301

DST#: 4

Test Start: 2017.09.01 @ 14:53:00

GENERAL INFORMATION:

Formation: **Altamont A**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:40:45

Time Test Ended: 20:26:30

Test Type: Conventional Bottom Hole (Reset)

Tester: James Winder

Unit No: 83

Interval: 4501.00 ft (KB) To 4536.00 ft (KB) (TVD)

Reference Elevations: 3344.00 ft (KB)

Total Depth: 4536.00 ft (KB) (TVD)

3339.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

Serial #: 6625

Inside

Press@RunDepth: 17.40 psig @ 4502.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.09.01

End Date:

2017.09.01

Last Calib.:

2017.09.01

Start Time: 14:53:05

End Time:

20:26:29

Time On Btm:

2017.09.01 @ 16:40:15

Time Off Btm:

2017.09.01 @ 18:44:45

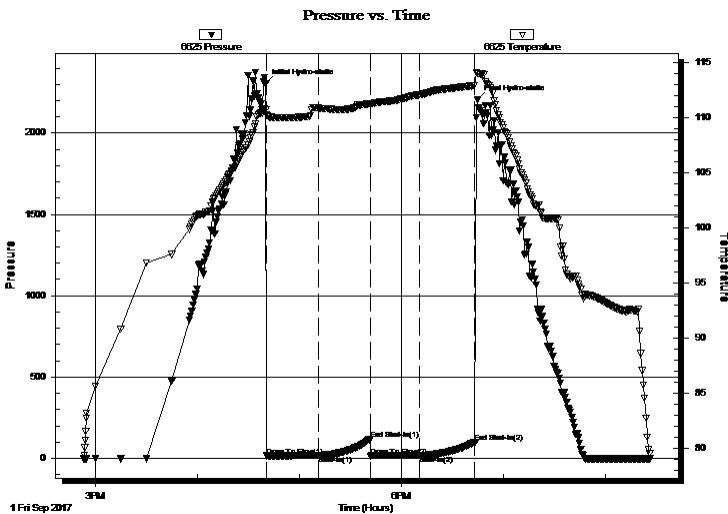
TEST COMMENT: 30 - IF: Weak surface blow, dead at 11 min.

30 - IS: No blow

30 - FF: No blow

30 - FS: No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2306.48	110.72	Initial Hydro-static
1	15.35	110.28	Open To Flow (1)
31	16.73	110.89	Shut-In(1)
62	118.34	111.27	End Shut-In(1)
62	14.69	111.26	Open To Flow (2)
91	17.40	112.09	Shut-In(2)
123	100.67	112.93	End Shut-In(2)
125	2202.90	114.03	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
2.00	Mud 100%	0.01

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration, Inc

16-15s-36w Logan,KS

8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278
ATTN: John Goldsmith

Blau - Schroeder #1

Job Ticket: 63301

DST#: 4

Test Start: 2017.09.01 @ 14:53:00

Tool Information

Drill Pipe:	Length: 4359.00 ft	Diameter: 3.80 inches	Volume: 61.15 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: 119.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose: 88000.00 lb
			<u>Total Volume: 61.74 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	6.00 ft			String Weight: Initial 68000.00 lb
Depth to Top Packer:	4501.00 ft			Final 68000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	35.00 ft			
Tool Length:	64.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description

Length (ft) Serial No. Position Depth (ft) Accum. Lengths

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4473.00	
Shut In Tool	5.00			4478.00	
Hydraulic tool	5.00			4483.00	
Jars	5.00			4488.00	
Safety Joint	3.00			4491.00	
Packer	5.00			4496.00	29.00 Bottom Of Top Packer
Packer	5.00			4501.00	
Stubb	1.00			4502.00	
Recorder	0.00	6625	Inside	4502.00	
Recorder	0.00	8017	Outside	4502.00	
Perforations	31.00			4533.00	
Bullnose	3.00			4536.00	35.00 Bottom Packers & Anchor

Total Tool Length: 64.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration, Inc
8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278
ATTN: John Goldsmith

16-15s-36w Logan,KS

Blau - Schroeder #1

Job Ticket: 63301

DST#: 4

Test Start: 2017.09.01 @ 14:53:00

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 52.00 sec/qt
Water Loss: 9.56 in³
Resistivity: ohm.m
Salinity: 8200.00 ppm
Filter Cake: 1.00 inches

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

Oil API: deg API
Water Salinity: ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
2.00	Mud 100%	0.010

Total Length: 2.00 ft Total Volume: 0.010 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

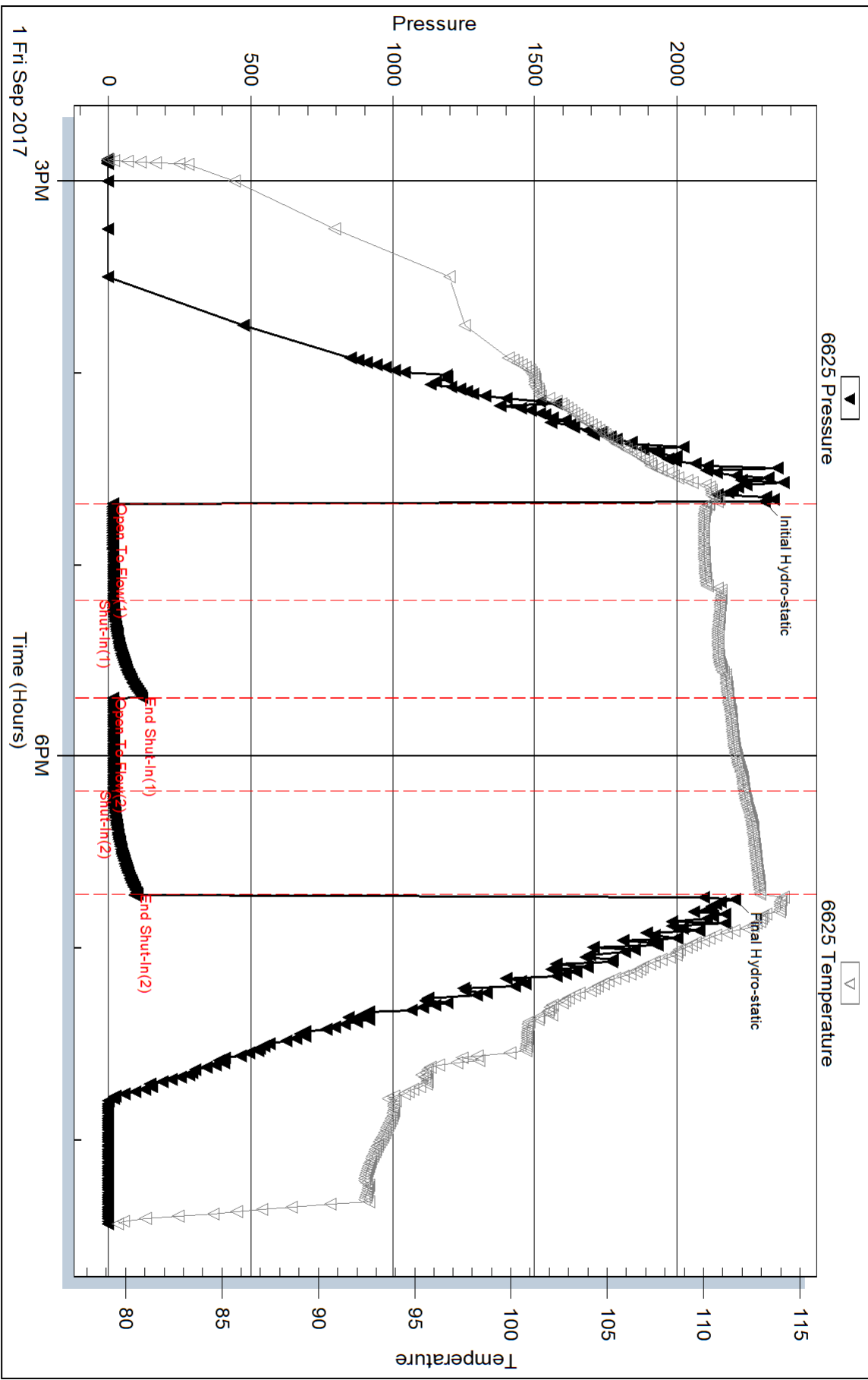
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time





DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration, Inc**

8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278

ATTN: John Goldsmith

Blau - Schroeder #1

16-15s-36w Logan,KS

Start Date: 2017.09.02 @ 03:49:00

End Date: 2017.09.02 @ 10:38:00

Job Ticket #: 63302 DST #: 5

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

Printed: 2017.09.05 @ 08:41:40



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration, Inc

16-15s-36w Logan,KS

8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278
ATTN: John Goldsmith

Blau - Schroeder #1

Job Ticket: 63302

DST#: 5

Test Start: 2017.09.02 @ 03:49:00

Tool Information

Drill Pipe:	Length: 4420.00 ft	Diameter: 3.80 inches	Volume: 62.00 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: 119.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 62.59 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	32.00 ft			String Weight: Initial 64000.00 lb
Depth to Top Packer:	4536.00 ft			Final 66000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	20.00 ft			
Tool Length:	49.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Change Over Sub	1.00			4508.00	
Shut In Tool	5.00			4513.00	
Hydraulic tool	5.00			4518.00	
Jars	5.00			4523.00	
Safety Joint	3.00			4526.00	
Packer	5.00			4531.00	29.00 Bottom Of Top Packer
Packer	5.00			4536.00	
Stubb	1.00			4537.00	
Recorder	0.00	6625	Inside	4537.00	
Recorder	0.00	8017	Outside	4537.00	
Perforations	16.00			4553.00	
Bullnose	3.00			4556.00	20.00 Bottom Packers & Anchor

Total Tool Length: 49.00



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration, Inc

16-15s-36w Logan,KS

8100 E 22nd St. N #700
Box 783188
Wichita, KS 67278
ATTN: John Goldsmith

Blau - Schroeder #1

Job Ticket: 63302

DST#: 5

Test Start: 2017.09.02 @ 03:49:00

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

10000 ppm

Viscosity: 52.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.59 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 8200.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
165.00	MCW 63%w , 37%m	1.230

Total Length: 165.00 ft Total Volume: 1.230 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

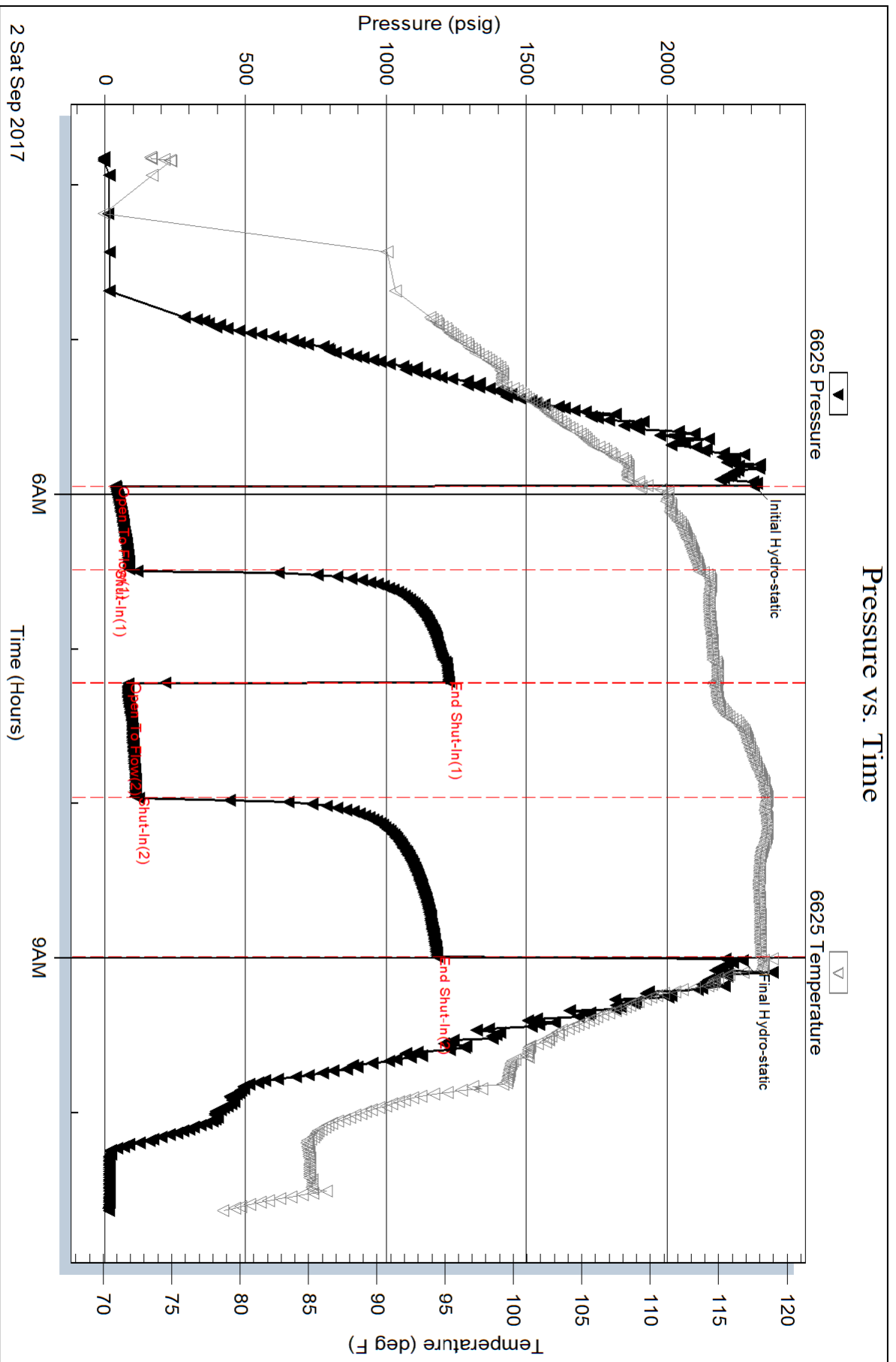
Laboratory Name:

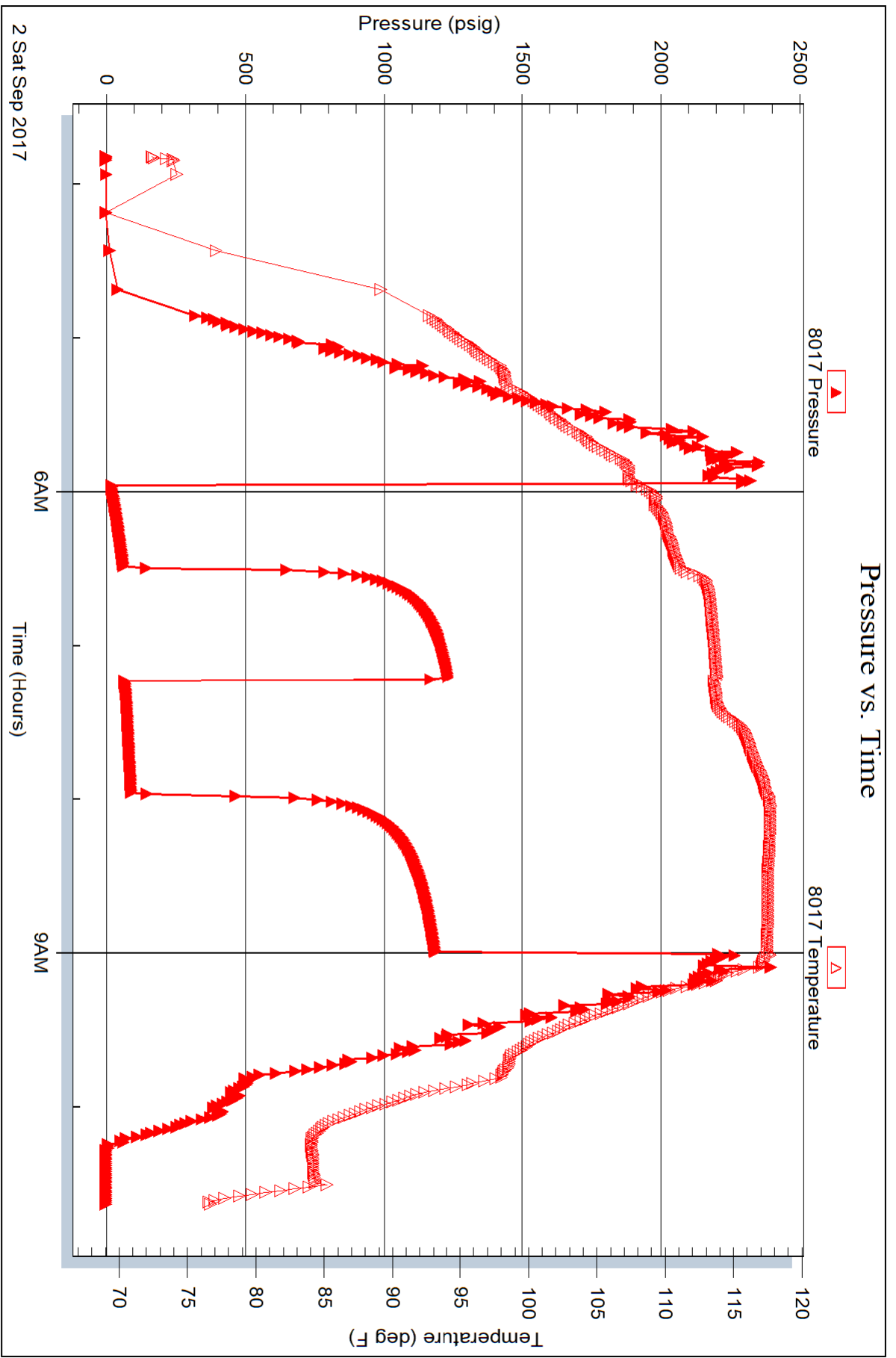
Laboratory Location:

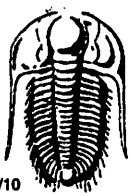
Recovery Comments: RW = .560 ohms @ 77.6 deg F

Chlorides = 10,000 ppm

Pressure vs. Time







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63348

Well Name & No. Blau-Schroeder #1 Test No. 1 Date 8-29-17
 Company Ritchie Exploration Inc Elevation 3344 KB 3339 GL
 Address 8100 E 22nd St. N #700 Box 783188 Wichita, KS 67278
 Co. Rep / Geo. John Goldsmith Rig WW #10
 Location: Sec. 16 Twp. 15S Rge. 36w Co. Logan State KS

Interval Tested 4054 - 4094 Zone Tested Toronto
 Anchor Length 40 Drill Pipe Run 3918 Mud Wt. 9.0
 Top Packer Depth 4049 Drill Collars Run 119 Vis 59
 Bottom Packer Depth 4054 Wt. Pipe Run - WL 8.0
 Total Depth 4094 Chlorides 4200 ppm System LCM 1 1/2

Blow Description IF: Blow built to 4"
ISI: No blowback
FF: Blow built to 3"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>51</u>	<u>WM w/trace oil</u>	<u>trace</u>	<u>44</u>	<u>56</u>	<u></u>
<u>119</u>	<u>MCW w/trace oil</u>	<u>trace</u>	<u>66</u>	<u>34</u>	<u></u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

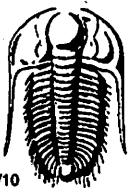
Rec Total 170 BHT 113 Gravity _____ API RW .586 @ 62.5 °F Chlorides 12,500 ppm

(A) Initial Hydrostatic 1999 Test 1150 T-On Location 19:20 8/29
 (B) First Initial Flow 28 Jars 250 T-Started 19:53
 (C) First Final Flow 64 Safety Joint 75 T-Open 21:32
 (D) Initial Shut-In 1000 Circ Sub _____ T-Pulled 00:32
 (E) Second Initial Flow 72 Hourly Standby _____ T-Out 1:55 8/30
 (F) Second Final Flow 88 Mileage 94 RT 70.50 Comments _____
 (G) Final Shut-In 1004 Sampler _____
 (H) Final Hydrostatic 1971 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 30 Ruined Shale Packer _____
 Initial Shut-In 45 Ruined Packer _____
 Final Flow 45 Extra Copies _____
 Final Shut-In 60 Sub Total 0
 Total 1545.50
 MP/DST Disc't _____

Approved By [Signature] Our Representative James Winkler
 Sub Total 1545.50

TriLOBITE Testing Inc. shall not be liable for damages 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 of opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63349

Well Name & No. Blau-Schroeder #1 Test No. 2 Date 8-30-17
 Company Ritchie Exploration Inc Elevation 3344 KB 3339 GL
 Address 8100 E 22nd St. N #700 Box 783188 Wichita KS 67278
 Co. Rep / Geo. John Goldsmith Rig WW #10
 Location: Sec. 16 Twp. 15s Rge. 36w Co. Logan State KS

Interval Tested 4096-4184 Zone Tested LKC "A-D"
 Anchor Length 88 Drill Pipe Run 3981 Mud Wt. 9.1
 Top Packer Depth 4091 Drill Collars Run 119 Vis 56
 Bottom Packer Depth 4096 Wt. Pipe Run - WL 9.6
 Total Depth 4184 Chlorides 7000 ppm System LCM 2

Blow Description IF: Blow built to BOB (11") at 45 sec.
ISI: No blowback
FF: Blow built to BOB at 2 min.
FSI: No blowback

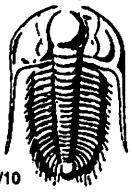
Rec	Feet of	%gas	%oil	%water	%mud
<u>550</u>	<u>MCW</u>	-	-	<u>64</u>	<u>36</u>
<u>500</u>	<u>MCW</u>	-	-	<u>79</u>	<u>21</u>
<u>250</u>	<u>SMCW</u>	-	-	<u>94</u>	<u>6</u>
<u>1250</u>	<u>Water</u>	-	-	<u>99</u>	<u>1</u>
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 2550 BHT 116 Gravity API RW-448 @ 85.4 °F Chlorides 12,000 ppm

(A) Initial Hydrostatic 2020 Test 1150 T-On Location 13:25
 (B) First Initial Flow 462 Jars 250 T-Started 13:48
 (C) First Final Flow 1043 Safety Joint 75 T-Open 15:56
 (D) Initial Shut-In 1173 Circ Sub _____ T-Pulled 17:58
 (E) Second Initial Flow 1057 Hourly Standby _____ T-Out 20:25
 (F) Second Final Flow 1162 Mileage 94RT 70.50 Comments _____
 (G) Final Shut-In 1181 Sampler _____
 (H) Final Hydrostatic 1970 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 30
 Initial Shut-In 30
 Final Flow 30
 Final Shut-In 30
 Sub Total 0
 Total 1545.50
 MP/DST Disc't _____
 Sub Total 1545.50

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



TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63350

Well Name & No. Blau-Schroeder #1 Test No. 3 Date 8-31-17
 Company Ritchie Exploration Inc Elevation 3394 KB 3339 GL
 Address 8100 E 22nd St. N #700 Box 783188 Wichita, KS 67278
 Co. Rep / Geo. John Goldsmith Rig WW #10
 Location: Sec. 16 Twp. 15s Rge. 36w Co. Logan State KS

Interval Tested 4191-4234 Zone Tested LKC "E-F"
 Anchor Length 43 Drill Pipe Run 4074 Mud Wt. 9.3
 Top Packer Depth 4186 Drill Collars Run 119 Vis 45
 Bottom Packer Depth 4191 Wt. Pipe Run - WL 9.6
 Total Depth 4234 Chlorides 8000 ppm System LCM 2

Blow Description IF: 1/4" Blow at open, built to 2 1/2"
ISI: No blowback
FF: Blow started at 2 1/2 min, built to 2 3/4"
FSI: No blowback

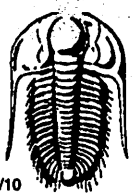
Rec	Feet of	%gas	%oil	%water	%mud
<u>140</u>	<u>wcm w/trace oil</u>	<u>trace</u>	<u>15</u>	<u>85</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec Total <u>140</u>	BHT <u>111</u>	Gravity <u>API RW-672 @ 73.1 °F</u>	Chlorides <u>9000</u>	ppm	

(A) Initial Hydrostatic 2095 Test 1150 T-On Location 3:40
 (B) First Initial Flow 17 Jars 250 T-Started 4:17
 (C) First Final Flow 50 Safety Joint 75 T-Open 6:04
 (D) Initial Shut-In 1215 Circ Sub _____ T-Pulled 8:50
 (E) Second Initial Flow 51 Hourly Standby _____ T-Out 10:30
 (F) Second Final Flow 80 Mileage 94 RT 70.50 Comments _____
 (G) Final Shut-In 1214 Sampler _____
 (H) Final Hydrostatic 2072 Straddle _____
 Shale Packer _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1545.50

Initial Open 30
 Initial Shut-In 30
 Final Flow 45
 Final Shut-In 60

Sub Total 0
 Total 1545.50
 MP/DST Disc't _____

Approved By [Signature] Our Representative James Winder
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63301

Well Name & No. Blau-Schroeder # 1 Test No. 4 Date 9-1-17
 Company Ritchie Exploration Inc Elevation 3344 KB 3339 GL
 Address 8100 E 22nd St. N #700 Box 783188 Wichita, KS 67278
 Co. Rep / Geo. John Goldsmith Rig WW #10
 Location: Sec. 16 Twp. 15s Rge. 36w Co. Logan State KS

Interval Tested 4501 - 4536 Zone Tested Altament A
 Anchor Length 35 Drill Pipe Run 4359 Mud Wt. 9.2
 Top Packer Depth 4496 Drill Collars Run 119 Vis 52
 Bottom Packer Depth 4501 Wt. Pipe Run - WL 9.6
 Total Depth 4536 Chlorides 8200 ppm System LCM 1

Blow Description IF: Weak surface blow, dead at 11 min.
ISI: No blow
FF: No blow
FSI: No blow

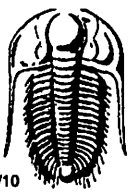
Rec	Feet of	%gas	%oil	%water	%mud
<u>2</u>	<u>mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 2 BHT 113 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm
 (A) Initial Hydrostatic 2306 Test 1150 T-On Location 14:20
 (B) First Initial Flow 15 Jars 250 T-Started 14:53
 (C) First Final Flow 17 Safety Joint 75 T-Open 16:40
 (D) Initial Shut-In 118 Circ Sub _____ T-Pulled 18:43
 (E) Second Initial Flow 15 Hourly Standby _____ T-Out 20:25
 (F) Second Final Flow 17 Mileage 94 RT 70.50
 (G) Final Shut-In 101 Sampler _____
 (H) Final Hydrostatic 2203 Straddle _____
 Shale Packer _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____

Initial Open 30
 Initial Shut-In 30
 Final Flow 30
 Final Shut-In 30
 Sub Total 0
 Total 1545.50
 MP/DST Disc't _____
 Sub Total 1545.50

Approved By [Signature] Our Representative James Winder

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 63302

Well Name & No. Blau - Schroeder #1 Test No. 5 Date 9-2-17
 Company Ritchie Exploration Inc Elevation 3344 KB 3339 GL
 Address 8100 E 22nd St N #700 Box 783188 Wichita, KS 67278
 Co. Rep / Geo. John Goldsmith Rig WW #10
 Location: Sec. 16 Twp. 15S Rge. 36W Co. Logan State KS

Interval Tested 4536 - 4556 Zone Tested Altamont "B"
 Anchor Length 20 Drill Pipe Run 4420 Mud Wt. 9.2
 Top Packer Depth 4531 Drill Collars Run 119 Vis 52
 Bottom Packer Depth 4536 Wt. Pipe Run - WL 9.6
 Total Depth 4556 Chlorides 8200 ppm System LCM 1
 Blow Description IF: 1/4" Blow at open, built to 3 1/4"
ISI: No blowback
FF: Blow started at 3 1/2 min., built to 3 1/4"
FSI: No blowback

Rec	Feet of	%gas	%oil	%water	%mud
<u>165</u>	<u>MCW</u>		<u>63</u>	<u>37</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 165 BHT 118 Gravity API RW .560 @ 77.6 °F Chlorides 10,000 ppm

(A) Initial Hydrostatic <u>2309</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>3:25</u>
(B) First Initial Flow <u>38</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>3:49</u>
(C) First Final Flow <u>86</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>5:56</u>
(D) Initial Shut-In <u>1224</u>	<input type="checkbox"/> Circ Sub	T-Pulled <u>8:59</u>
(E) Second Initial Flow <u>83</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>10:35</u>
(F) Second Final Flow <u>110</u>	<input checked="" type="checkbox"/> Mileage <u>94 RT X 2</u> 70.50 + 70.50	Comments <u>tools loaded 16:10 9/4</u>
(G) Final Shut-In <u>1180</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2269</u>	<input type="checkbox"/> Straddle	

Initial Open 30
 Initial Shut-In 45
 Final Flow 45
 Final Shut-In 60

Shale Packer
 Extra Packer
 Extra Recorder
 Day Standby 2.5d 3.5h
 Accessibility
 Sub Total 1616.00

Ruined Shale Packer
 Ruined Packer
 Extra Copies
 Sub Total 1600
 Total 1616+1600
 MP/DST Disc't

Approved By [Signature] Our Representative James Winder

Trilobite Testing Inc. shall not be liable for damaged or 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.

Wellsite Services, LLC

John Goldsmith
(316) 640-0236

427 Roosevelt St.
Cheney, KS 67025

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

Well Name: #1 Blau-Schroeder
API: 15-109-21517
Location: 610' FSL & 2,570' FWL, Sec 16-15S-36W, S/2 S/2
License Number: REI #4767
Spud Date: 8/25/2017
Surface Coordinates: LAT: 38.7464629
LONG: -101.326285
Bottom Hole Vertical Hole
Coordinates: 1/4 Degree Deviation
Ground Elevation (ft): 3339'
Logged Interval (ft): 3800' To: RTD
Formation: Mississippian at RTD
Type of Drilling Fluid: Chemical

Region: Logan County
Drilling Completed: 9/4/2017

K.B. Elevation (ft): 3344'
Total Depth (ft): 5010'

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Ritchie Exploration Inc.
Address: 8100 E. 22nd St. N. #700
Wichita, KS 67226
(316) 691-9500

GEOLOGIST

Name: John Goldsmith
Company: Wellsite Services LLC
Address: 427 Roosevelt St.
Cheney, KS 67025
(316) 640-0236

RIG RECORDS

Contractor: WW Drilling Rig #10
Pusher: Ricky Hilgers

Collar Tally: 434'

Pump: National K-380
Liner & Stroke: 6 x 14

BIT RECORDS

Size:	Type:	Footage:	Condition:	Hours:	Serial #:
12 1/4"	Sm-tooth	0-268'	RR	2.75	RD 8002
7 7/8"	Varel	268'-5010"	New	127.75	1387952

COMMENTS

Surface Casing: 6 joints of 8 5/8" set @ 268'
Production Casing: No production casing was installed.
Mud by: MudCo
DST's by: Trilobite Testing
Logs by: Pioneer Energy Services (DIL, CN-CD, ML, CS)
RTD=5010' LTD=5009'

FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Stotler	3702'	-357	3700'	-355
Heebner Shale	4057'	-713	4055'	-711
Toronto	4078'	-734	4076'	-732
Lansing	4102'	-758	4102'	-758
Muncie Creek Shale	4284'	-940	4282'	-938
Stark Shale	4373'	-1029	4370'	-1026
Hushpuckney Shale	4420'	-1076	4418'	-1074
Base of KC	4460'	-1116	4458'	-1114
Marmaton	4501'	-1157	4500'	-1156
Altamont	4516'	-1172	4514'	-1170
Pawnee	4592'	-1248	4591'	-1247
Myrick	4633'	-1289	4633'	-1289
Ft Scott	4648'	-1304	4647'	-1303
Cherokee Shale	4676'	-1332	4676'	-1332
Johnson Zone	4764'	-1420	4764'	-1420
Morrow	4814'	-1470	4814'	-1470
Mississippian	4926'	-1582	4925'	-1581
RTD	5010'	-1666		
LTD			5009'	-1665

DST's

DST #1 "Toronto" 4054'-4094' 8/29/17 30-45-45-60
 1st Blw: Surf blw blt to 4" (No BB)
 2nd Blw: Surf blw blt to 3" (No BB)
 IFP: 28-64# ISIP: 1000# FFP: 72-88# FSIP: 1004#
 Hyd: 1999-1971#
 Rec: 51' WM w/ tr Oil (44%Wtr), 119' MCW w/ tr Oil(66%Wtr).

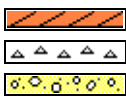
DST #2 "LKC A-D" 4096'-4184' 8/30/17 30-30-30-30
 1st Blw: Strg blw blt to BOB in 11min (No BB)
 2nd Blw: Strg blw blt to BOB in 2min (No BB)
 IFP: 462-1043# ISIP: 1173# FFP: 1057-1162# FSIP: 1181#
 Hyd: 2020-1970#
 Rec: 550' MCW (64%Wtr), 500' MCW (79%Wtr), 250' SMCW (94%Wtr), 1250' Wtr.

DST #3 "LKC E&F" 4191'-4234' 8/31/17 30-30-45-60
 1st Blw: 1/4" blw blt to 2.5" (No BB)
 2nd Blw: Blw started @ 2.5min blt to 2.75" (No BB)
 IFP: 17-50# ISIP: 1215# FFP: 51-80# FSIP: 1214#
 Hyd: 2095-2072#
 Rec: 140' WCM w/ tr Oil (15%Wtr).

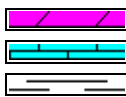
DST #4 "Altamont A" 4501'-4536' 9/1/17 30-30-30-30
 1st Blw: Wk surf blw died @ 11min (No BB)
 2nd Blw: No blw (No BB)
 IFP: 15-17# ISIP: 118# FFP: 15-17# FSIP: 101#
 Hyd: 2306-2203#
 Rec: 2' Mud.

DST #5 "Altamont B" 4536'-4556' 9/2/17 30-45-45-60
 1st Blw: 1/4" blw blt to 3.25" (No BB)
 2nd Blw: Blw started @ 3.5min blt to 3.25" (No BB)
 IFP: 38-86# ISIP: 1224# FFP: 83-110# FSIP: 1180#
 Hyd: 2309-2269#
 Rec: 165' MCW (63%Wtr).

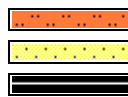
ROCK TYPES



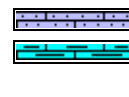
Anhy
 Cht
 Congl



Dol
 Lmst
 Shale



Sltst
 Ss
 Carb sh



Sandylms
 Shaly ls

ACCESSORIES

EVENTS

Circ
 Conn

FOSSIL

Brach
 Bryozoa
 Crin



Foram



Fossil



Gastro



Oolite



Ostra



Fuss



Oolcast

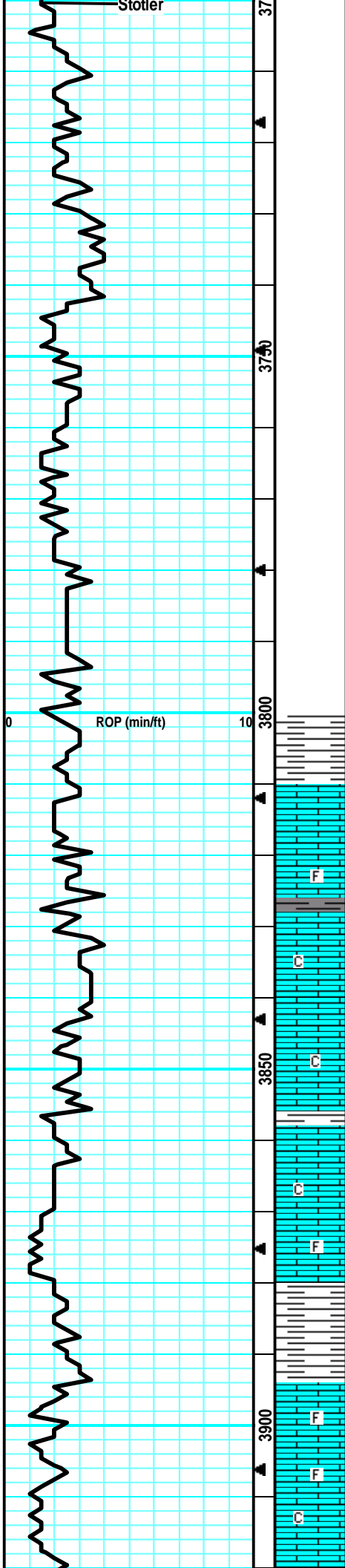
MINERAL

Calc
 Chtdk
 Chtlt
 Glau
 Pyr
 Sil

TEXTURE

Chalky
 Crsxln
 Finexln
 Microxln

Drilling Time ROP (min/ft)	Depth	Lithology	CFS Point Oil Shows	Geological Descriptions	Remarks
<p>ROP (min/ft)</p> <p>Anhydrite</p> <p>B/Anhydrite</p> <p>2650</p>	<p>2650</p>			<p>Morning Activity/Report @ 7:00am</p> <p>8/25/2017: Spud @ 2:00pm</p> <p>8/26/17: drlg @ 700'</p> <p>8/27/17: drlg @ 2465'</p> <p>8/28/17: drlg @ 3436'</p> <p>8/29/17: drlg @ 3978' (DST #1 Toronto)</p> <p>8/30/17: drlg @ 4128' (DST #2 LKC A-D)</p> <p>8/31/17: testing @ 4234' (DST #3 LKC E-F)</p> <p>9/1/17: drlg @ 4485' (DST #4 Altamont A)</p> <p>9/2/17: testing @ 4556' (DST #5 Altamont B)</p> <p>9/3/17: drlg @ 4775'</p> <p>9/4/17: circ @ RTD 5010' (Elec Logs)</p>	<p>Survey @ 260' = 1/4 Degree</p> <p>Anhydrite @ 2628' (+716)</p> <p>MudCo Check #2 @ 2628' 08/27/17 @ 10:00am Wt: 9.7 Vis: 28 pH: 7.0 Filt: n/c Chlr: 76K LCM: n/c</p> <p>B/Anhydrite @ 2647' (+697)</p>
<p>ROP (min/ft)</p> <p>3600</p> <p>3650</p> <p>00</p>	<p>3600</p> <p>3650</p> <p>00</p>				<p>MudCo Check #3 @ 3535' 08/28/17 @ 11:45am Wt: 8.7 Vis: 55 pH: 11.5 Filt: 8.0 Chlr: 3.4K LCM: 2#</p>



SH: gry/brn, silty, soft, fw LS: gry/tan, mott, fn xln, flakey/mealy, tr-nvp, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, sm flakey/mealy, sub-chlky, tr-? intxn por in sm, 2 pcs w/ drk hvy tar like stain, no fluor, no cut, pos drk dead oil, no cup odr, nsfo.

LS: gry/tan, slight mott, fn xln, fw foss, firm, sm gritty like, tr-nvp, sm SH: drk gry/gry, silty, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, sm gritty/sandy, tr-pr intxn por, fw foss, dense, firm, tr-nvp, no cup odr, ns.

LS: lt tan/tan, mostly sing, fn xln, dense, sm firm, fw sub-chlky, tr-nvp, no cup odr, ns.

LS: lt tan/lt gry, mostly sing, fn xln, fw flakey, many dense, tr-nvp, fw lght brn spttd min specs, no fluor/cut, no cup odr, nsfo.

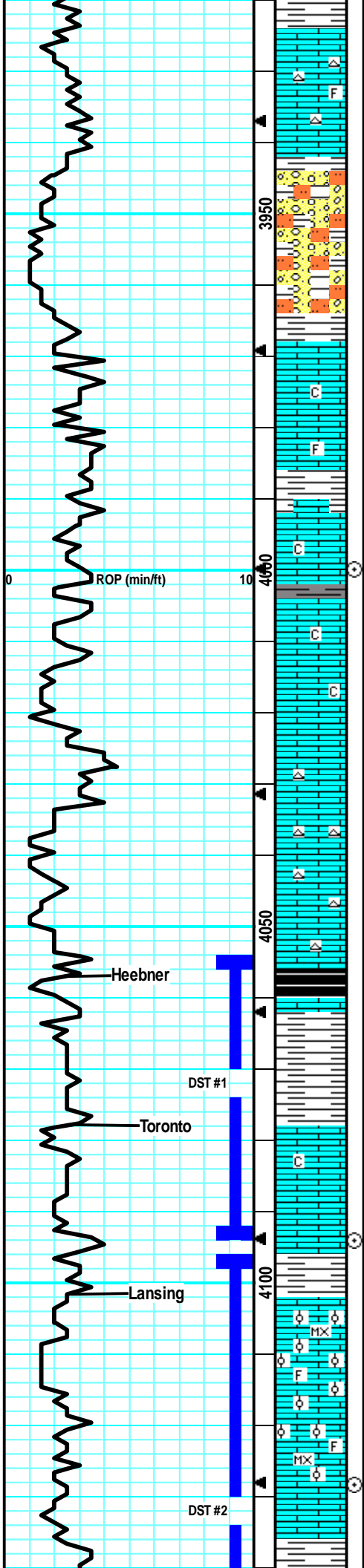
LS: lt gry/tan, slight mott, fn xln, fw foss, fw flakey/mealy, tr-nvp, fw SH: gry/drk gry, silty, no cup odr, ns.

SH: gry/drk gry, silty, fw LS: gry, slight mott, foss, flakey, tr-nvp, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, fw foss frags, sm dense, fw brittle, tr-nvp, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, sm flakey, fw foss, many firm, tr-nvp, fw pcs w/ brn min stns, no fluor/cut, no cup odr, nsfo.

LS: lt tan/tan, mostly sing, fn xln, many firm, sub-chlky in prt, tr-nvp, fw SH: gry/brn, silty, no cup odr, ns.



LS: lt tan/lt gry, slght mott, fn xln, fw foss, many firm, fw dense, Cherty in prt, tr-nvp, fw SH: lght grn, silty, gritty, no cup odr, ns.

LS: gry, mott, fn xln, sandy/gritty, sm friable, fw sub-chlky, tr-nvp, svrl SH: gry, silty, soft, fw waxy, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, sm sandy/gritty, fw sub chlky, tr-nvp, svrl SH: gry, silty, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, many dense, sm flakey/mealy, tr-nvp, fw pcs w/ drk brn stns, no fluor/cut, no cup odr, ns.

LS: lt gry/lt tan, mostly sing, fn xln, fw foss frags/fuss, fw sub-chlky, tr-nvp, no cup odr, ns.

LS: lt gry/lt tan, mostly sing, fn xln, dense, sm brittle, fw sub-chlky in prt, tr-nvp, no cup odr, ns.

LS: tan/lt gry, slght mott in prt, fn xln, mostly dense, sm flakey, sub-chlky, tr-nvp, fw SH: gry/brn, silty, no cup odr, ns.

LS: tan/lt gry, mostly sing, fn xln, mostly dense, sub-chlky, tr-nvp, fw SH: gry/blu/brn, silty, no cup odr, ns.

Much of the same LS, infx of Chert: wht/opaq, foss, sharp, less SH, no cup odr, ns.

LS: tan, mostly sing, fn xln, mostly dense, sm firm, sub-chlky in prt, tr-nvp, sm Chert: wht/opaq, foss, sharp, no cup odr, ns.

LS: tan/lt gry, slght mott, fn xln, mostly dense, fw flakey, sub-chlky in prt, tr-nvp, fw Chert: wht/lt gry, foss, sharp, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, many flakey/mealy, sm pr intxln por in sm, fw pcs w/ drk brn stns, no fluor/cut, pos drk dead oil, sm SH: blk, carb, no cup odr, nsfo.

SH: gry/blu/brn, silty, soft, fw LS: gry/tan, slght mott, fn xln, pr intxln por in sm, lght brn spttd stn, ? fluor, no cut, no cup odr, nsfo.

LS: tan/lt tan, slght mott, fn xln, mostly brittle, fr intxln por in sm, lght brn stns in por in svrl pcs, fr sfo on brk, gd fluor & cut.

LS: crm/lt tan, mostl sing, miro/fn xln, mostly brittle, sub-chlky in prt, tight scat fn intxln-ppt por in svrl pcs, svrl pcs w/ hvy stn, fr sfo on brk, gd cup odr.

SH: gry/blu/brn, silty, soft, fw pcs of LS: most like above, sm with ppt intxln por with show, pos base of TOR or v top of LANS rx, gd cup odr, fw sfo.

LS: crm/lt tan, mostly sing, micro-fn xln, sm dense, sub-chlky in fw, tight ppt intxln por scat in sm, drk brn stns in por, ssfo on brk, fr cup odr, gd fluor/cut.

LS: crm/lt tan, slght mott, fn xln, sm v ool/foss, many brittle, drk stns in por, fr sfo ok brk, fr cup odr, strng w/ heat, gd fluor/cut, svrl pcs/ try.

LS: crm/lt tan, sm of rx above w/ ool/foss and sho, mostly micro/fn xln, dense, brittle, sub-chlky, tr-nvp, fr cup odr, ssfo in 5-6 pcs.

60" Smpl: LS: lght gry/crm, sing, micro-fn xln, dense, sm brittle, sub-chlky, tr-nvp, svrl pcs pur chlky, faint-? cup odr, nsfo.

LS: crm/lt tan, sing, fn xln, mostly dense, sm brittle, sub-chlky in prt, tr-nvp, fw SH: gry/grn, silty, soft, fw waxy, no cup odr, ns.

MudCo Check #4 @ 3981'
08/29/17 @ 7:15am
Wt: 9.0 Vis: 54
pH: 11.0 Filt: 8.0
Chr: 4.2K LCM: 2#

Short Trip @ 4000' (25 Stands)

CFS @ 4000'
(30"/60")

DST #1 "Toronto" 4054'-4094' 8/29/17
30-45-45-60
1st Blw: Surf blw blt to 4" (No BB)
2nd Blw: Surf blw blt to 3" (No BB)
IFP: 28-64# ISIP: 1000# FFP: 72-88#
FSIP: 1004#
Hyd: 1999-1971#
Rec: 51' WM w/tr Oil (44%Wtr), 119' MCW w/tr Oil (66%Wtr).

Heebner @ 4057' (-713)

Toronto @ 4078' (-734)

Survey @ 4094' = 1/2 Degree

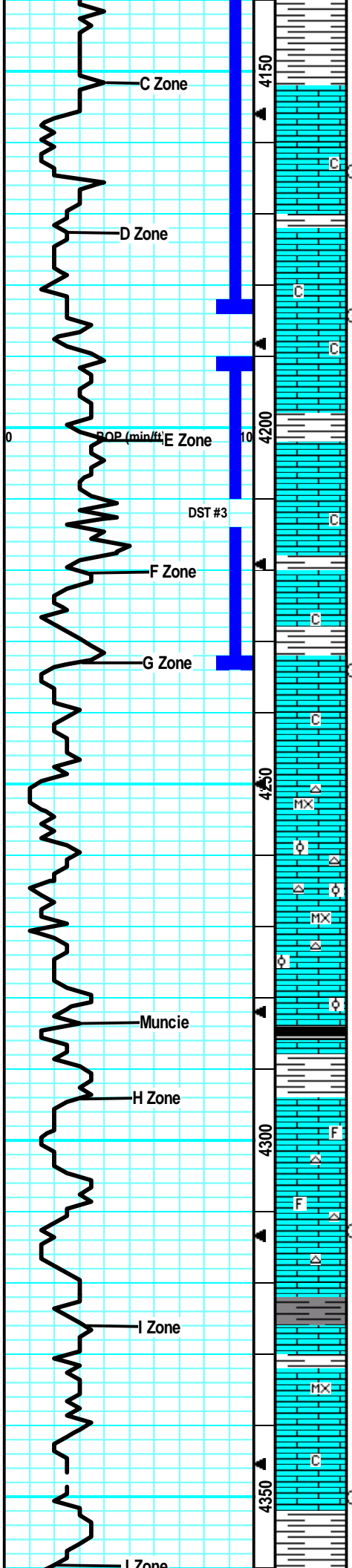
CFS @ 4094'
(30"/60")

Pipe Strap was
0.4' Short to the
board.

Lansing @ 4102' (-758)

CFS @ 4128'
(30"/60")

DST #2 "LKC A-D" 4096'-4184' 8/30/17
30-30-30-30
1st Blw: Strg blw blt to BOB in 11 min (No BB)
2nd Blw: Strg blw blt to ROP in 6 min (No BB)



LS: lt gry/lt tan, sing, fn xln, mostly dense, fw sub-chlky, tr-nvp, fw SH: gry/grn/blu, silty, ? cup odr, ns pcs found.

LS: gry/lt tan, sing, fn xln, many, dense, sm firm, 4-5 pcs w/ pr intxn por, lght brn stns, gd fluor/cut, wk cup odr, ssfo.

LS: gry/tan, slght mott, fn xln, fw ool, many dense, pr intxn sm scat intool por, drk brn stns, sm tarry like, faint cup odr, vssfo.

LS: lt tan, sing, fn xln, mostly dense, sm pr intxn por on edge, scat gd vuggy por, drk hvy glbs of oil in vugs, gd sfo in 6-8 pcs, faint-wk cup odr.

LS: lt tan, sing, fn xln, mostly dense, sm patchy pr intxn por w/ scat vuggy por, drk stns in por, dul yel fluor, strn cut, faint-wk cup odr, vssfo.

LS: lt tan/lt gry, sing, fn xln, mostly dense, fw pcs w/ pr intxn patchy por, scat drk brn stns, vssfo in 3-4 pcs, wk fluor, gd cut, faint-? cup odr,

LS: tan/lt gry, sing, fn xln, mostly dense, sm brittle, sub-chlky in prt, tr-nvp, fw pcs SH: gry/brn, silty, no cup odr, ns.

LS: gry/tan, tan, slght mott, fn xln, many dense, sm firm, fw flakey, scat vuggy por, lght brn sphr of oil in por, gd cup odr + w/ heat, ssfo in 5-6 pcs.

LS: tan/gry, slght mott, fn xln, many dense, sm firm, fw pcs w/ tight ppt intxn por, lght brn patchy stns, gd fluor/cut, vssfo in 4-5 pcs, faint cup odr.

LS: tan/lt gry, slght mott, fn xln, sm dense, fw flakey/mealy, sub-chlky in prt, v fw pcs w/ pr intxn por, no fluor/cut, nsfo, faint-? cup odr.

LS: lt gry/lt tan, mostly sing, fn xln, many dense, fw flakey/mealy, sub-chlky in prt, tr-nvp, fw SH: gry/grn, silty, no cup odr, ns.

LS: lt gry/tan, mostly sing, fn xln, many dense, sub-chlky, sm firm, tr-nvp, svrl SH: brn/gry, silty, no cup odr, ns.

LS: tan/lt tan, sing, fn xln, sub-chlky in prt, fw firm, tr-nvp, 2 pcs w/ pr intxn por, wk stn in por, vssfo on brk, no cup odr, pos from above.

LS: lt tan, sing, micro-fn xln, sub-chlky, many brittle, tr-nvp, fw Chert: wht/opaq, foss, sharp, no cup odr, ns.

LS: lt tan, sing, micro-fn xln, fw ool, mostly brittle, sub-chlky, tr-nvp, fw pcs pur chlk, tr-nvp, fw Chert: wht/opaq, foss, sharp, no odr, ns.

LS: tan/gry, slght mott, fn xln, mostly dense, fw brittle, fw pcs w/ pr intxn por, fw SH: gry/grn, silty, no cup odr, ns.

LS: gry/tan, fn xln, mostly dense, sm firm, fw flakey/mealy, tr-nvp, sm SH: blk/gry, silty, carb, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, fw foss, mostly flakey/mealy, tr-pr intxn por in fw, fw pcs pur chlk, no cup odr, ns.

LS: gry/ltan, slght mott, fn xln, flakey/mealy, sub-chlky, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: tan/lt gry, slght mott, fn xln, mostly dense, sm flakey/mealy, fw brittle, tr-nvp, fw Chert: wht/opaq, foss, sharp, no cup odr, ns.

LS: lt tan/lt gry, sing, fn xln, mostly brittle, fw flakey, sub-chlky in prt, tr-nvp, fw SH: gry, silty, no cup odr, ns.

LS: lt gry/lt tan, sing, fn xln, many dense, sm brittle, tr-nvp, fw pcs w/ lght brn stns, no fluor/cut, nsfo, sm SH: blk/drk gry, silty, sm carb, no cup odr.

LS: lt gry/tan, slght mott, micro-fn xln, sm dense, sm firm, 3 pcs w/ scat vuggy por, drk stns in por, gd fluor/cut, vssfo, faint cup odr.

LS: lt tan/lt gry, slght mott, fn xln, sm dense, fw flakey, 4 pcs w/ scat vuggy por w/ sho, gd fluor/cut, vssfo on brk, no cup odr.

LS: gry/tan, slght mott, fn xln, many foss, brittle, sub-chlky in prt, tr-pr intxn/intfoss por, sm SH: gry, silty, soft, no cup odr, ns.

2nd Blw: Strg blw bit to BOB in zmin (No BB)
 IFP: 462-1043# ISIP: 1173# FFP:
 1057-1162# FSIP: 1181#
 Hyd: 2020-1970#
 Rec: 550' MCW (64%Wtr), 500' MCW
 (79%Wtr), 250' SMCW (94%Wtr), 1250' Wtr.

CFS @ 4164'
 (30"/60")

MudCo Check #5 @ 4184'
 08/30/17 @ 11:30am
 Wt: 9.1 Vis: 56
 pH: 10.0 Fil: 9.6
 Chir: 7.0K LCM: 2#

CFS @ 4184'
 (30"/60")

DST #3 "LKC E&F" 4191'-4234' 8/31/17
 30-30-45-60
 1st Blw: 1/4" blw bit to 2.5" (No BB)
 2nd Blw: Blw started @ 2.5min bit to 2.75"
 (No BB)
 IFP: 17-50# ISIP: 1215# FFP: 51-80# FSIP:
 1214#
 Hyd: 2095-2072#
 Rec: 140' WCM w/ tr Oil (15%Wtr).

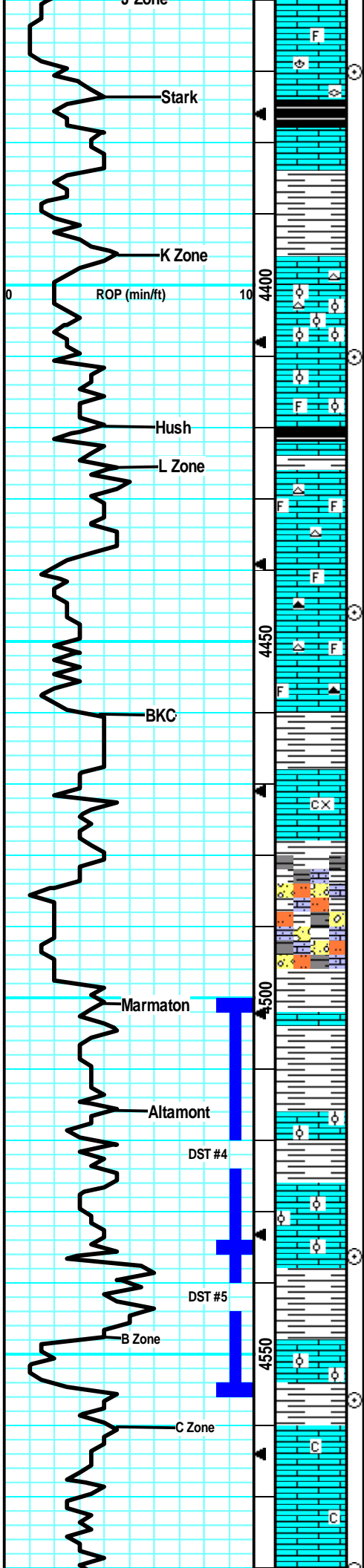
CFS @ 4234'
 (30"/60")

MudCo Check #6 @ 4234'
 08/31/17 @ 8:45am
 Wt: 9.3 Vis: 45
 pH: 10.0 Fil: 9.6
 Chir: 8.0K LCM: 2#

Muncie @ 4284' (-940)

CFS @ 4313'
 (30"/60")

CFS @ 4350'
 (30"/60")



LS: tan/gry, slight mott, fn xln, many foss brach/frags, brittle, svrl chlky in prt, tr-pr intxn por in sm, sm SH: gry, silty, no cup odr, ns.

LS: gry/tan, mott, fn xln, many foss w/ brach/fuss, sm brit, tr-pr intxn/intfoss por, sm SH: gry/blk, silty, sm carb, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, many flakey/mealy, sub-chlky, sm brit, tr-nvp, svrl SH: gry/brn/blk, silty, fw carb, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, fw flakey/mealy, sm brit, pr intxn por in sm, sm Chert: wht/opaq, sharp, fw SH: gry/brn, silty, no odr, ns.

LS: gry/tan, slight mott, fn xln, many ool, svrl dense, sm firm, tr-nvp, svrl SH: gry/drk gry, silty, no cup odr, ns.

LS: tan/gry, mott, fn xln, sm v ool/foss, brit, fw dense, pr intool/foss por in fw, sm Chert: wht/gry, opa, foss, no cup odr, ns.

SH: blk/drk gry, silty, carb.

LS: lt gry/crm, sing, fn xln, fw foss, chlky, brittle, tr-nvp, fw pcs pur chl, fw Chert: wht/opaq, sharp, no odr, ns.

LS: gry/lt tan, sing, fn xln, dense, sub-chlky in prt, tr-nvp, 1 pcs ool, tght pr intool pos, drk brn tarry stns in por, vssfo, pos from above, no odr.

LS: gry/lt tan, slight mott, fn xln, sm flakey/mealy, chlky in prt, sm brittle, tr-nvp, fw pcs pur chl, fw Chert: wht/opaq, foss, sharp, no cup odr, ns.

LS: gry/lt tan, slight mott, fn xln, sm foss frags, mostly brit, chlky in prt, tr-nvp, svrl pcs pur chl, fw Chert: wht/gry, opa, foss, sharp, no cup odr, ns.

LS: gry/tan, mott in prt, fn-crs xln, mostly dense, sm flakey/mealy, many firm, tr-nvp, v fw SH: gry/brn, silty, med crush, no cup odr, ns.

LS: gry/tan, slight mott in prt, fn xln, many dense, fw flakey/mealy, man firm, tr-nvp, cpl pcs w/ drk min stns, no fluor/cut, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, dense, sm brit, fw grainy, tr-nvp, svrl SH: gry/brn/grn, silty, soft, fw SltStn: gry/brn, gritty, friable, no cup odr, ns.

LS: tan/gry, mott in prt, fn xln, sm foss frags, mostly firm, many dense, fw flakey, tr-nvp, fw SH: gry/brn, med crush, no cup odr, ns.

LS: gry/tan, mott, fn xln, mostly dense, many firm, fw flakey, tr-nvp, svrl SH: gry/blu, silty, gritty, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, many dense, sm brit, pr ppt intxn and frac por, drk patchy stns, gd fluor/cut, vssfo on 5-6 pcs, faint cup odr.

LS: tan/lt tan, slight mott, fn xln, sm ool, many dense, sm fr intxn por and tight intool por, drk hvy stns in por, fr sfo on brk in svrl pcs, wk cup odr.

LS: tan/lt tan, slight mott, fn xln, fw ool, mostly dense, many firm, 3-4 pcs w/ fr intxn por and sm frac por, fr sfo on brk, faint cup odr.

LS: lt tan/lt gry, slight mott, fn xln, mostly dense, sub-chlky, tr-nvp, abund SH: gry/brn/blu/grn, silty, soft, no cup odr, ns.

LS: tan, slight mott, fn xln, sm ool, many dense, sm brittle, tr-pr intxn por in sm, fw pcs w/ lght brn stns, gd fluor/cut, vssfo on brk, fnt cup odr.

SH: gry/blu/brn, silty, soft.

LS: tan, fw slight mott, fn xln, mostly dense, sub-chlky in prt, fw firm, tr-nvp, abund SH: gry/brn, silty, soft, no cup odr, ns.

LS: tan/gry, mostly sing, fn xln, sm dense, fw brittle, tr-nvp, fw pcs w/ drk min stns, no fluor/cut, abund SH: drk gry/brn, silty, no odr, ns.

CFS @ 4370'
(30"/60")

Stark @ 4373' (-1029)

CFS @ 4410'
(30"/60")

Hush @ 4420' (-1076)

CFS @ 4446'
(30"/60")

BKC @ 4460' (-1116)

DST #4 "Altamont A" 4501'-4536' 9/1/17
30-30-30-30
1st Blw: Wk surf blw died @ 11 min (No BB)
2nd Blw: No blw (No BB)
IFP: 15-17# ISIP: 118# FFP: 15-17# FSIP: 101#
Hyd: 2306-2203#
Rec: 2' Mud.

Marmaton @ 4501' (-1157)

Altamont @ 4516' (-1172)

MudCo Check #7 @ 4536'
09/1/17 @ 10:00am
Wt: 9.2 Vis: 52
pH: 10.0 Filt: 9.6
Chlr: 8.2K LCM: 1#

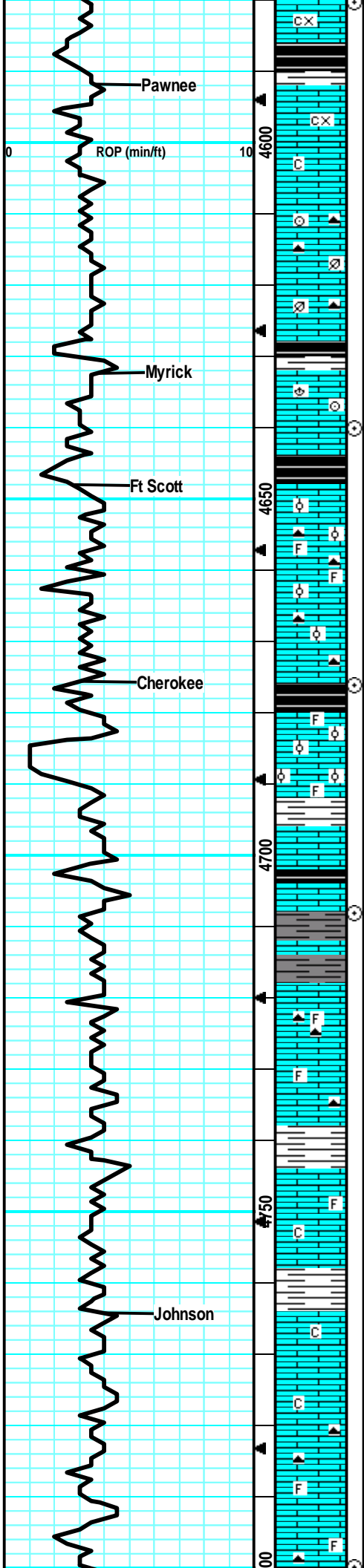
CFS @ 4536'
(30"/60")

DST #5 "Altamont B" 4536'-4556' 9/2/17
30-45-45-60
1st Blw: 1/4" blw blt to 3.25" (No BB)
2nd Blw: Blw started @ 3.5min blt to 3.25" (No BB)
IFP: 38-86# ISIP: 1224# FFP: 83-110#
FSIP: 1180#
Hyd: 2309-2269#
Rec: 165' MCW (63%Wtr).

CFS @ 4556'
(30"/60")

MudCo Check #8 @ 4556'
09/2/17 @ 10:15am
Wt: 9.2 Vis: 50
pH: 10.5 Filt: 9.6
Chlr: 6.0K LCM: 1#

CFS @ 4580'



LS: gry/tan, slight mott in prt, fn-crs xln, mostly dense, fw flakey, many firm, tr-nvp, svrl SH: gry/brn, silty, med crush, no odr, ns.

LS: gry/tan, sing, fn-crs xln, many dense, sm firm, tr-nvp, abund SH: gry/brn/blk, silty, sm carb, no cup odr, ns.

LS: gry, slight mott, fn xln, mostly dense, sm flakey, sub-chlky in prt, fw firm, tr-nvp, svrl SH: gry, silty, soft, no cup odr, ns.

LS: gry, slight mott, fn xln, foss w/ crin & frags, sm firm, sub-chlky, tr-nvp, fw Chert: gry/tan, no cup odr, ns.

LS: gry, slight mott, fn xln, mostly dense, sm firm, tr-pr intxln por in fw, abund SH: drk gry/blk, many carb, no cup odr, ns.

LS: gry/lt brn, mott, fn xln, foss w/ brach/crin, dense, firm, tr-nvp, svrl SH: drk gry/blk, silty, many carb, no cup odr, ns.

LS: gry/lt tan, mott in prt, fn xln, sm ool, sm brittle, sub-chlky in prt, tr-nvp, fw Chert: wht/gry, foss, sharp, no odr, ns.

LS: gry/tan, mott, fn xln, many ool/foss, svrl firm, tr-nvp, fw pcs SH: gry/drk gry, silty, no cup odr, ns.

LS: gry/tan, mott, fn xln, many ool/foss, svrl firm, tr-nvp, fw pcs w/ drk blk/brn min stns, no fluor/cut, nsfo sm Chert: wht/gry, foss, sharp, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, mostly dense, sm firm, fw sub-chlky, tr-nvp, fw Chert: wht/gry, foss, sharp, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, sm ool/foss, many dense, sm firm, tr-nvp, fw SH: drk gry/blk, silty, soft, many carb, no cup odr, ns.

LS: gry/tan, mott, fn xln, sm v ool, sm foss w/ crin and frags, svrl dense/firm, tr-nvp, fw Chert: gry, foss, sharp, no cup odr, ns.

LS: lt gry/tan, slight mott, fn xln, mostly dense, sm flakey, sub-chlky in prt, tr-nvp, fw Chert: gry, foss, sharp, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, mostly dense, sub-chlky, tr-nvp, fw SH: blk, silty, carb, no odr, ns.

SH: drk gry/blk, silty, soft, sm carb, fw LS: tan/gry, slight mott, fn xln, fw dense, sm brittle, tr-nvp, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, fw ool, sm firm, fw sub-chlky/brittle, tr-nvp, abund SH: drk gry, silty, soft, no cup odr, ns.

LS: tan/lt brn/gry, slight mott, fn xln, sm foss, mostly dense, many firm, fw sub-chlky, tr-nvp, fw SH: gry, silty, soft, no cup odr, ns.

LS: lt brn/gry, slight mott, fn xln, v fw foss frags, mostly dense, hard, tr-nvp, fw Chert: brn/gry, foss, sharp, fw SH: gry/grn, silty, no cup odr, ns.

LS: lt brn/gry, slight mott, fn xln, fw foss frags, many dense, sm firm, tr-nvp, fw Chert: gry, smokey, foss, fw SH: gry/drk gry, silty, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, v fw foss frags, mostly dense, sm firm, tr-nvp, fw SH: gry/blu, silty, sm v soft, no cup odr, ns.

LS: lt brn/tan, slight mott, fn xln, mostly dense, mostly firm, many flakey/mealy, tr-nvp, sm SH: drk gry/gry, silty, soft, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, sm dense, many sub-chlky, fw flakey/mealy, tr-nvp, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, many dense, mostly firm, sub-chlky in prt, tr-nvp, fw Chert: tan/lt brn, foss, sharp, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, fw foss frags, many dense, mostly firm, fw sub-chlky in prt, tr-nvp, no cup odr, ns.

CFS @ 4550' (30"/60")

Pawnee @ 4592' (-1248)

Myrick @ 4633' (-1289)

CFS @ 4640' (30"/60")

Ft Scott @ 4648' (-1304)

CFS @ 4676' (30"/60")

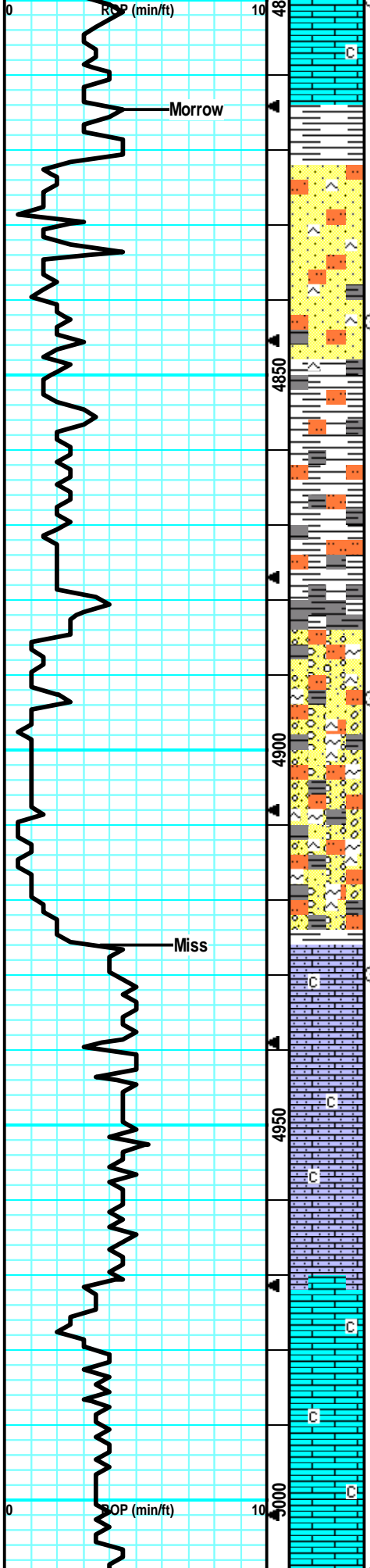
Cherokee @ 4676' (-1332)

CFS @ 4708' (30"/60")

Johnson @ 4764' (-1420)

MudCo Check #9 @ 4800'
 09/3/17 @ 9:25am
 Wt: 9.1 Vis: 57
 pH: 10.0 Filt: 9.6
 Chlr: 6.6K LCM: 2#

CFS @ 4800' (30"/60")



LS: gry/lt brn, slight mott, fn xln, mostly dense, many firm, tr-nvp, svrl SH: gry/brn, silty, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, sm sandy/grainy, sub-chlky in prt, fw flakey/mealy, tr-nvp, abund SH: gry, silty, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, tr-nvp, abund SH: gry/brn/grn, silty, soft, fw StStn: lt brn, gritty, v soft, no cup odr, ns.

SS: crm/gry, fn grn, sub-rnd, arg, clky, friable, tr-? intgrn por, fw SS: brn, silty, arg, tr-nvp, svrl SH: gry/grn/brn, silty, no cup odr, ns.

SS: gry/wht/brn, arg, fn-crs grn, sub-ang, fning upward, fr intgrn por in crs grn clustrs, no cup odr, ns.

SS: lt gry/blu/grn, fn grn, sub-rnd, arg, friabl, sil cem, fw glauc, tr-? intgrn in sm, fw brn silty/dirty, no cup odr, ns.

SS: crm/lt gry, fn grn, sub-ang, fw arg, friable/brittle, fr intgrn por in sm, fw pcs w/ drk mins stns, no fluor/cut, abund SH: gry/brn, silty, no odr, ns.

SS: crm/brn/grn, fn grn, sm sub-ang, mostly rnd, many arg/silty, brittle, friable, tr-? intgrn por in most, fw pr intgrn por, abund SH: gry/brn, no cup odr, ns.

SS: crm/lt tan, sub-rnd/sub-ang, fn-crs xln, pr intgrn por in crs grn clust, friable, sil cem, abund SH: gry/brn, silty, no cup odr, ns.

SS: crm/lt gry, fn-crs grn, sub-ang, arg, brit, many friable, tr-pr intgrn por in sm, abund SH: gry/brn, silty, no cup odr, ns.

SS: gry/grn, fn-crs grn, sub-ang, sil cem, arg, glauc, sm firm, friable, pr intgrn por, no odr, ns.

SS: crm/lt gry, fn-crs grn, sub-ang, friable, sm firm, fr intgrn por, sm glauc, abund SH: gry/brn, silty, soft, no cup odr, ns.

SS: lt gry, fn grn, sub-rnd, friable, sil cem, tr intgrn por, glauc in prt, abund SH: gry/brn, silty, soft, no cup odr, ns.

SS: lt gry, fn grn, sub rnd, sil cem, friable, tr-pr intgrn por, sm glauc, abund SH: gry/brn, silty, soft, no cup odr, ns.

Much of the same SS as desc above, svrl LS: crm/lt tan, fn grn, sandy/gritty, sm brittle, sub-chlky, tr-nvp, no cup odr, ns.

LS: crm/lt tan, fn xln, mostly sandy/gritty, fn xln, sm friable, sub-chlky in prt, tr-nvp, abund SH: gry/brn, silty, soft, no cup odr, ns.

LS: crm/lt tan, fn xln, sandy/gritty, many firm, sm friable, tr-nvp, abund SH: gry/grn, silty, no cup odr, ns.

LS: crm/lt tan/lt gry, fn xln, sandy/gritty, fn xln, sm firm, friable in prt, sub-chlky in sm, tr-nvp, sm SH: gry/grn, silty, fw fissile, no cup odr, ns.

LS: crm/lt tan, fn xln, sandy/gritty, fw firm, sm friable, sub-chlky, tr-nvp, svrl SH: gry/grn/brn, silty, soft, no cup odr, ns.

LS: crm/lt tan, fn xln, sandy/gritty, sub-chlky, friable, tr-nvp, fw LS: tan/lt tan, fn xln, dense, flakey/mealy, tr-nvp, abund SH, no cup odr, ns.

LS: tan/lt gry, fn xln, mostly dense, fw flakey/mealy, fw firm, sub-chlky in prt, tr-nvp, abund slough SH, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, mostly dense, fw flakey, sm firm, sub-chlky in prt, tr-nvp, abund SH: gry/grn, silty, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, mostly dense, sm flakey, fw firm, chlky in prt, tr-nvp, abund SH: gry/grn/brn, no cup odr, ns.

Morrow @ 4814' (-1470)

CFS @ 4843'
(30"/60")

CFS @ 4893'
(30"/60")

Miss @ 4926' (-1582)

CFS @ 4930'
(30"/60")

Large Influx of slough Shale.....

RTD: 5010' (-1666)
LTD: 5009' (-1665)

MudCo Check #10 @ 5010'
09/4/17 @ 9:30am
Wt: 9.3 Vis: 56
pH: 10.5 Filt: 8.8
Chlr: 6.4K LCM: 2#

CFS @ 5010'
(30"/60")

Survey @ 5010' = 1/4 Degree

11/11/2020 (10:00)				
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RITCHIE

EXPLORATION, INC.
Wichita, Kansas

#1 Blau-Schroeder

610' FSL & 2570' FWL

50' S & 70' W of S/2 S/2 Section 16-15S-36W

Logan County, Kansas

API# 15-109-21517-0000

Elevation: GL: 3339', KB: 3344'

Sample Tops			Ref. Well
Anhydrite	2628'	+716	-9
B/Anhydrite	2647'	+697	-11
Stotler	3695'	-351	-6
Heebner	4057'	-713	-12
Toronto	4078'	-734	-10
Lansing	4102'	-758	-10
Muncie Shale	4281'	-937	-9
Stark	4374'	-1033	-10
Hush	4420'	-1076	-10
BKC	4460'	-1116	-10
Marmaton	4498'	-1154	-8
Altamont	4516'	-1172	-8
Pawnee	4594'	-1250	+5
Myrick	4632'	-1288	+7
Fort Scott	4648'	-1304	+6
Cherokee	4676'	-1332	+9
Johnson	4764'	-1420	+6
Morrow Shale	4814'	-1470	+10
Mississippian	4926'	-1582	+19
RTD	5010'	-1666	



9003 / 4895

TICKET NUMBER 53605
LOCATION Oakley Ks
FOREMAN Jerry Y

OLD TICKET & TREATMENT REPORT
CEMENT

Invoice # 811222 Ks

620-431-9210 or 800-467-8676

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY	
9-4-17	7173	Blew-Schroeder #1	16	15s	36w	Logan	
CUSTOMER Ritchie Exp.			Russell Spgs				
MAILING ADDRESS P.O. Box 783188			St. Dikots				
CITY Wichita			Ni-to				
STATE KS			ZIP CODE 67278-3188				
TRUCK #		DRIVER		TRUCK #		DRIVER	
731		Travis W					
479		Wald					

JOB TYPE Plug HOLE SIZE 7 7/8 HOLE DEPTH 5020 CASING SIZE & WEIGHT
 CASING DEPTH DRILL PIPE 4 1/2 TUBING OTHER
 SLURRY WEIGHT 13.8 SLURRY VOL 1.42 WATER gal/sk CEMENT LEFT In CASING
 DISPLACEMENT DISPLACEMENT PSI MIX PSI RATE

REMARKS: Softy meeting a rig upon W10 Plug as ordered with 240 sks
 60/40 4% gel 1/4 #1 flo seal
 50 sks @ 2635'
 100 sks @ 1400'
 50 sks @ 320'
 10 sks @ 40' with 8 5/8 foriper plug
 30 sks Rat hole

Thank you
Jerry & crew

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
CE 0451	1	PUMP CHARGE	1900.00	1900.00
CE0002	45	MILEAGE	7.15	321.75
CE0710	10.32	ton m:leage delivery	1.75	812.70
CC5829	240 sks	liteblend V	16.00	3840.00
CC 6075	60 #	flo seal	3.00	180.00
CP 8228	1	8 5/8 wooden plug	165.00	165.00
			subtotal	7219.45
			-30%	2165.84
			subtotal	5053.61
			SALES TAX	234.30
			ESTIMATED TOTAL	5287.98

Ravin 3737

AUTHORIZATION [Signature] TITLE DATE

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.



8888/8776

TICKET NUMBER 53553
 LOCATION Oakley, KS
 FOREMAN Walt Dinkel

PO Box 884, Chanute, KS 66720
 620-431-9210 or 800-467-8676

FIELD TICKET & TREATMENT REPORT
 CEMENT

INVOICE # 811099

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY	
8-25-17	7173	Blew-Schroeder #1	16	15S	36W	Logan	
CUSTOMER		Ritchie Exploration		Russell Springs		300th on Hwy 25 to Dakota	
MAILING ADDRESS		PO. Box 783188		TRUCK #	DRIVER	TRUCK #	DRIVER
CITY		STATE	ZIP CODE	753	Travis Williams	772-T127	Kathie Carswell
Wichita		KS	67278-3888		Timmy Bray		

JOB TYPE SurFace HOLE SIZE 12 1/4 HOLE DEPTH 268' CASING SIZE & WEIGHT 8 5/8 - 24#
 CASING DEPTH 268' DRILL PIPE _____ TUBING _____ OTHER _____
 SLURRY WEIGHT 15.2 SLURRY VOL _____ WATER gal/sk _____ CEMENT LEFT In CASING 15' to 20'
 DISPLACEMENT 15 3/4 DISPLACEMENT PSI _____ MIX PSI _____ RATE 4 BPM

REMARKS: Safety Meeting, rig up on WJW #10, Circ casing on bottom
mix 180 sks com, 3% cc - 2% gel, Displace 15 3/4 BBL H₂O, shut in

Cement Did Circ
Approx 2 BBL to RT

Thank You
Walt & crew

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
Ceo471	1	PUMP CHARGE	1,150.00	1,150.00
Ceo002	45	MILEAGE	7.15	321.75
Ceo711	8.46	Ten Mileage Delivery	1.25	660.00
CC5871	180 sks	SurFace Blend TC	23.00	4140.00
				6,271.75
			Less 30%	1,881.53
				4,390.22
			8%	231.84
			SALES TAX	231.84
			ESTIMATED TOTAL	4622.07

Ravin 3737

AUTHORIZATION [Signature] TITLE _____ DATE _____

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.



**DUAL COMP POROSITY
MICRO & DUAL IND LOG**

Company **RITCHIE EXPLORATION, INC.**
Well **BLAU-SCHROEDER NO.1**
Field **TWIN BUTTE**
County **LOGAN**
State **KANSAS**

Company **RITCHIE EXPLORATION, INC.**
Well **BLAU-SCHROEDER NO.1**
Field **TWIN BUTTE**
County **LOGAN** State **KANSAS**

Location: **API #: 15-109-21517-00-00**
610' FSL & 2570' FWL
SEC 16 TWP 15S RGE 36W
Permanent Datum **GROUND LEVEL Elevation 3339'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**
Other Services **BHCS**
Elevation **K.B. 3344'**
D.F. N/A
G.L. 3339'

Date	9/4/2017						
Run Number	ONE						
Type Log	CNL/CDL/ML/DIL						
Depth Driller	5010'						
Depth Logger	5009'						
Bottom Logged Interval	5008'						
Top Logged Interval	3600'						
Type Fluid In Hole	CHEMICAL						
Salinity, PPM CL	6,400						
Density	9.3						
Level	FULL						
Max. Rec. Temp. F	126 DEG/F						
Operating Rig Time	4 HOURS						
Equipment -- Location	108 HAYS						
Recorded By	J. HENRICKSON						
Witnessed By	JOHN GOLDSMITH						
Borehole Record							
Run No.	Bit	From	To	Size	Wgt.	From	To
ONE	12.25"	0	268'	8.625"	23#	0	268'
TWO	7.875"	268'		TD			
Casing Record							

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, LLC will not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees.

Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.
RUSSELL SPRINGS
SOUTH TO DAKOTA ROAD, 2 1/2 EAST, NORTH INTO

Log Measured From: KELLY BUSHING 5 Ft. Above Permanent Datum

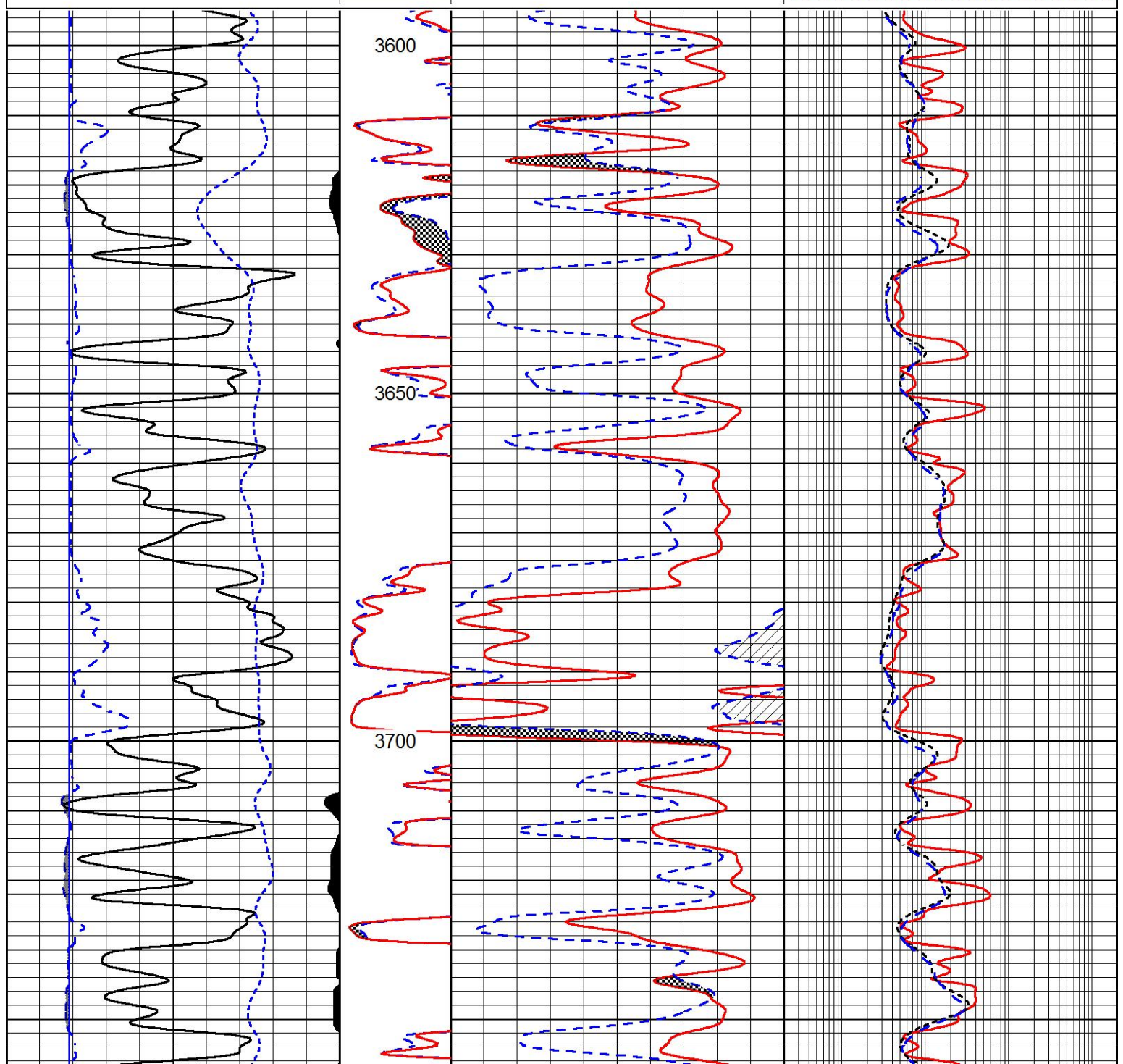
THANK YOU FOR USING PIONEER ENERGY SERVICES
www.pioneerenergy.com 785-625-3858

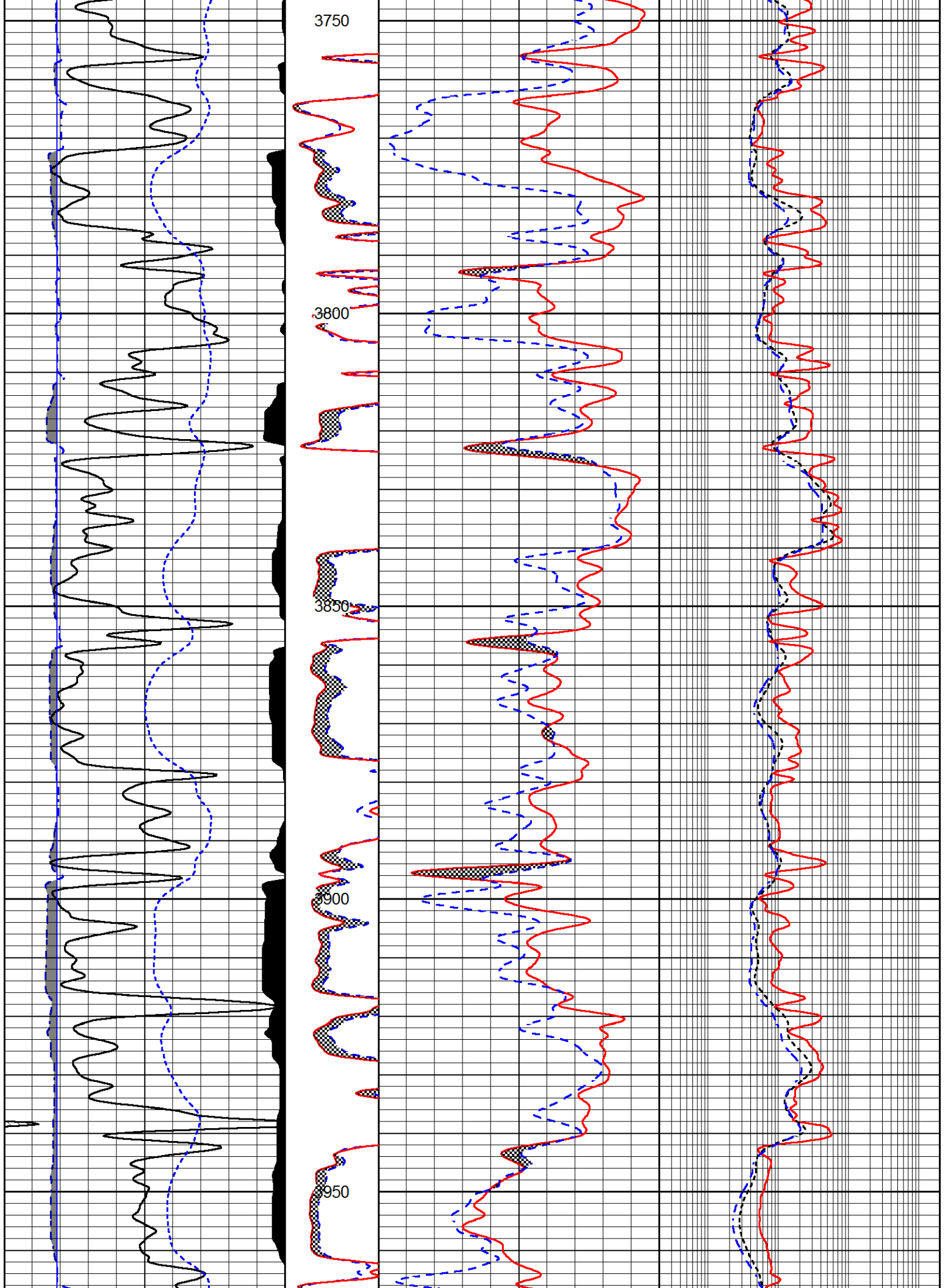
Your Pioneer Energy Services Crew	This Log Record Was Witnessed By
Engineer: J. HENRICKSON	Primary Witness: JOHN GOLDSMITH
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

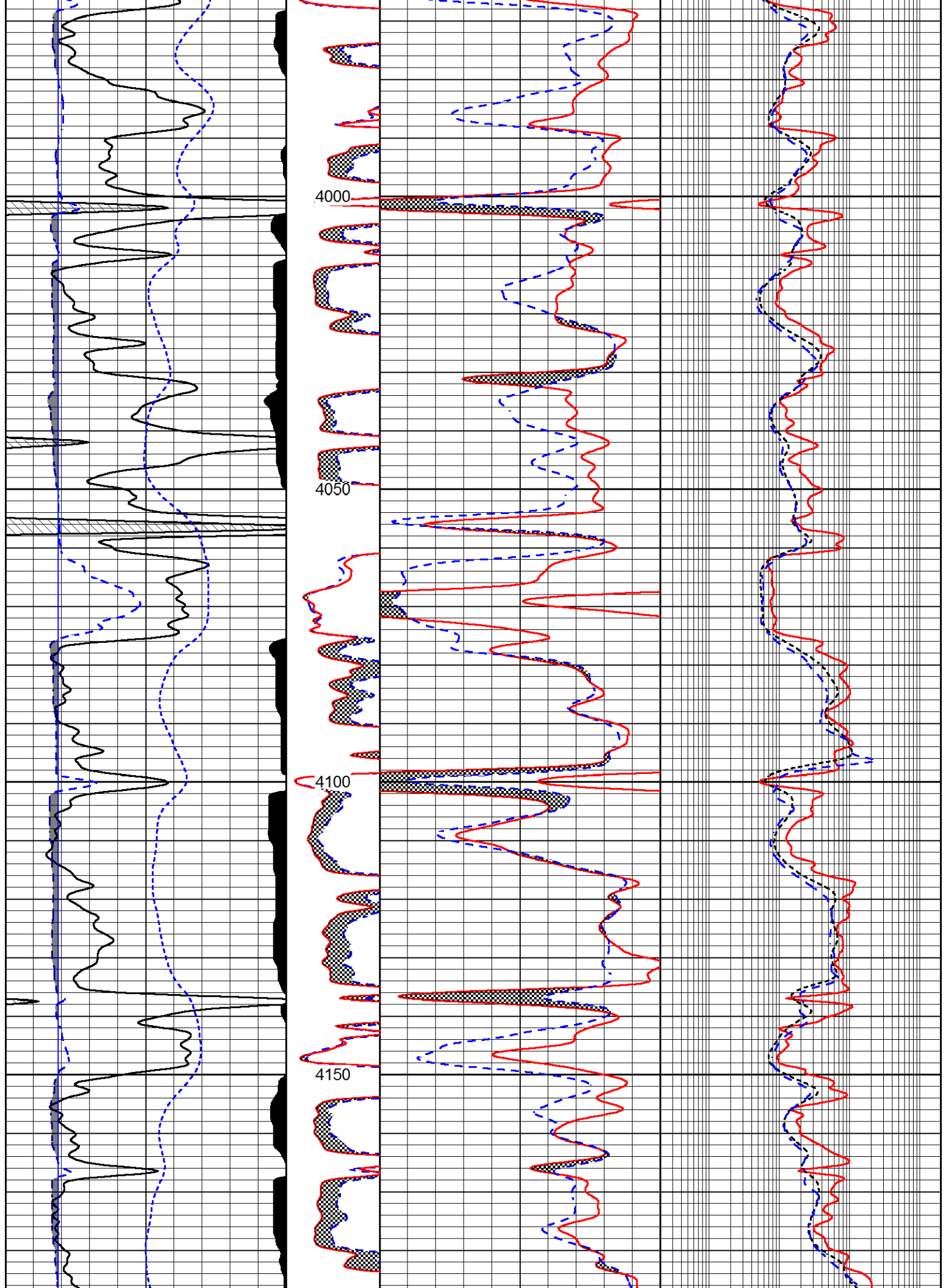
MAIN PASS

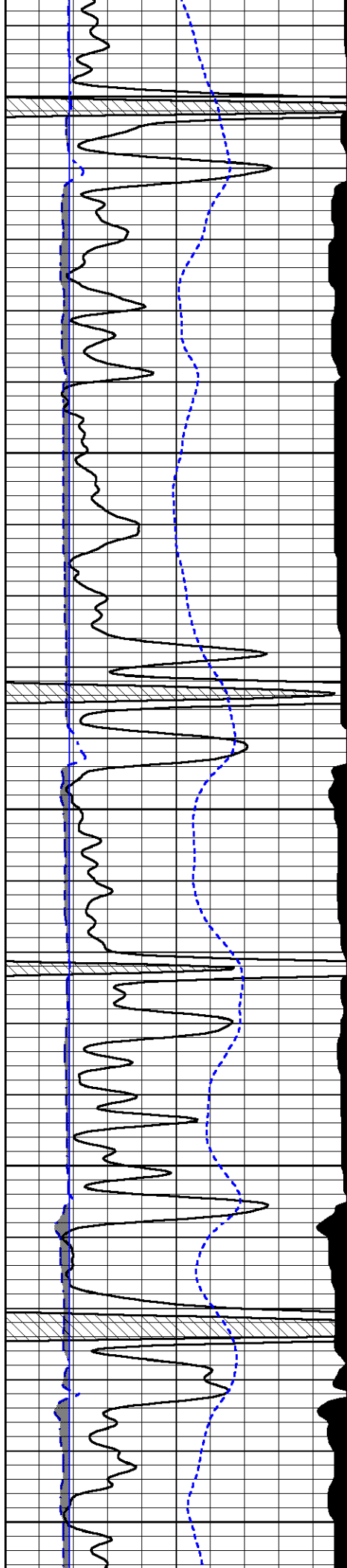
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 Presentation Format RITCHC~1
 Dataset Creation Mon Sep 04 13:37:48 2017
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	MN	30	DENSITY POROSITY (pu)	0	SHALLOW GUARD
150	GR (GAPI)	300	(Ohm-m)	30	NEUTRON POROSITY (pu)	0	(Ohm-m) 2000
6	CALIPER (in)	16	0 20				MEDIUM INDUCTION
2.875	DCAL (in)	7.875	MI				(Ohm-m) 2000
-200	SP (mV)	0	(Ohm-m)				DEEP INDUCTION
			0 20				(Ohm-m) 2000









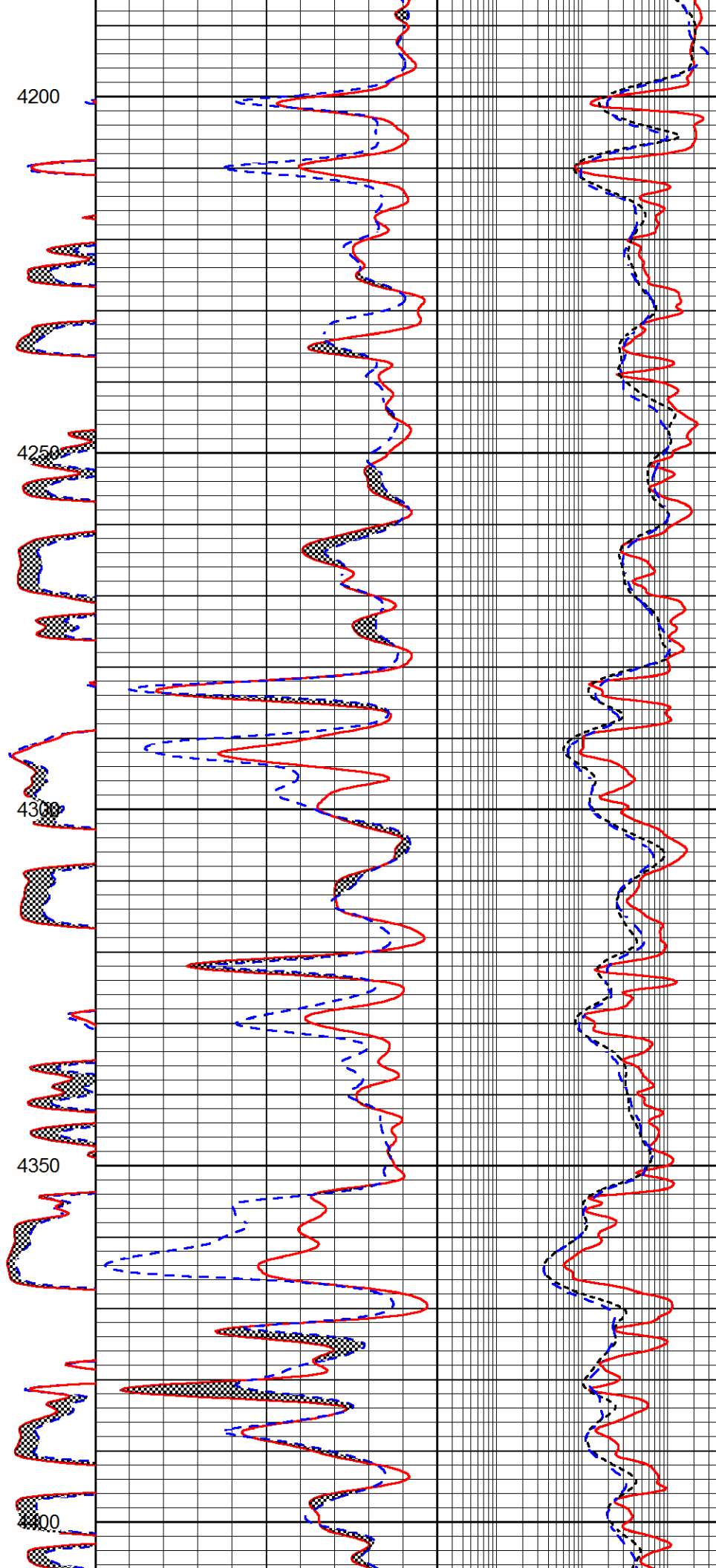
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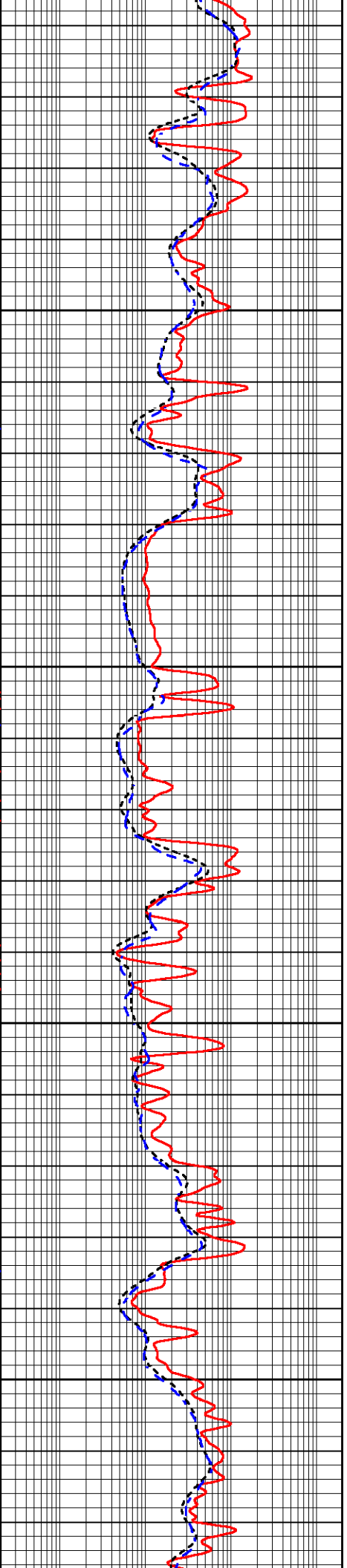
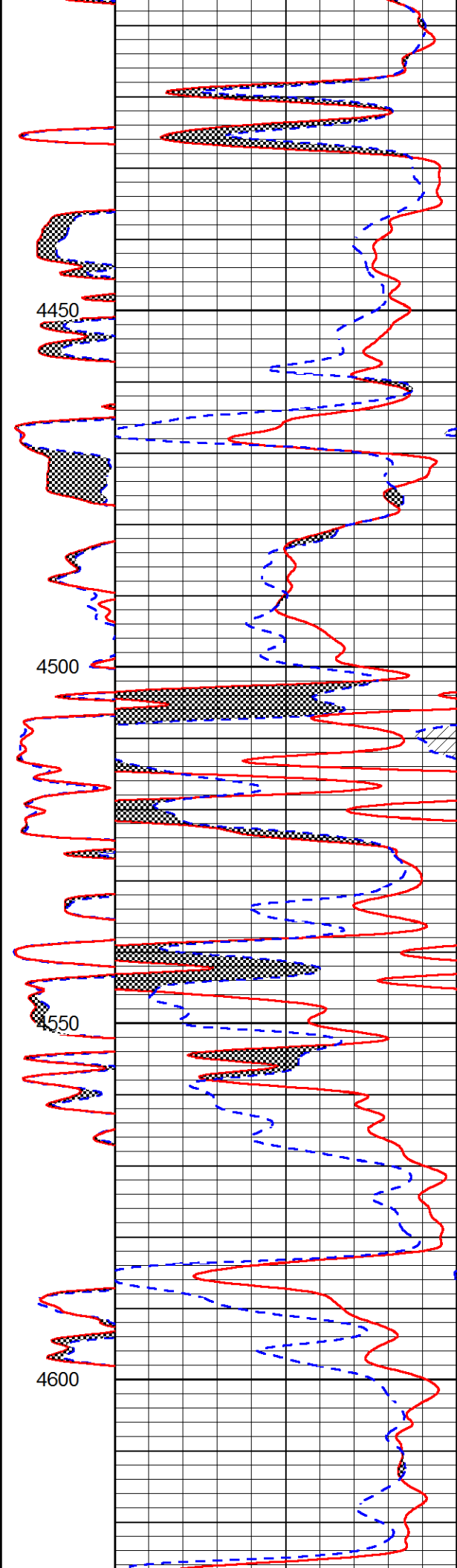
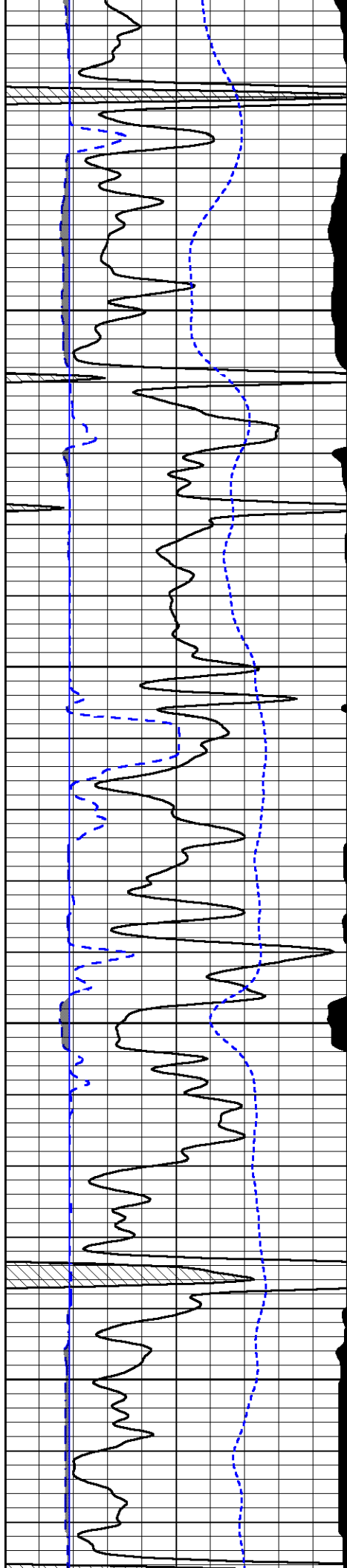
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4300

4350

4400



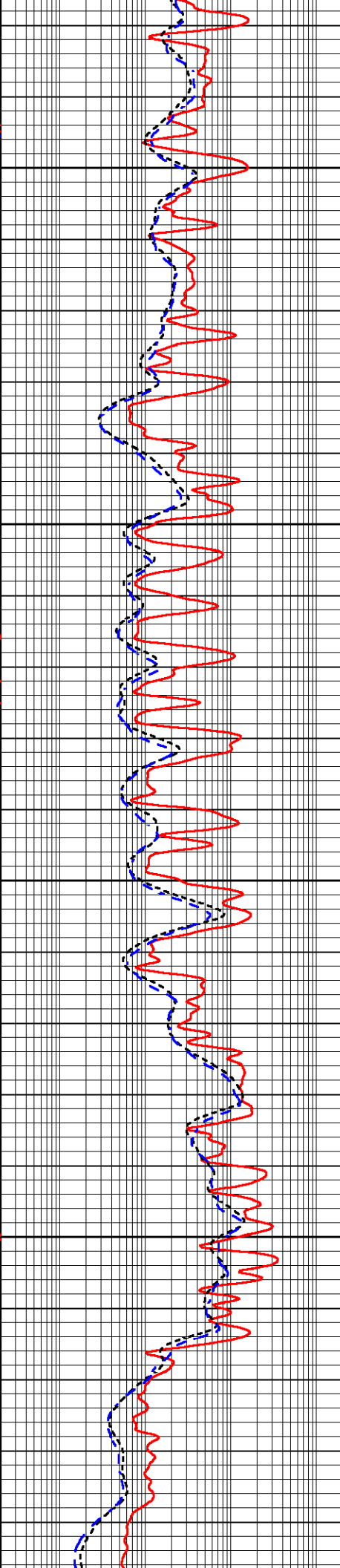
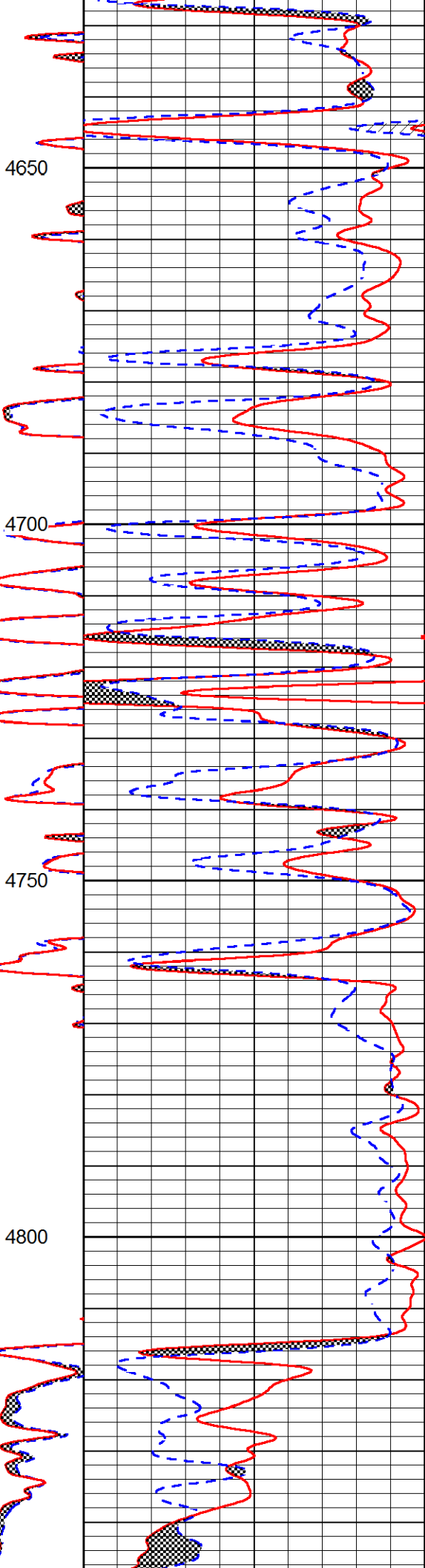
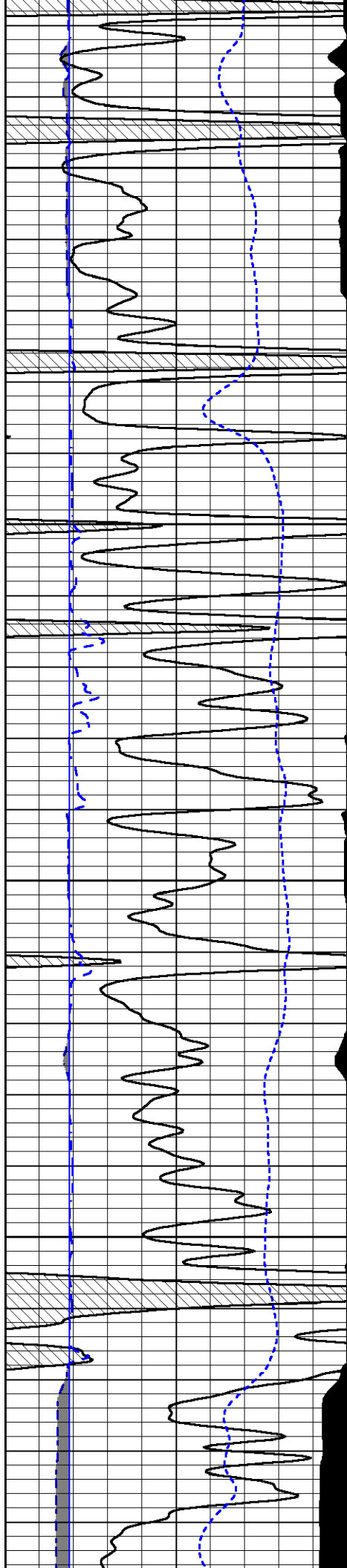


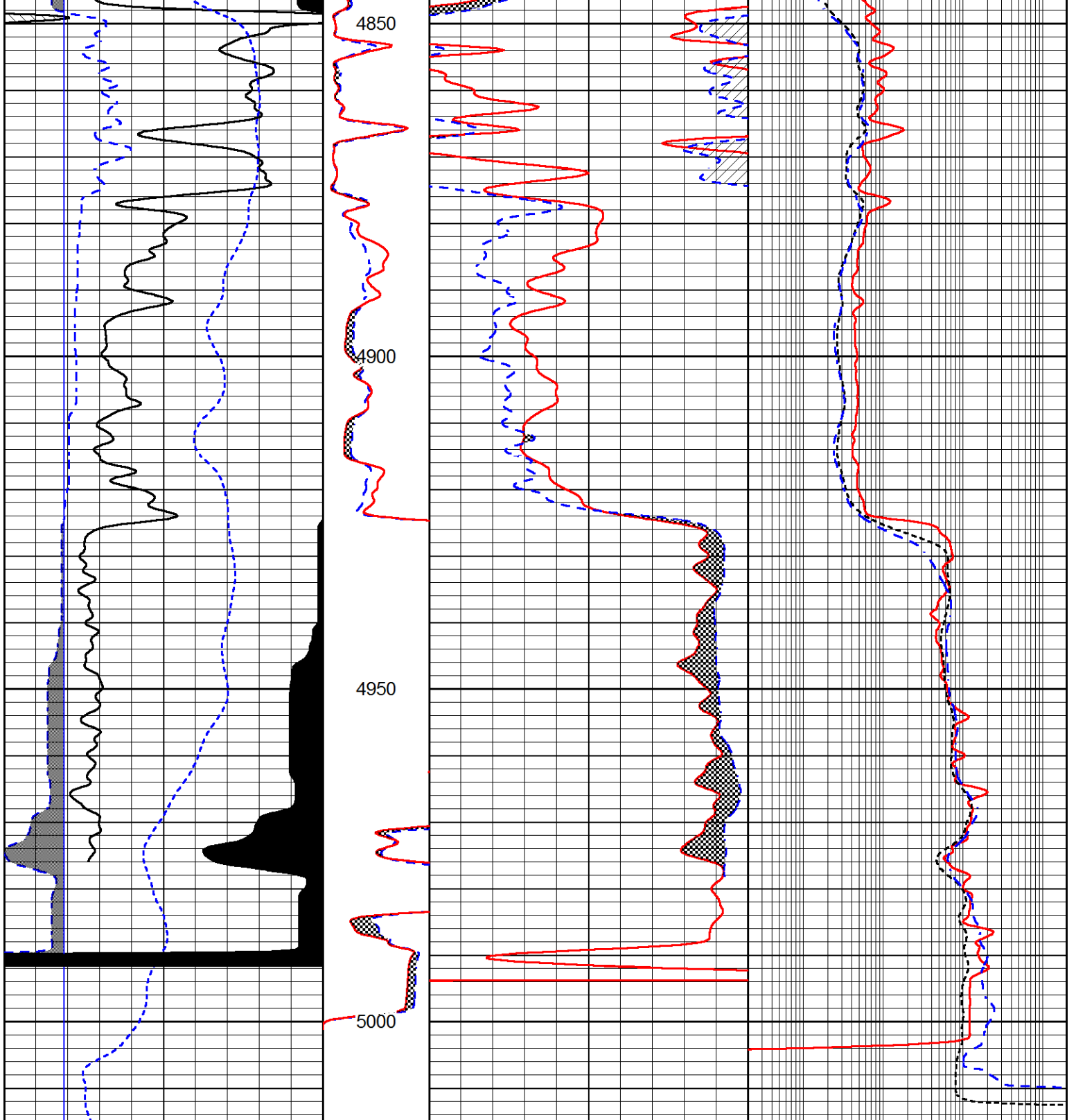
4450

4500

4550

4600





0	GAMMA RAY (GAPI)	150
150	GR (GAPI)	300
6	CALIPER (in)	16
2.875	DCAL (in)	7.875
-200	SP (mV)	0

MN	30	(Ohm-m)
MI	20	(Ohm-m)

30	DENSITY POROSITY (pu)	0
30	NEUTRON POROSITY (pu)	0

0.2	SHALLOW GUARD	2000
(Ohm-m)		
0.2	MEDIUM INDUCTION	2000
(Ohm-m)		
0.2	DEEP INDUCTION	2000
(Ohm-m)		