

Form	ACO1 - Well Completion
Operator	Woolsey Operating Company, LLC
Well Name	UNRUH A 1
Doc ID	1375750

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Surface	12.25	9.625	36	717	A-CON	200	3% cc, 1/4# celoflake
Surface	12.25	.625	6	717	60/40 POZ	150	3%CC, 2% gel, 1/4# celoflake

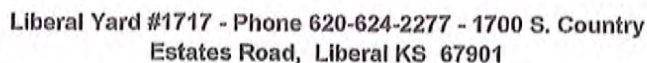
Customer WOOLSON OPERATING COMPANY		Lease No.		Date 11-22-17	
Lease Unruh "A"		Well # 1			
Field Order # 16208	Station Pratt	Casing 9 5/8	Depth 716	County Kiowa	State KS
Type Job			Formation	Legal Description 11-29S-19W	

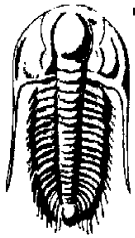
PIPE DATA		PERFORATING DATA		FLUID USED		TREATMENT RESUME		
Casing Size	Tubing Size	Shots/Ft		Acid	200 SRS A-CON	RATE	PRESS	ISIP
Depth 716	Depth	From	To	Pre Pad	100 SRS 60/40 POZ	Max	3200	5 Min.
Volume 55.3	Volume	From	To	Pad	50 SRS 60/40 POZ	Min	3200	10 Min.
Max Press	Max Press	From	To	Frac		Avg		15 Min.
Well Connection	Annulus Vol.	From	To			HHP Used		Annulus Pressure
Plug Depth 672.2	Packer Depth	From	To	Flush	52	Gas Volume		Total Load

Customer Representative ALAN DICK	Station Manager WESTERHOLM	Treater MATTAL
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Service Units	83353	84981	19843	19903	73768				
Driver Names	MATTAL	McGraw		OSBORNE	5				

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
5:35					ON LOCATION / SENTRY meeting
					Rig lost circ @ 690' SET CIRC @ 720' AP.DY.
3:10					RUN 9 5/8 36" Baffle PATE IN JT 1
					CENTRALIZATION ON JT 1
4:50					CSNG ON BOTTOM
5:02					HOOK TO CSNG / BREAK CIRC W. RIG
5:19	100		3	3	PUMP 3 bbl WATER
5:23	100		77	3	MIX 200 SRS A-CON
5:52	100		22	3	MIX 100 SRS 60/40 POZ
5:59					release plug
6:00	100			3	START disp
6:20	100		52		plug down / shut in well
					NO CIRC. NO CMT
8:20	50		12	1	MIX 50 SRS 60/40 POZ (TOP OFF)
8:30					CMT TO SURFACE
9:30					CMT STAYED IN WEL
					JOB COMPLETE
					THANK YOU!
					Mike Mattal
					Mike + Rife

[illegible]



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63118

DST#: 1

Test Start: 2017.11.28 @ 04:40:54

GENERAL INFORMATION:

Formation: **KC Iola**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:24:45

Time Test Ended: 17:29:29

Test Type: Conventional Bottom Hole (Initial)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 4560.00 ft (KB) To 4590.00 ft (KB) (TVD)

Reference Elevations: 2339.00 ft (KB)

Total Depth: 4590.00 ft (KB) (TVD)

2327.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 12.00 ft

Serial #: 8524 Outside

Press@RunDepth: 90.66 psig @ 4587.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.11.28

End Date:

2017.11.28

Last Calib.: 2017.11.28

Start Time: 04:40:55

End Time:

17:29:29

Time On Btm: 2017.11.28 @ 11:24:15

Time Off Btm: 2017.11.28 @ 14:56:29

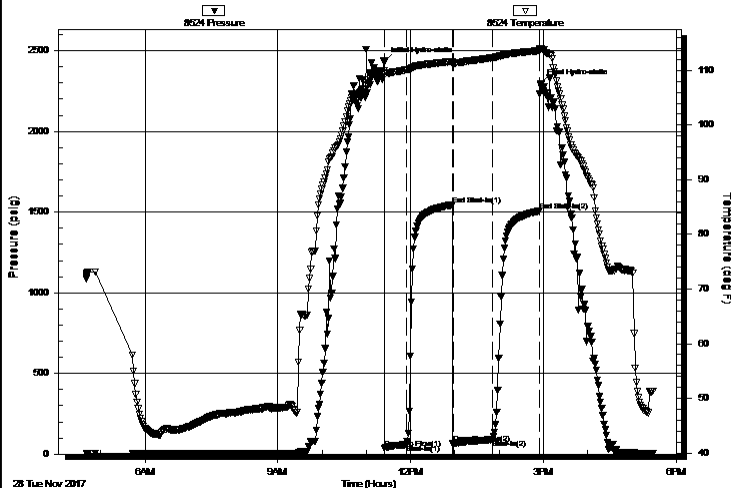
TEST COMMENT: 30- IF- Slowly built to 1.5"

60- IS- No blow

60- FF- .25" blow

60- FSI- No blow

Pressure vs. Time



PRESSURE SUMMARY

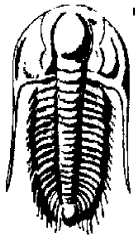
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2430.04	110.05	Initial Hydro-static
1	36.91	109.39	Open To Flow (1)
30	58.22	110.08	Shut-In(1)
92	1544.21	111.66	End Shut-In(1)
94	66.11	111.33	Open To Flow (2)
147	90.66	112.32	Shut-In(2)
211	1507.44	113.61	End Shut-In(2)
213	2298.59	113.88	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
93.00	WM, 40%W 60%M	0.46

Gas Rates

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

DRILL STEM TEST REPORT

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63118

DST#: 1

Test Start: 2017.11.28 @ 04:40:54

GENERAL INFORMATION:

Formation: **KC Iola**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:24:45

Time Test Ended: 17:29:29

Test Type: Conventional Bottom Hole (Initial)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 4560.00 ft (KB) To 4590.00 ft (KB) (TVD)

Total Depth: 4590.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2339.00 ft (KB)

2327.00 ft (CF)

KB to GR/CF: 12.00 ft

Serial #: 6771 Inside

Press@RunDepth: psig @ 4587.00 ft (KB)

Start Date: 2017.11.28

End Date:

2017.11.28

Start Time: 04:41:02

End Time:

17:29:21

Capacity: 8000.00 psig

Last Calib.: 2017.11.28

Time On Btm:

Time Off Btm:

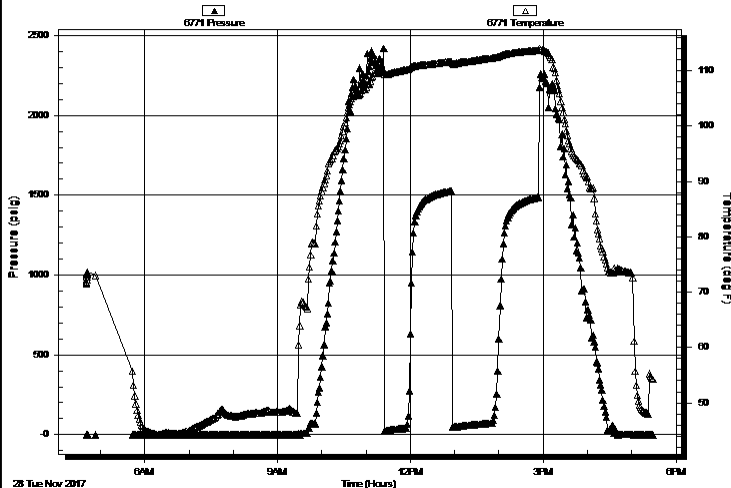
TEST COMMENT: 30- IF- Slowly built to 1.5"

60- IS- No blow

60- FF- .25" blow

60- FSI- No blow

Pressure vs. Time



PRESSURE SUMMARY

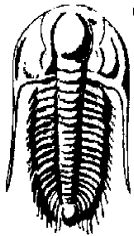
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
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Recovery

Length (ft)	Description	Volume (bbl)
93.00	WM, 40%W 60%M	0.46

Gas Rates

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

DRILL STEM TEST REPORT

FLUID SUMMARY

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63118

DST#: 1

Test Start: 2017.11.28 @ 04:40:54

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 47.00 sec/qt

Water Loss: 9.18 in³

Resistivity: ohm.m

Salinity: 6400.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

Oil API: deg API

Water Salinity: 19000 ppm

ft
bbl

psig

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
93.00	WM, 40%W 60%M	0.457

Total Length: 93.00 ft Total Volume: 0.457 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW: .26@53deg

Serial #: 8524

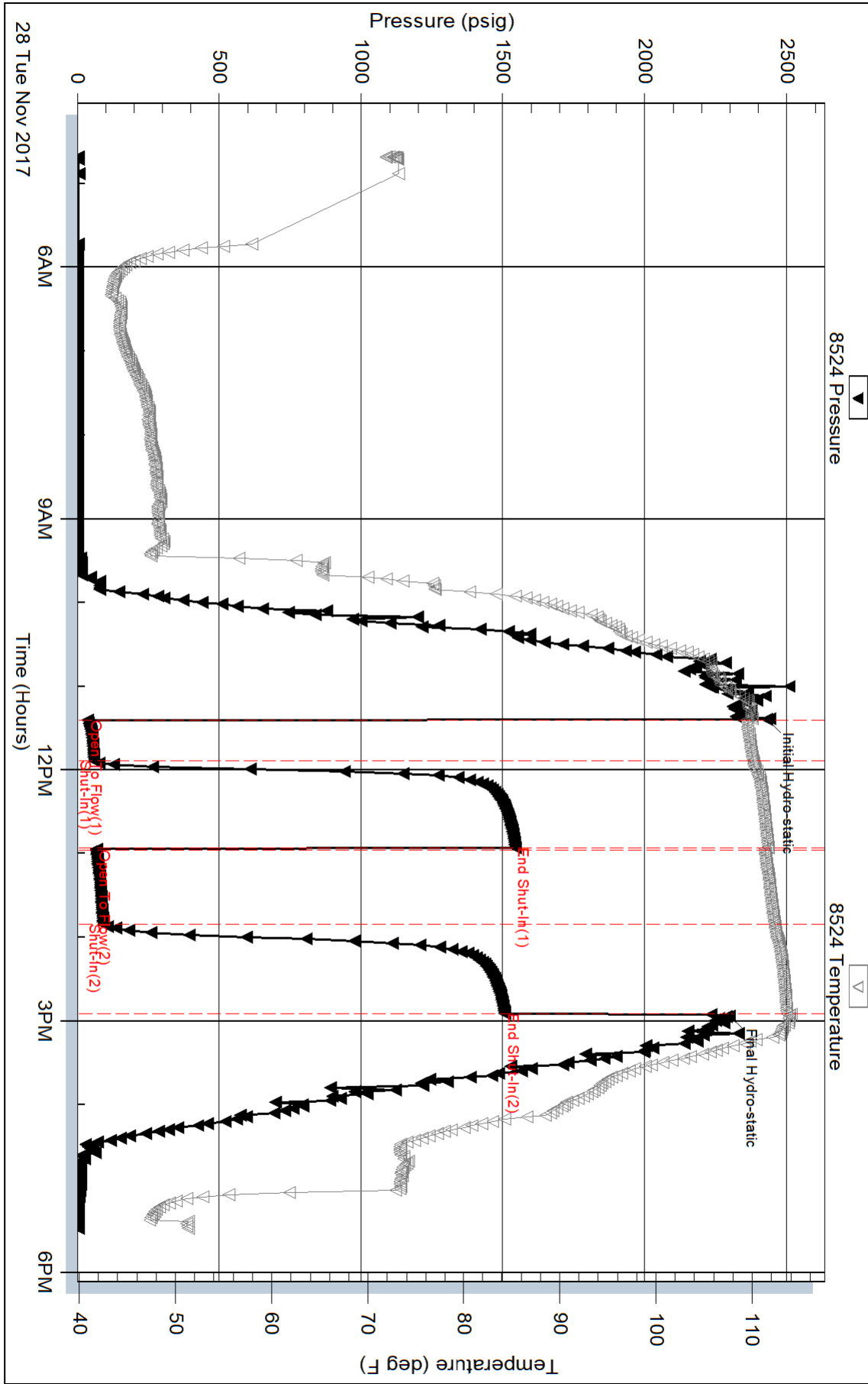
Outside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 1

Pressure vs. Time



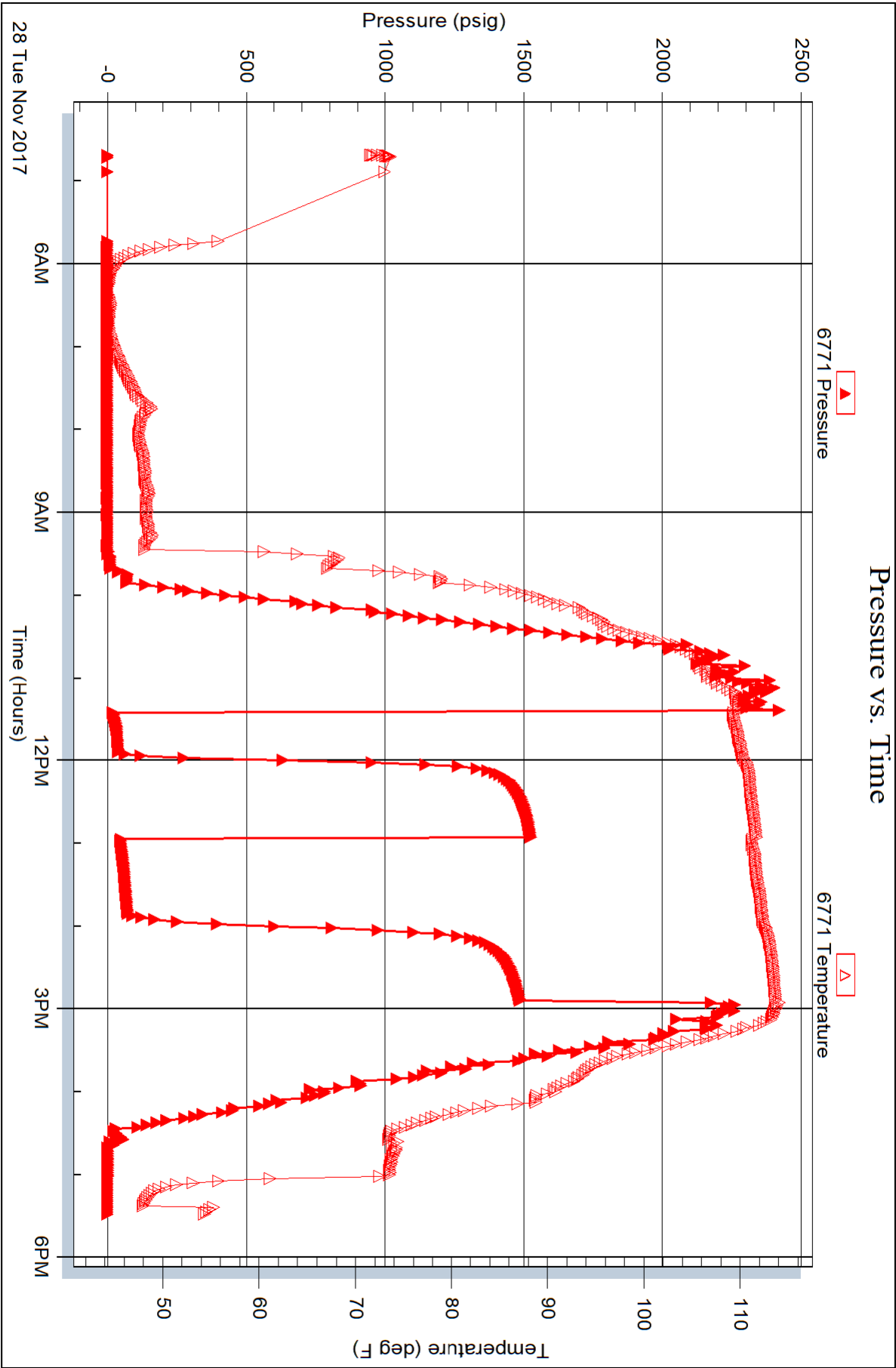
Serial #: 6771

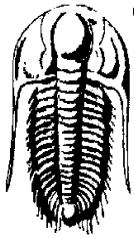
Inside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 1





TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63119

DST#: 2

Test Start: 2017.11.29 @ 14:00:34

GENERAL INFORMATION:

Formation: **KC Hertha**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:36:10

Time Test Ended: 23:07:09

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 4760.00 ft (KB) To 4792.00 ft (KB) (TVD)

Total Depth: 4792.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 2339.00 ft (KB)

2327.00 ft (CF)

KB to GR/CF: 12.00 ft

Serial #: 8524 Outside

Press@RunDepth: 69.26 psig @ 4789.00 ft (KB)

Start Date: 2017.11.29

End Date:

2017.11.29

Start Time: 14:00:35

End Time:

23:07:09

Capacity: 8000.00 psig

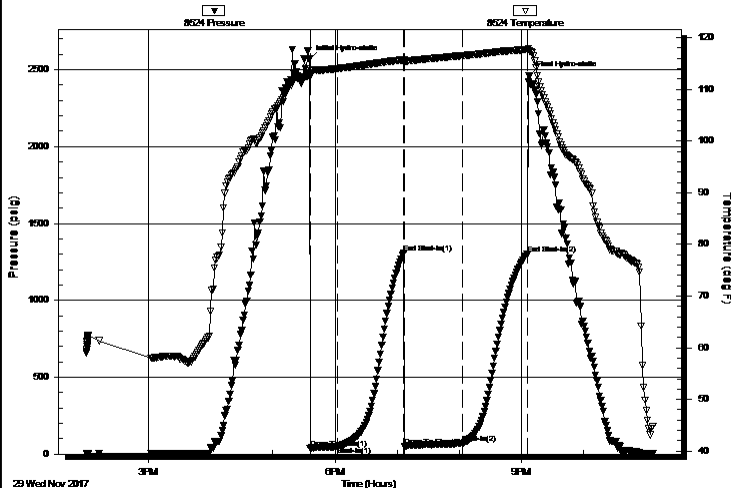
Last Calib.: 2017.11.29

Time On Btm: 2017.11.29 @ 17:35:10

Time Off Btm: 2017.11.29 @ 21:07:10

TEST COMMENT: 30- IF- Slow ly built to 3.5"
60- IS- No blow
60- FF- Built very slow ly to .75"
60- FSI- No blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2568.20	112.73	Initial Hydro-static
1	38.90	112.60	Open To Flow (1)
28	50.00	114.04	Shut-In(1)
92	1308.99	115.72	End Shut-In(1)
92	50.80	115.42	Open To Flow (2)
148	69.26	116.53	Shut-In(2)
211	1303.20	117.68	End Shut-In(2)
212	2463.03	117.51	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
15.00	M	0.07
0.00	110' GIP	0.00

Gas Rates

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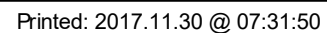
* Recovery from multiple tests

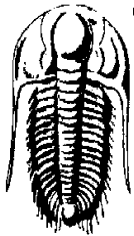


Test Start: 2017.11.29 @ 14:00:34

KB to GR/CF: 12.00 ft

TEST COMMENT: 30- IF- Slow ly built to 3.5"
60- IS- No blow
60- FF- Built very slow ly to .75"
60- FS- No blow





TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63119

DST#: 2

Test Start: 2017.11.29 @ 14:00:34

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 53.00 sec/qt

Water Loss: 9.59 in³

Resistivity: ohm.m

Salinity: 8400.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

deg API

ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	M	0.074
0.00	110' GIP	0.000

Total Length: 15.00 ft

Total Volume: 0.074 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8524

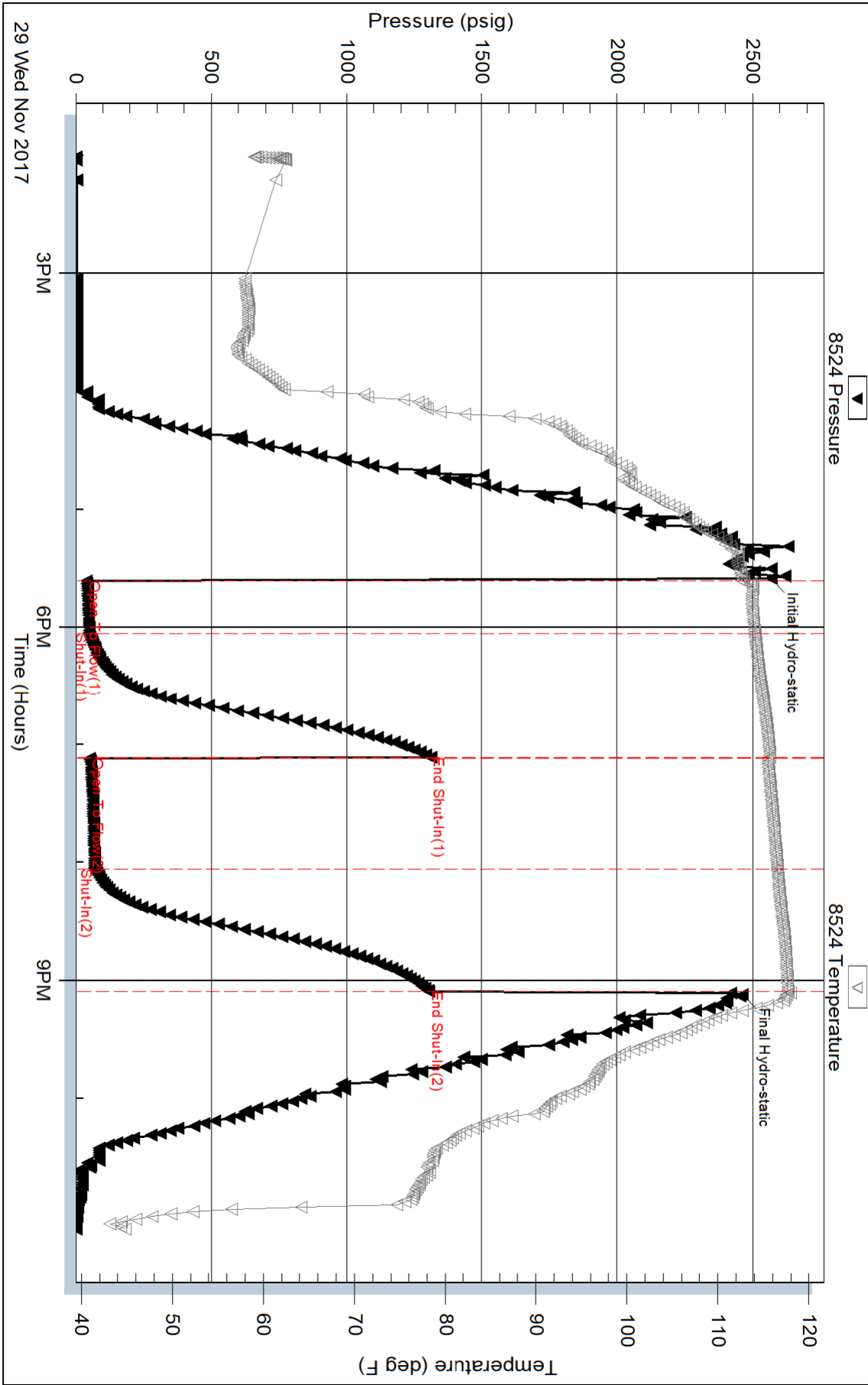
Outside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 2

Pressure vs. Time



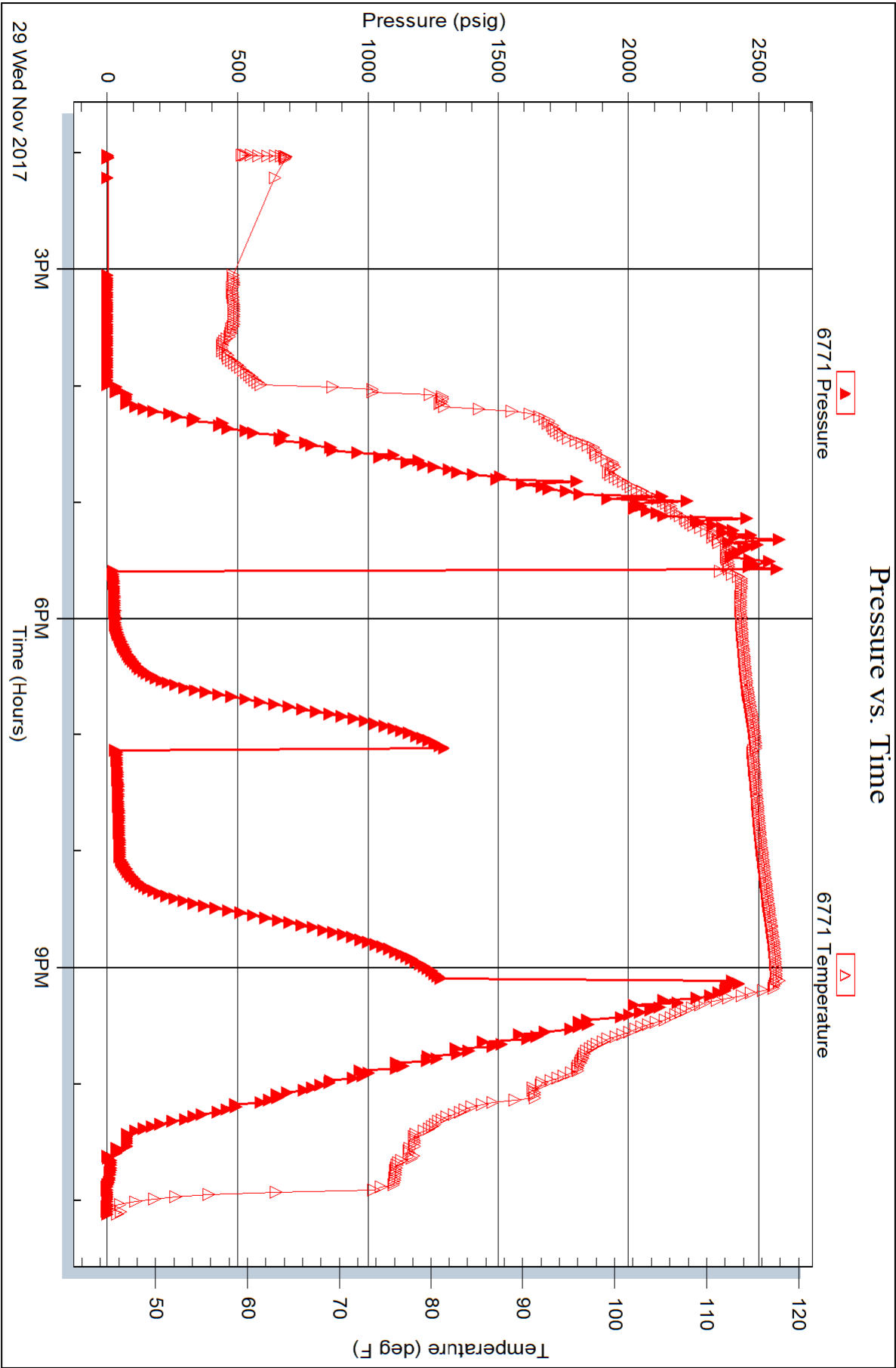
Serial #: 6771

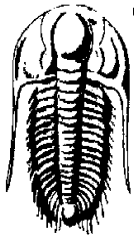
Inside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 2





TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63120

DST#: 3

Test Start: 2017.11.30 @ 21:49:31

GENERAL INFORMATION:

Formation: **Miss**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:30:22

Time Test Ended: 08:46:06

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 4952.00 ft (KB) To 5046.00 ft (KB) (TVD)

Reference Elevations: 2339.00 ft (KB)

Total Depth: 5046.00 ft (KB) (TVD)

2327.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 12.00 ft

Serial #: 8524 Outside

Press@RunDepth: 52.11 psig @ 4978.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.11.30

End Date:

2017.12.01

Last Calib.: 2017.12.01

Start Time: 21:49:32

End Time:

08:46:06

Time On Btm: 2017.12.01 @ 02:29:52

Time Off Btm: 2017.12.01 @ 05:33:22

TEST COMMENT: 30- IF- Built to .75" in 8 mins then slowly died back to 1/4"

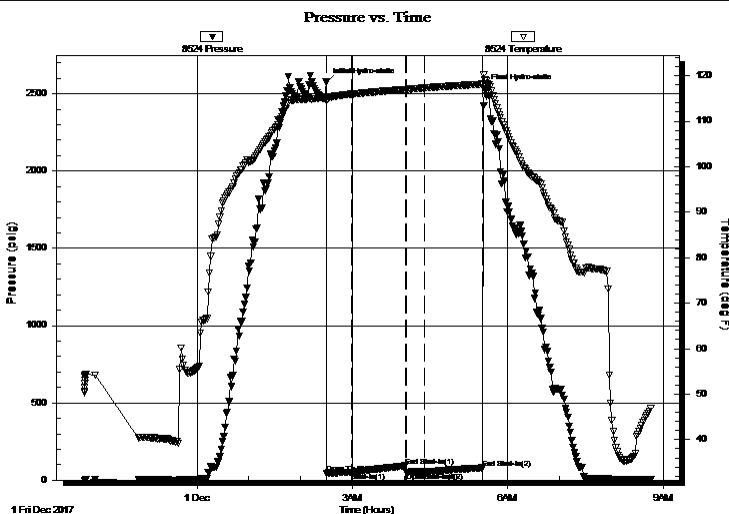
60- ISL- No blow

30- FF- No blow

60- FSI- No blow

PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2571.01	115.38	Initial Hydro-static
1	44.31	114.55	Open To Flow (1)
29	49.10	115.93	Shut-In(1)
92	92.32	116.96	End Shut-In(1)
93	49.19	116.97	Open To Flow (2)
114	52.11	117.31	Shut-In(2)
181	79.83	118.15	End Shut-In(2)
184	2533.26	119.22	Final Hydro-static



Recovery

Length (ft)	Description	Volume (bbl)
10.00	M	0.05

Gas Rates

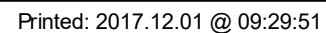
	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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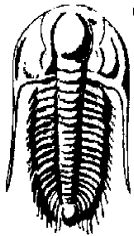
* Recovery from multiple tests



Test Start: 2017.11.30 @ 21:49:31

KB to GR/CF: 12.00 ft





TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63120

DST#: 3

Test Start: 2017.11.30 @ 21:49:31

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 48.00 sec/qt

Water Loss: 11.19 in³

Resistivity: ohm.m

Salinity: 8500.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

deg API

ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	M	0.049

Total Length: 10.00 ft

Total Volume: 0.049 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

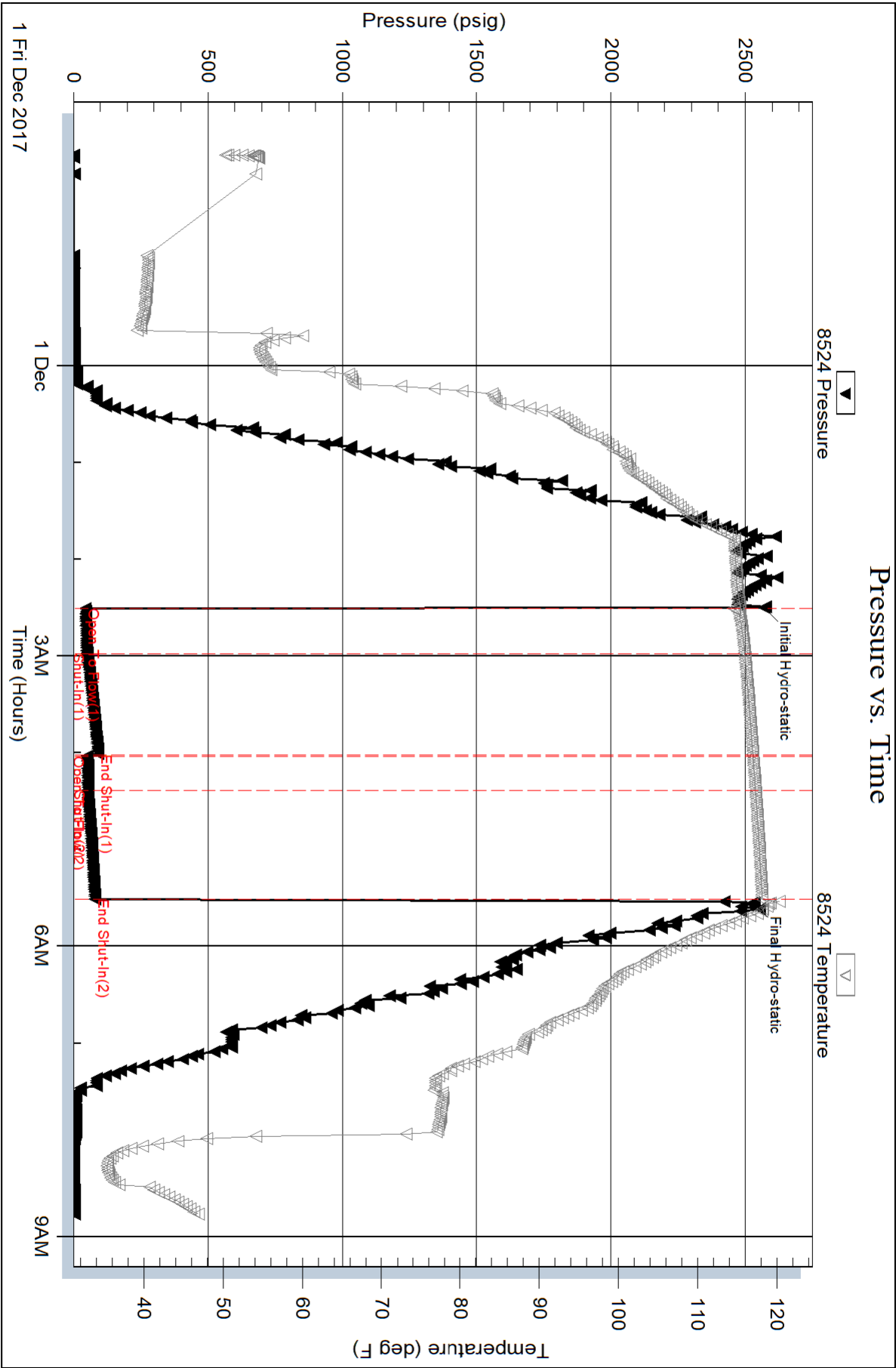
Serial #: 8524

Outside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 63120

Printed: 2017.12.01 @ 09:29:51

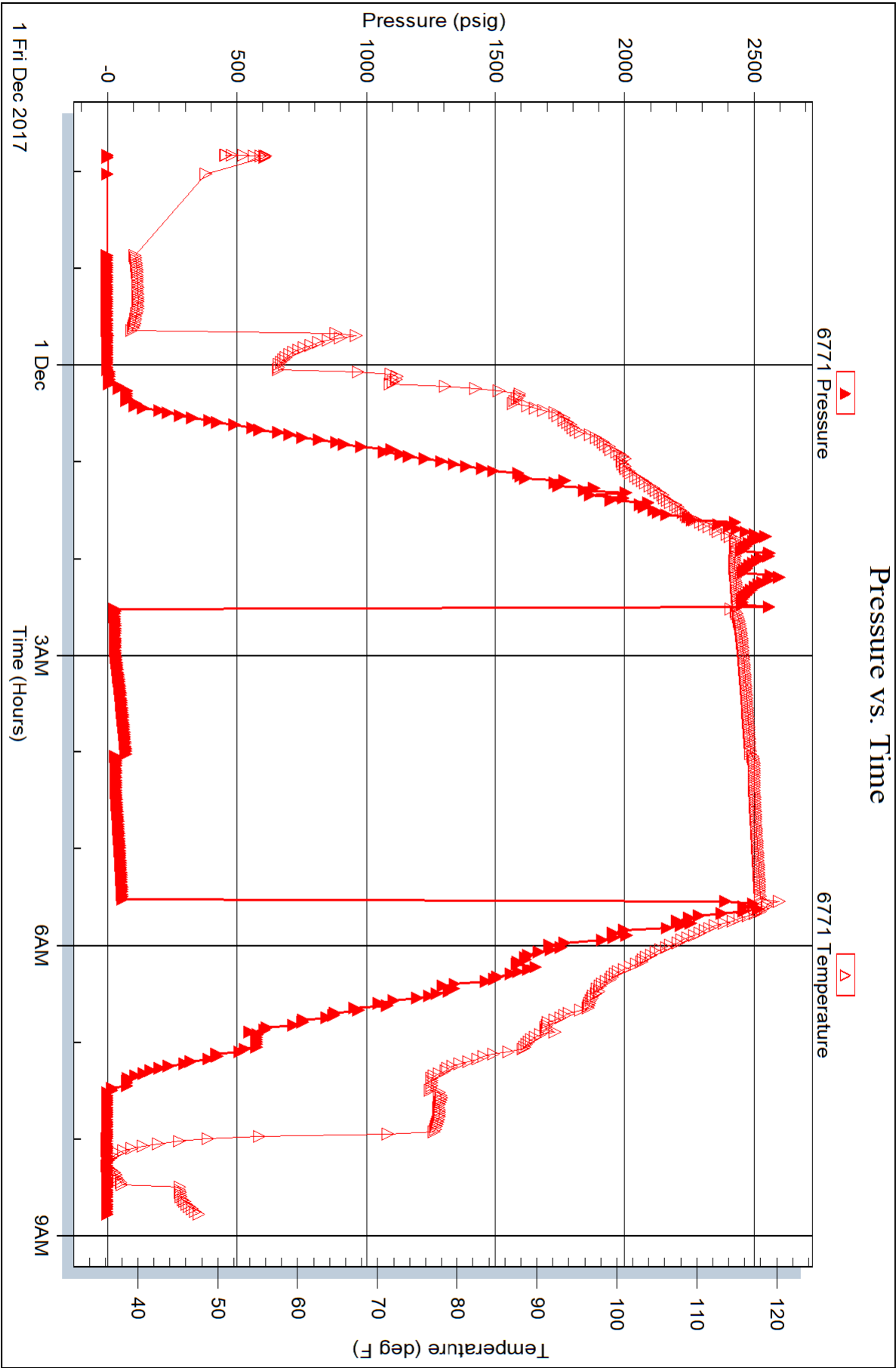
Serial #: 6771

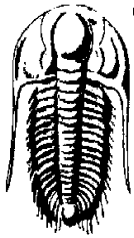
Inside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 3





TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63121

DST#: 4

Test Start: 2017.12.01 @ 17:01:55

GENERAL INFORMATION:

Formation: **Miss**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:02:16

Time Test Ended: 01:51:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 5046.00 ft (KB) To 5061.00 ft (KB) (TVD)

Reference Elevations: 2339.00 ft (KB)

Total Depth: 5061.00 ft (KB) (TVD)

2327.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 12.00 ft

Serial #: 8524 Outside

Press@RunDepth: 173.12 psig @ 5058.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.12.01

End Date:

2017.12.02

Last Calib.: 2017.12.02

Start Time: 17:01:56

End Time:

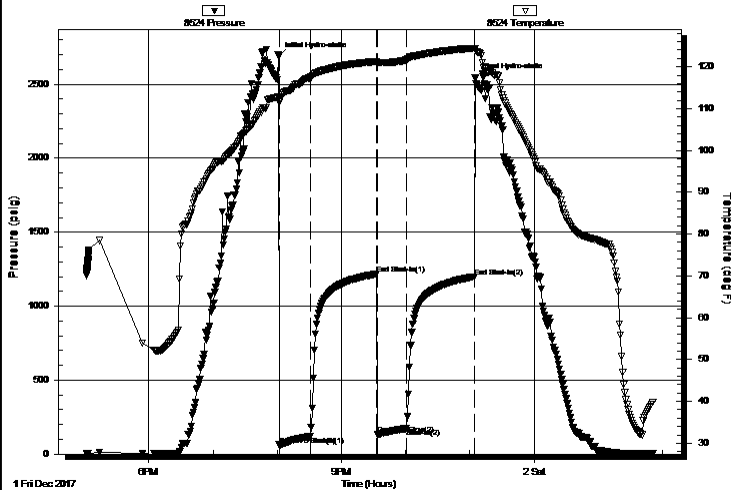
01:51:15

Time On Btm: 2017.12.01 @ 20:01:31

Time Off Btm: 2017.12.01 @ 23:04:46

TEST COMMENT: 30- IF- BOB 5mins
60- ISL- 1.75" blow
60- FF- BOB 7mins
60- FSL- 1" blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2689.47	112.56	Initial Hydro-static
1	58.50	111.97	Open To Flow (1)
30	118.78	117.32	Shut-In(1)
92	1219.37	121.27	End Shut-In(1)
93	130.87	121.00	Open To Flow (2)
120	173.12	121.71	Shut-In(2)
183	1199.19	124.39	End Shut-In(2)
184	2542.18	124.29	Final Hydro-static

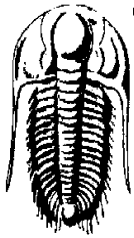
Recovery

Length (ft)	Description	Volume (bbl)
248.00	MW, 15%M 85%W	1.59
47.00	M	0.51
0.00	141' GIP	0.00

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63121

DST#: 4

Test Start: 2017.12.01 @ 17:01:55

GENERAL INFORMATION:

Formation: **Miss**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:02:16

Time Test Ended: 01:51:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 5046.00 ft (KB) To 5061.00 ft (KB) (TVD)

Total Depth: 5061.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2339.00 ft (KB)

2327.00 ft (CF)

KB to GR/CF: 12.00 ft

Serial #: 6771 Inside

Press@RunDepth: psig @ 5058.00 ft (KB)

Start Date: 2017.12.01

End Date:

2017.12.02

Start Time: 17:02:49

End Time:

01:51:53

Capacity: 8000.00 psig

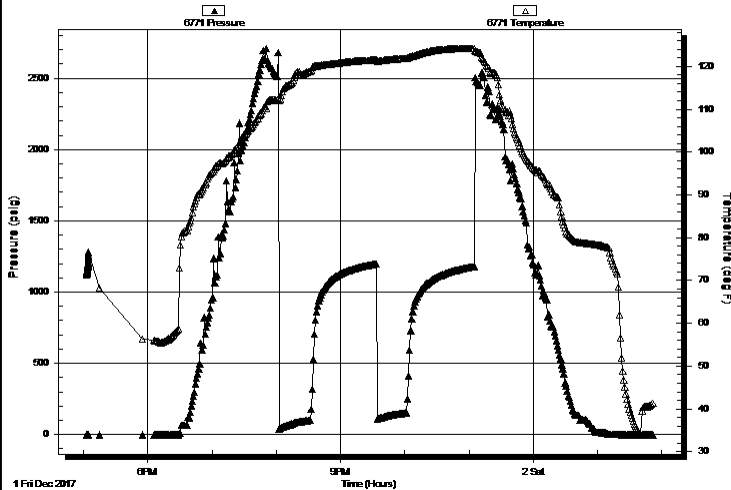
Last Calib.: 2017.12.02

Time On Btm:

Time Off Btm:

TEST COMMENT: 30- IF- BOB 5mins
60- ISL- 1.75" blow
60- FF- BOB 7mins
60- FSL- 1" blow

Pressure vs. Time



PRESSURE SUMMARY

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

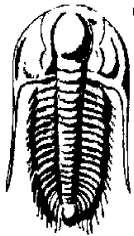
Recovery

Length (ft)	Description	Volume (bbl)
248.00	MW, 15%M 85%W	1.59
47.00	M	0.51
0.00	141' GIP	0.00

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63121

DST#: 4

Test Start: 2017.12.01 @ 17:01:55

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 55.00 sec/qt

Water Loss: 10.39 in³

Resistivity: ohm.m

Salinity: 9100.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

deg API

85000 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
248.00	MW, 15%M 85%W	1.593
47.00	M	0.509
0.00	141' GIP	0.000

Total Length: 295.00 ft

Total Volume: 2.102 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .12@46deg

Serial #: 8524

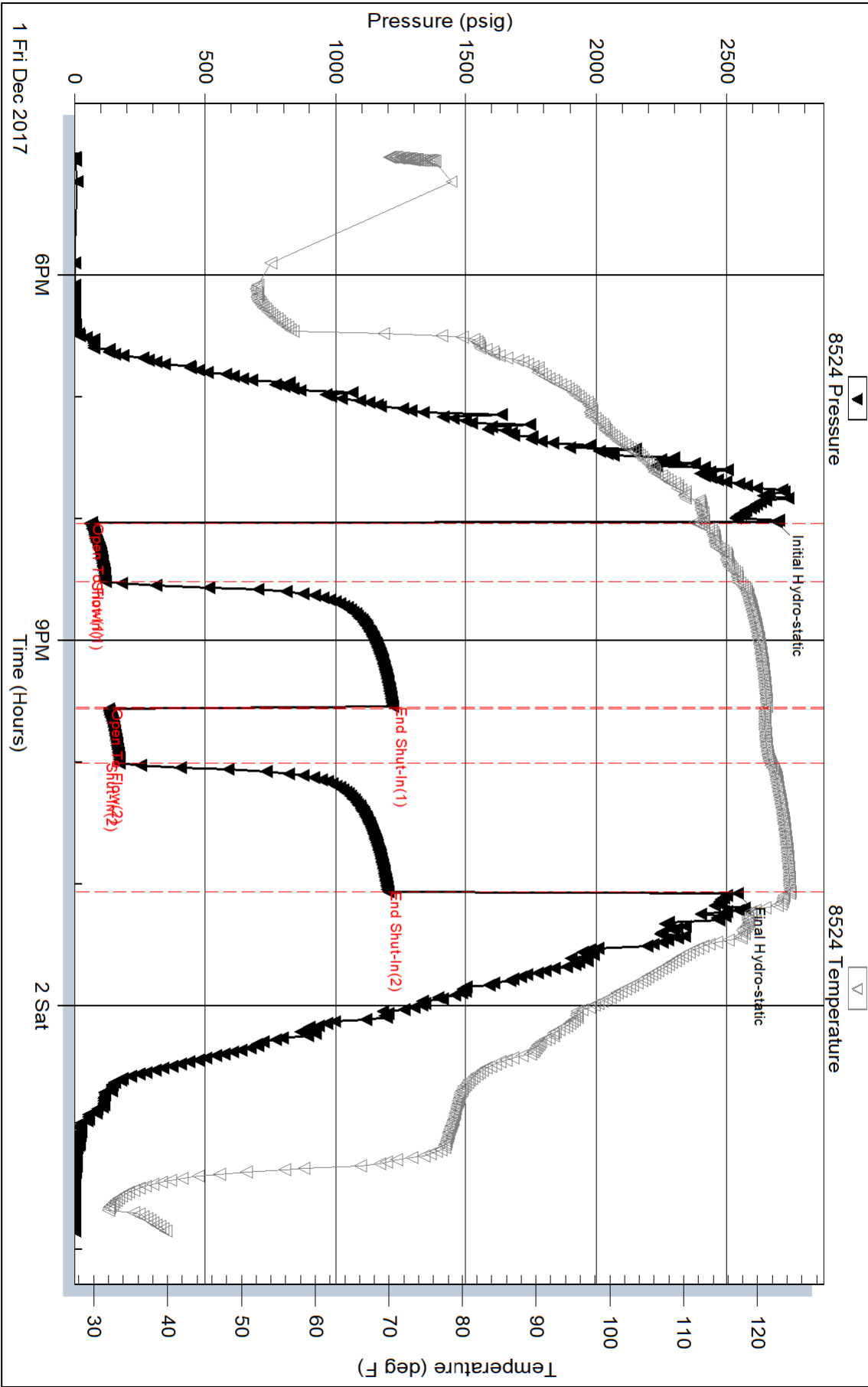
Outside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 4

Pressure vs. Time



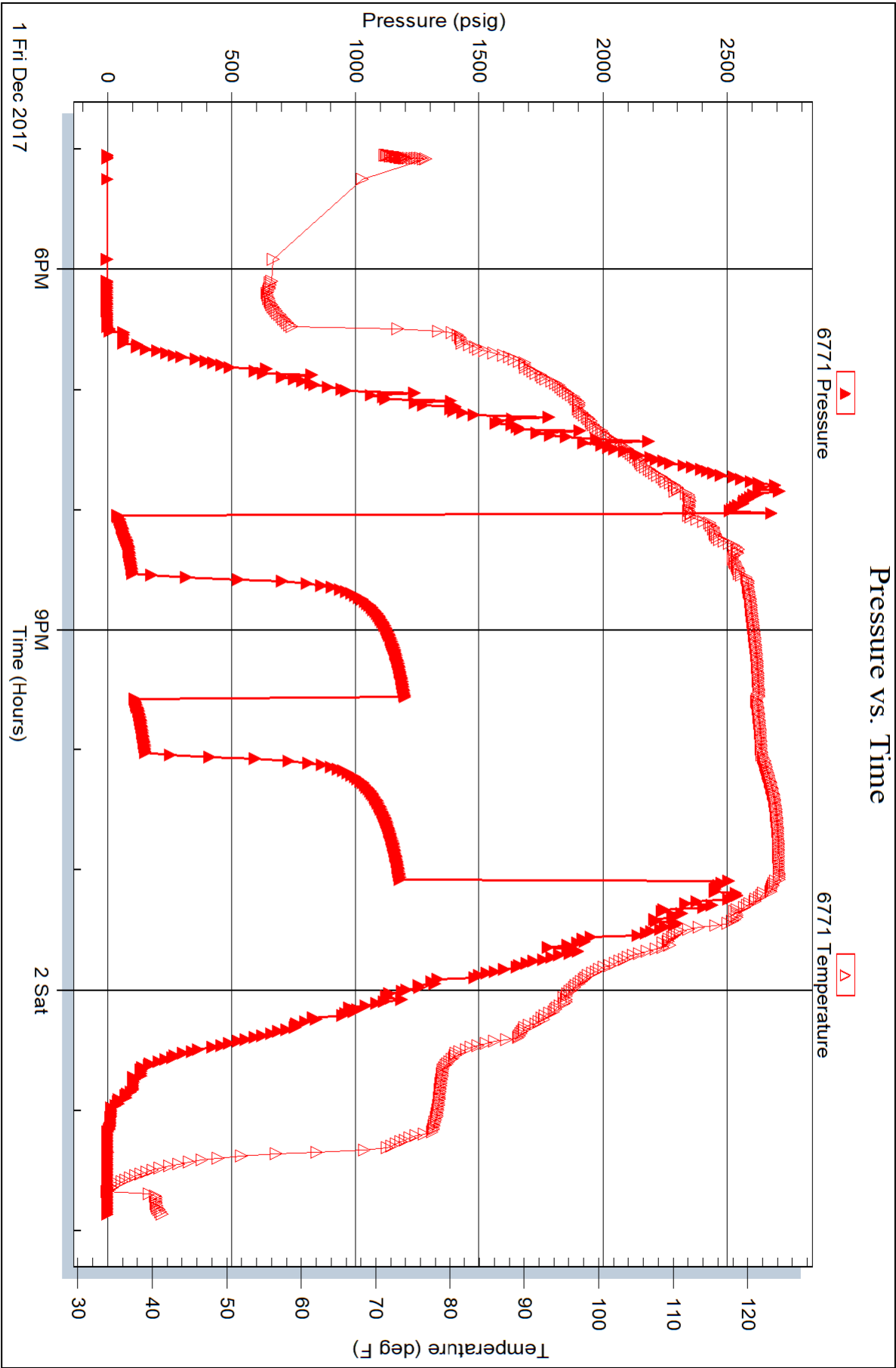
Serial #: 6771

Inside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 4





Woolsey Operating Company, LLC

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

Measured Depth Log

Well Name: Unruh A-1
Location: Section 11 - Township 29 South - Range 19 West
License Number: 15-097-21832-00-00 Region: Kiowa County, Kansas
Spud Date: November 21, 2017 Drilling Completed: December 2, 2017
Surface Coordinates: 1020' FSL & 1980' FEL
N 1/2 SW 1/4 SE 1/4

Bottom Hole Coordinates:

Ground Elevation (ft): 2327' K.B. Elevation (ft): 2339'
Logged Interval (ft): 3800' To: 5300' Total Depth (ft): 5300'
Formation: Topeka >> Mississippi
Type of Drilling Fluid: Chemical Mud

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

OPERATOR

Company: Woolsey Operating Company, LLC
Address: 125 N. Market, Suite 1000
Wichita, KS 67202

GEOLOGIST

Name: Bill Klaver
Company: Woolsey Operating Co. LLC
Address: 125 N. Market, Wichita Kansas, 67202

COMMENTS

Surface Casing: spud at 9 pm on 11/21/17, set 15 joints 9 5/8" X 24#/ft casing to 717' (tally) 701.7) w/ 200 sx A-con, 3% cc, 1/4# celloflake. Cement did not circulate. Lost circulation drilling surface hole, cemented with 1" Production Casing: No casing ran

Deviation Surveys: 1/2 at 721', 1/2 at 1001', 3/4 at 1348', 1 at 1913', 1 at 2415', 1/4 at 2917', 1 at 3638', 1 at 4234', 1/2 at 4590', 1/2 at 4792', 1 at 5061', 1/2 at 5300'

Pipe Strap @ 4590', Board: 4611.07, Strap: 4609.53, 1.54' short, no correction was made to the board.

Fossil Drilling Rig 3 Bit Record:

- 1) 12 1/4" RT RR in at 0' out at 721', 4 hours
- 2) 7 7/8" Varel Tool Co. PDC in at 721' out at 5300', 112 hrs

Gas Detector: Pason

Mud System: Mud Co. Justin Whiting, Mud Engineer

DSTs: Trilobite Testing, Brannon Lonsdale, Tester

E-Logs: ELI, Jeff Luebbers, Master Logger

DSTs

DST #1 Kansas City "Iola", 4560'-4590', 30"-60"-60"-60", weak 1" blow dec to 1/4" blow, Rec: 93' WM (40%W, 60%M), IHP 2430, IFP 37-50, ICIP 1544, FFP 66-91, FCIP 1507, FHP 2299, BHT 114 deg

DST #2 Kansas City "Hertha", 4760'-4792', 30"-60"-60"-60", weak 4" blow, Rec: 110' GIP, 15' Mud, IHP 2568, IFP 39-50, ICIP 1309, FFP 51-69, FCIP 1303, FHP 2463, BHT 118 deg

DST #3 Mississippi, 4952'-5046', 30"-60"-30"-60", wk 3/4" blow died, Rec: 10' Mud, IHP 2571, IFP 44-49, ICIP 92, FFP 49-52, FCIP 80, FHP 2533, BHT 118 deg

DST #4 Mississippi, 5046'-5061', 30"-60"-30"-60", SB BOB in 5 min, Rec: 141' GIP, 47' Mud, 248' MW (Chlorides 85,000 ppm, API Rw .12 @ 46 deg F), IHP 2689, IFP 59-119, ICIP 1219, FFP 131-173, FCIP 1199, FHP 2542, BHT 124 deg

CREWS

Fossil Drilling Rig 3

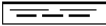
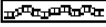
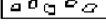
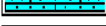
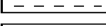
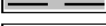
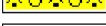
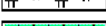
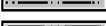
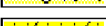
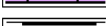
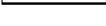
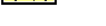
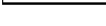
Rick Barriger, Tool Pusher

Chris Staats, Morning

Pablo Luna, Days

Gary Axtell, Evening

ROCK TYPES

	Anhy		Shy dolo		Sltst		Shale 3
	Bent		Dol		Ss		Silty dol
	Brec		Gyp		Black sh		Dol lmst
	Cht		Sdy lmst		Gry sh		Dol 2
	Clyst		Lmst		Shale		Granite wash
	Coal		Mrlst		Shysltst		Lmst
	Congl		Salt		Sltysht		Calc dol
	Sdy dolo		Shale		Ss 2		Shale 3

ACCESSORIES

MINERAL



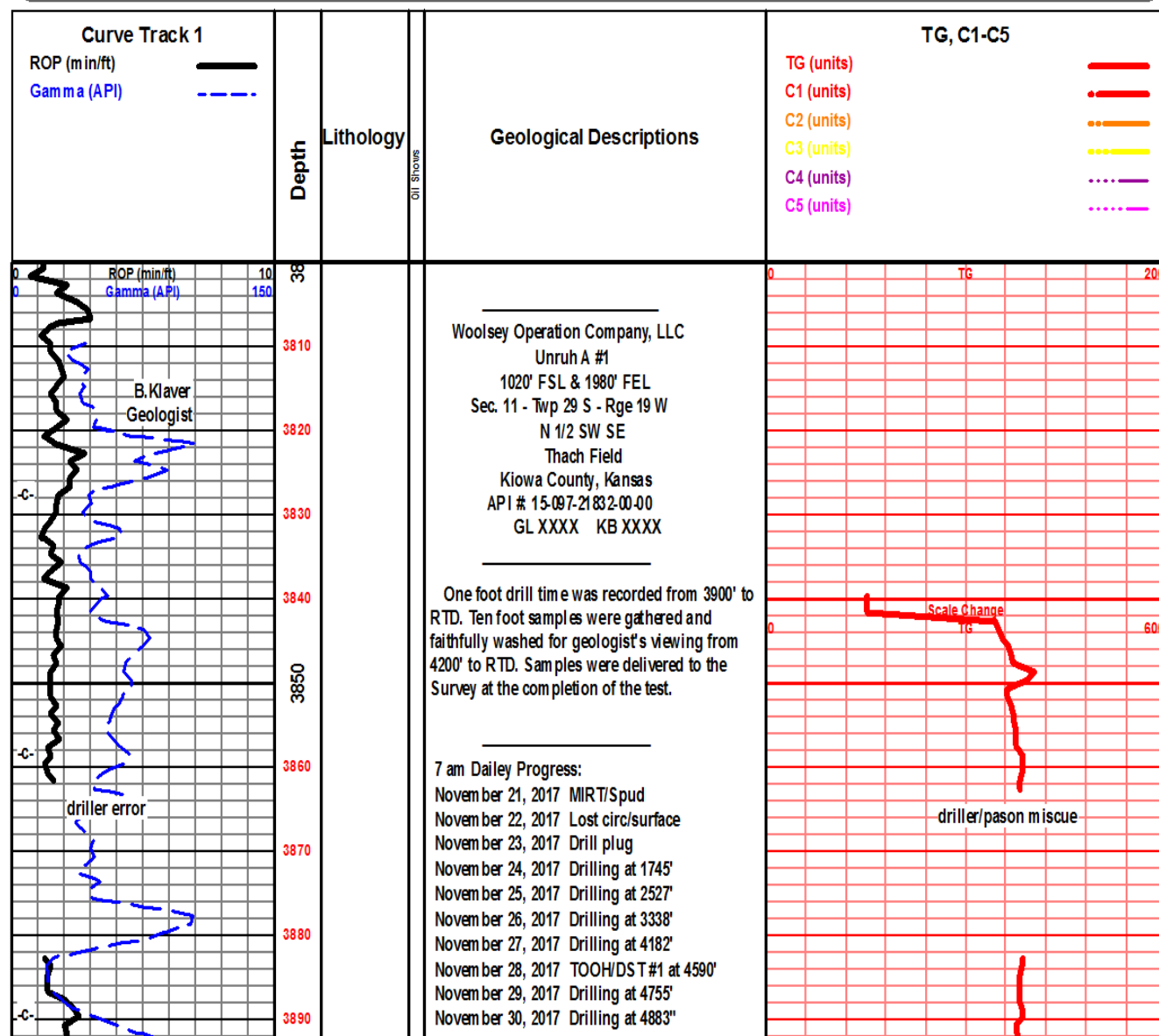
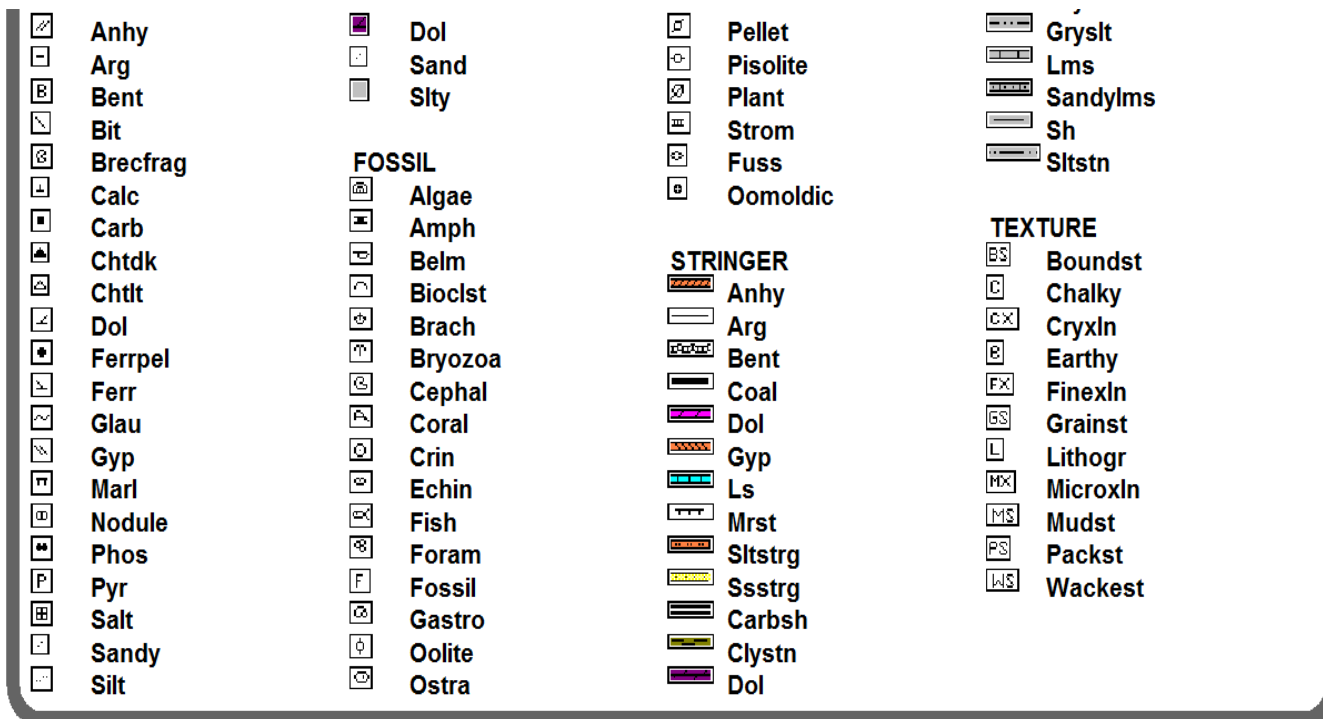
Chlorite

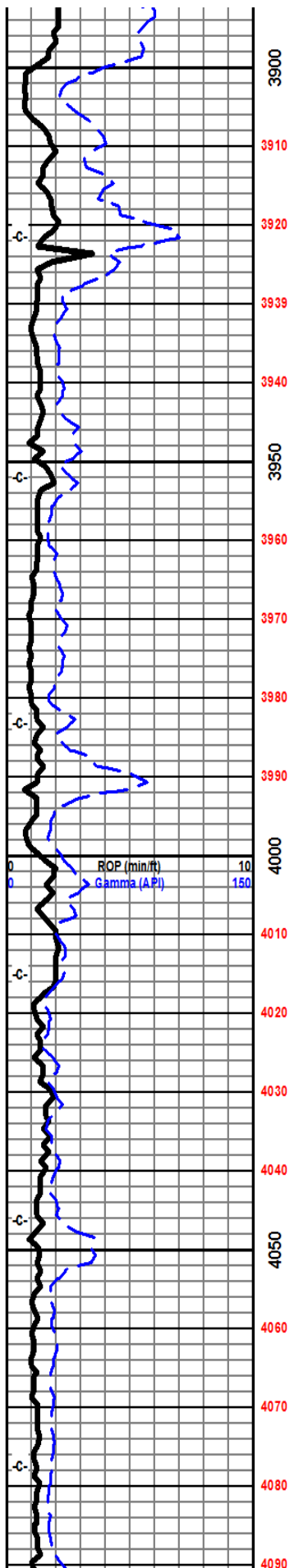


Pelec



Grvsh

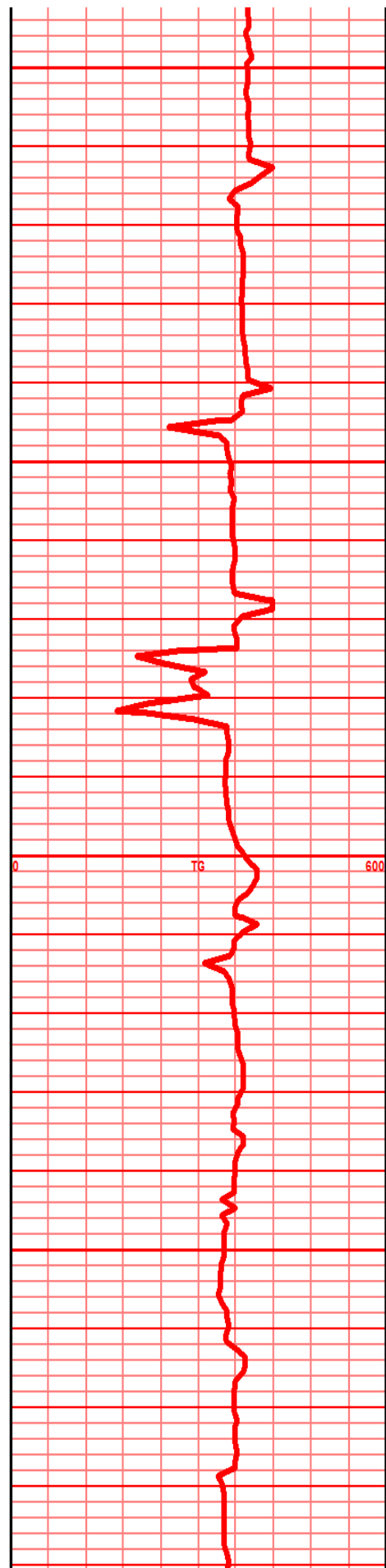


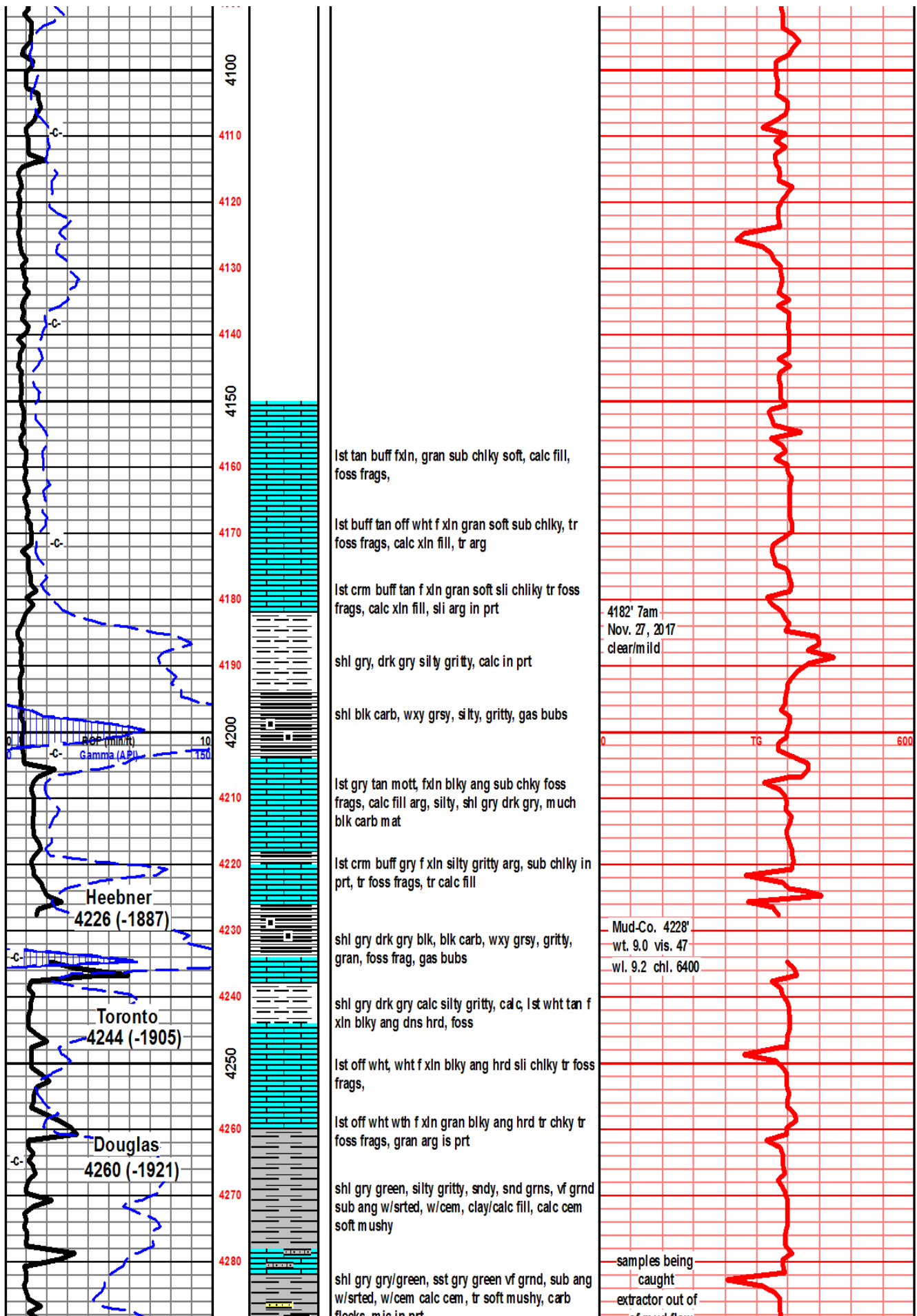


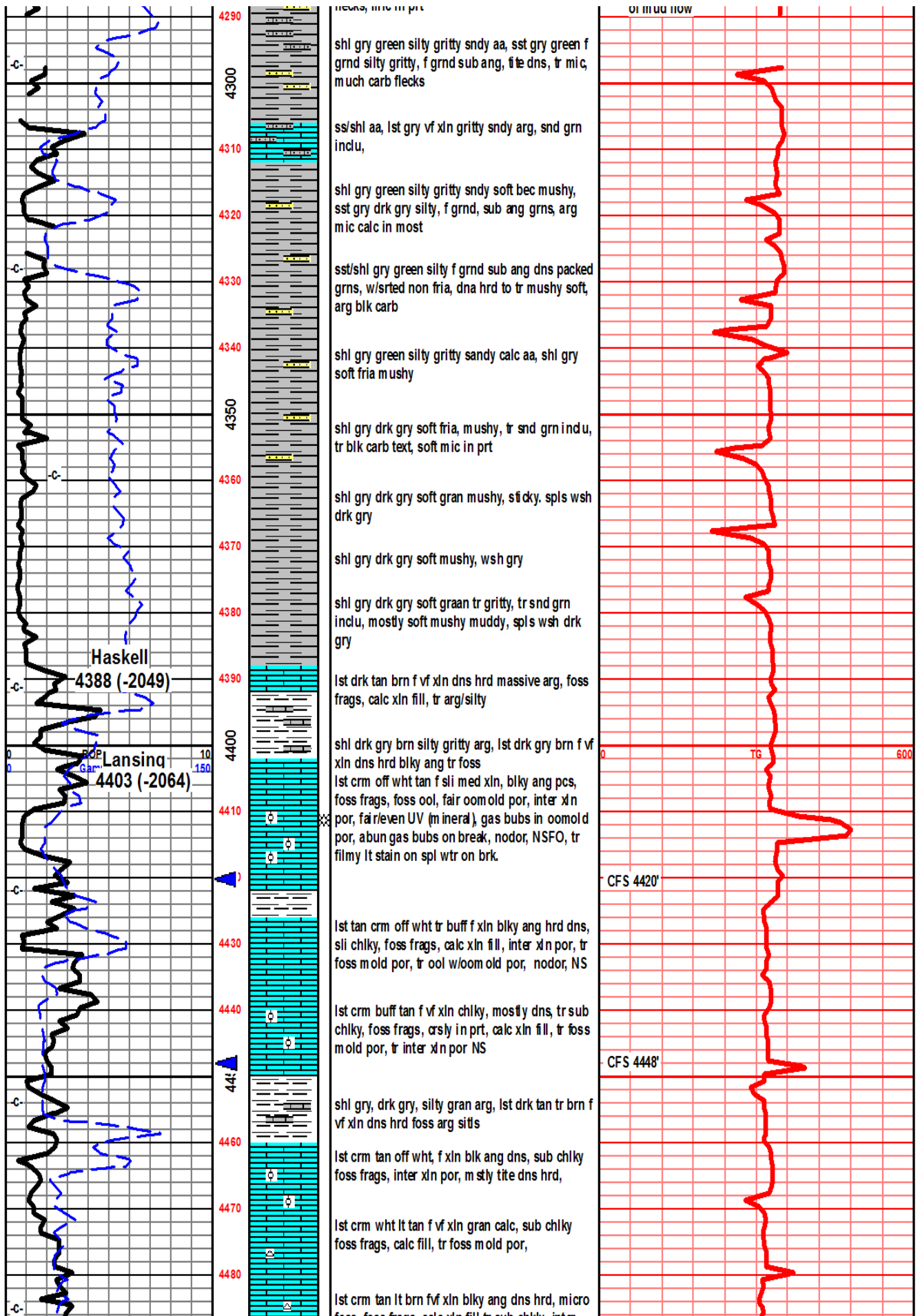
December 1, 2017 100H/DS I #3 at 5046'
 December 2, 2017 Drilling at 5092'
 December 3, 2017 E-Logs out 6 am

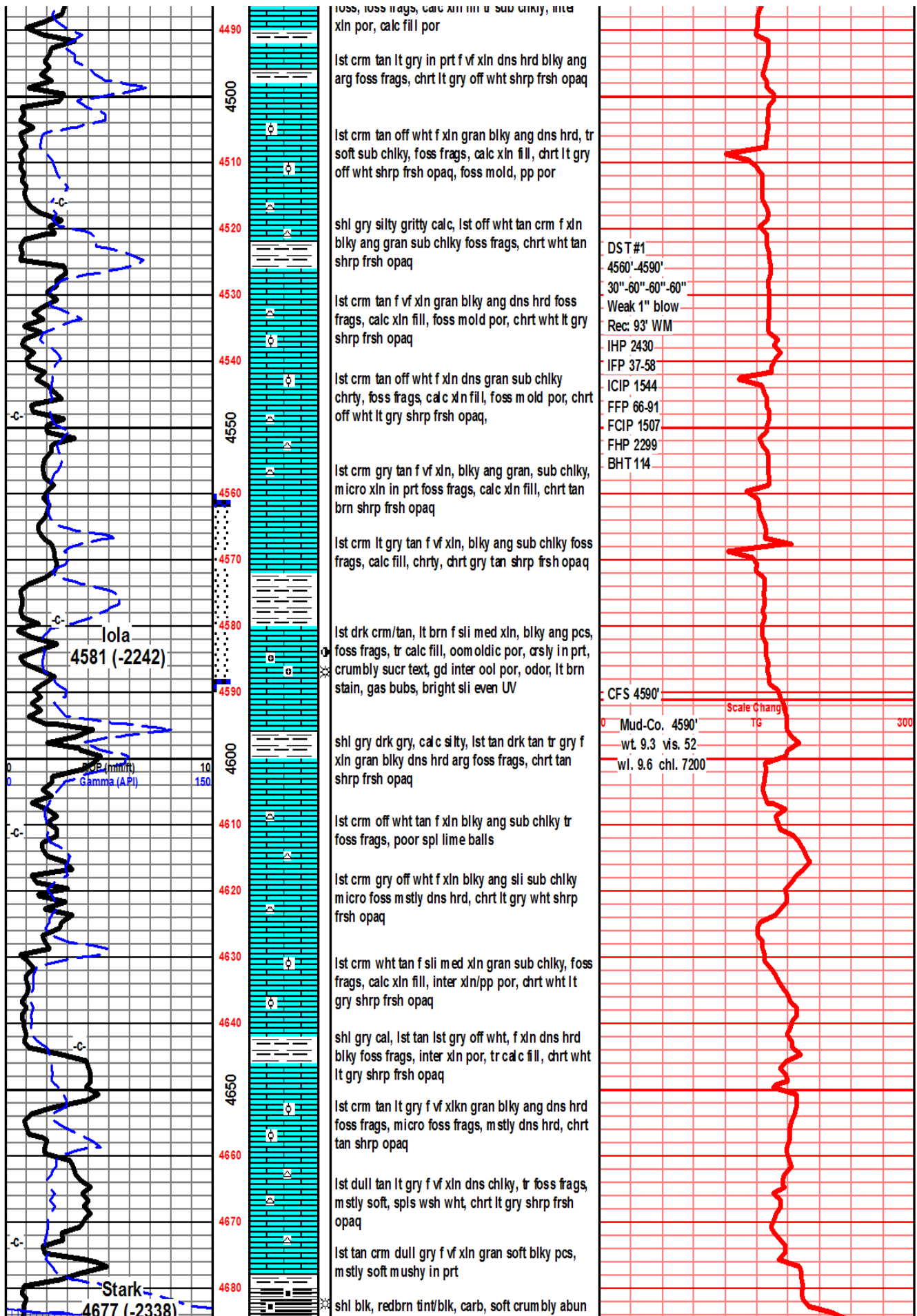
E-log Tops

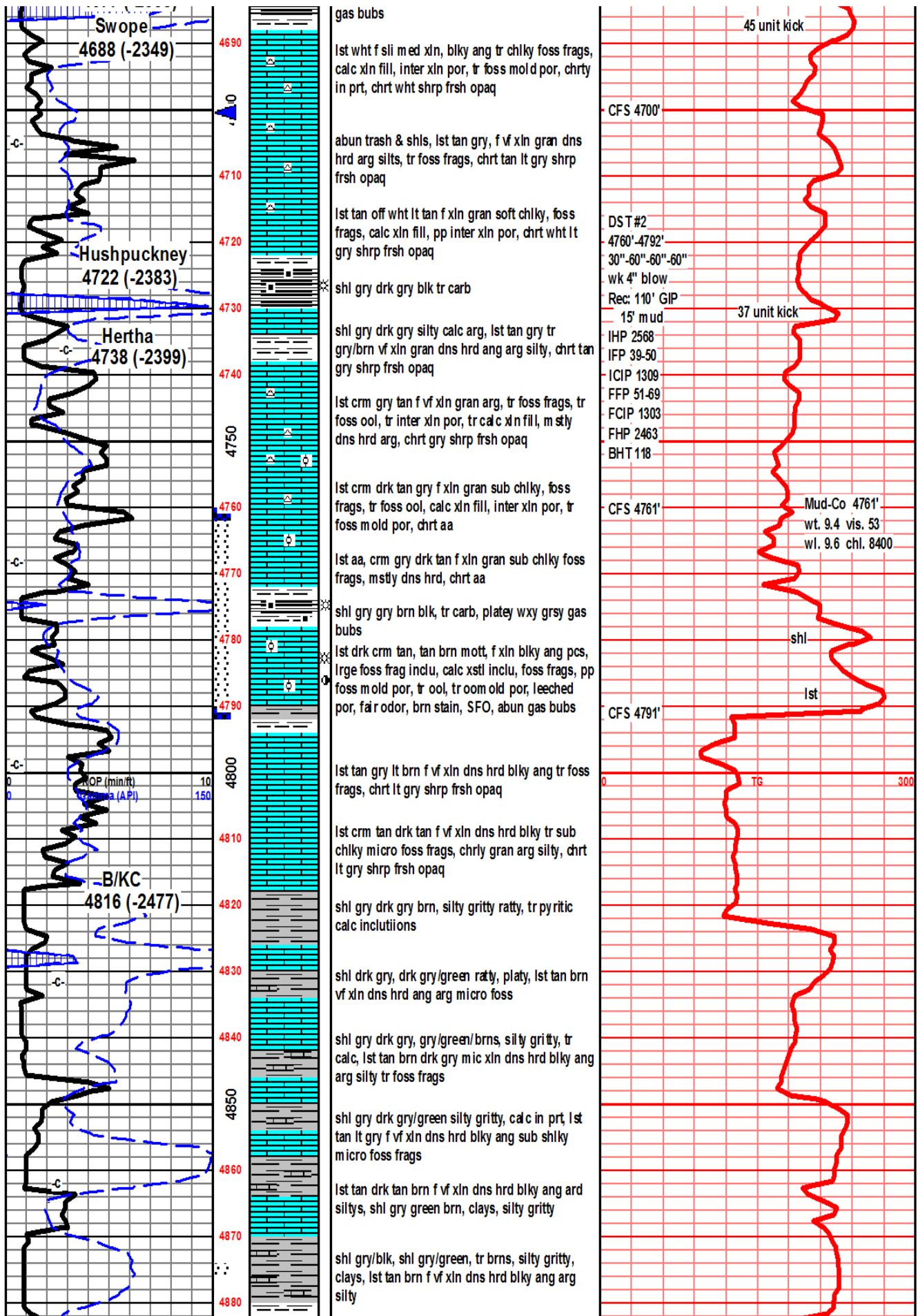
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 Onaga 3514 (-1175)
 Wabaussee 3580 (-1241)
 Heebner 4229 (-1890)
 Toronto 4247 (-1908)
 Douglas Grp 4262 (-1923)
 Haskell 4396 (-2057)
 Stanton 4411 (-2072)
 Plattsburg 4434 (-2095)
 Iola 4580 (-2241)
 Dennis 4661 (-2322)
 Stark 4680 (-2341)
 Swope 4694 (-2355)
 Hushpuckney 4725 (-2386)
 Hertha 4739 (-2400)
 B/Kanss City 4818 (-2479)
 Pawnee 4913 (-2574)
 Cherokee Grp 4961 (-2622)
 Mississippi Unc. 5031 (-2692)
 Warsaw 5044 (-2705)
 Osage 5085 (-2746)
 Compton 5244 (-2905)
 LTD 5302 (-2963)

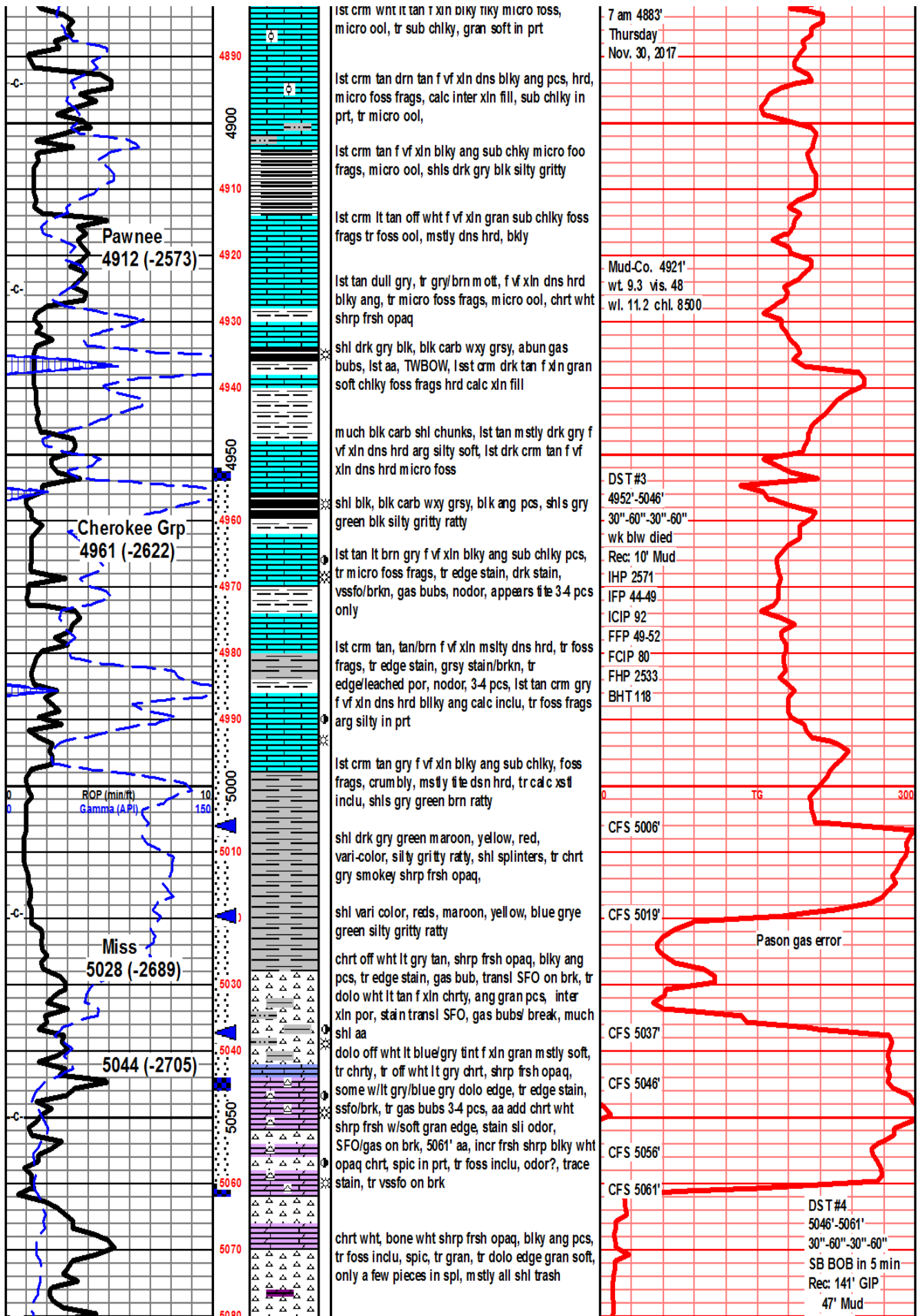


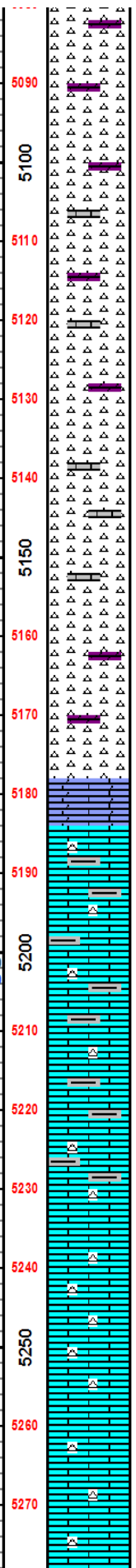
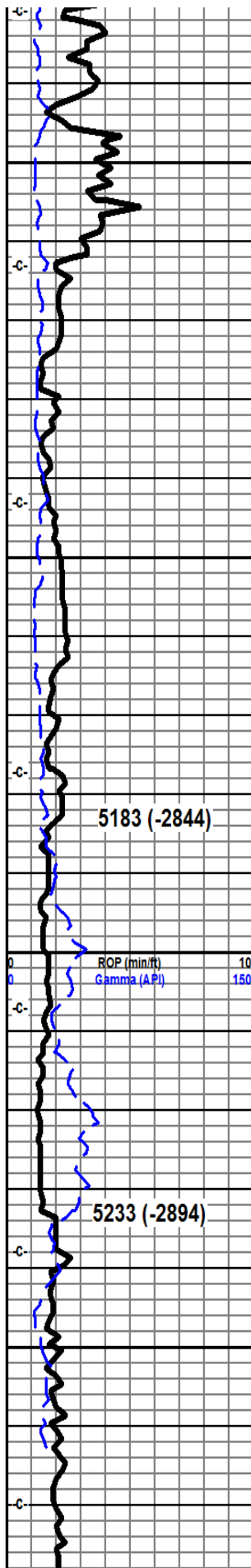












chrt wht off wht boney, soft gran sli chiky limy
trip text, chrt wht oof wht shrp frsh opa, blk
ang shrp edges

chrt wht, tr boney, shrp frsh blk with weath
gran soft trip text edge, inter gran por

chrt wht off wht shrp frsh opa spic, blkky ang
shrp pcs, chrt wht bone wht gran weath sli trip
text/edges

chrt wht off wht shrp frsh opa blkky ang pcs,
chrt wht bone wht gran weath text, trip text, gran
soft chiky edges, 1st wht off wht f vln gran soft
chiky

chrt wht shrp frsh opa, shrp ang pcs, tr spic, tr
gran weath text edge, tr gran trip text edge, tr
dolo wht off wht f xln gran suc text, chrt in prt

chrt wht shr frsh opa, shrp blkky ang pcs,
w/gran weath trip text, tr chiky soft crumbly,
dolo off wht f xln gran suc text, inter xln por, tr
glau, chrt

chrt wht shrp frsh opa, blkky ang shrp pcs,
w/weath text edge, sli trip text edge, soft crumbly
sli soft chalky edge, 1st/dolo wht tan lt gry f xln
blkky ang gran suc text in prt

chrt aa, shl gry brn/red, red calc shl w/wht calc
inclu, dolo lt gry tan f vln gran soft suc text

chrt dolo chrt aa, shl dkr gry brn, brn, calc
limy, red gritty, w/1st calc inclu soft mushy, shl
gry brn red maroon

chrt aa, shl dkr gry blk, hrd calc, drk brn/red soft
mushy, red clay/shl w/wht 1st calc inclu, shl brn
maroon

aa, 1st gry brn red, f vln gran gritty silty, arg,
shl gry green blk, shl lt gry lt green silty micro sd
grns gritty silty soft

shl drk gry/lt green silty gritty calc, soft mushy,
dolo lt gry/grn vln/grnd gritty silty, micro
sny in prt

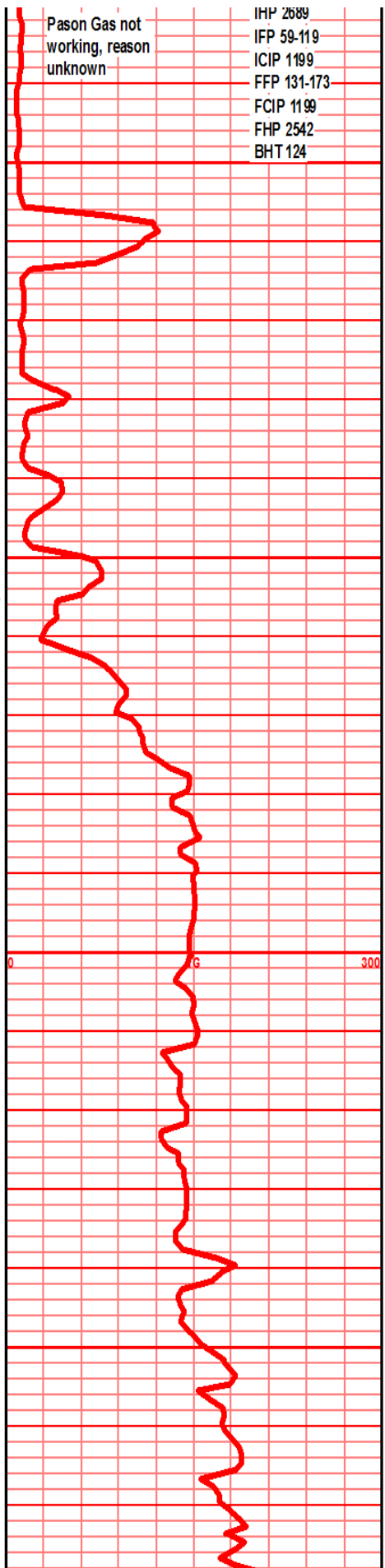
shl aa, shl gry drk gry blk, tr platy ang pcs, tr
silty gritty

flood wht lt tan shrp frsh opa chrt, shrp ang
blkky, 1st wht off wht tan f sli med xln foss frags,
chrt inclu, soft crumbly

1st wht off wht tan f sli med xln blkky ang soft
crumbly foss inclu, chrt, chrt wht shrp frsh
foss, 1st edge

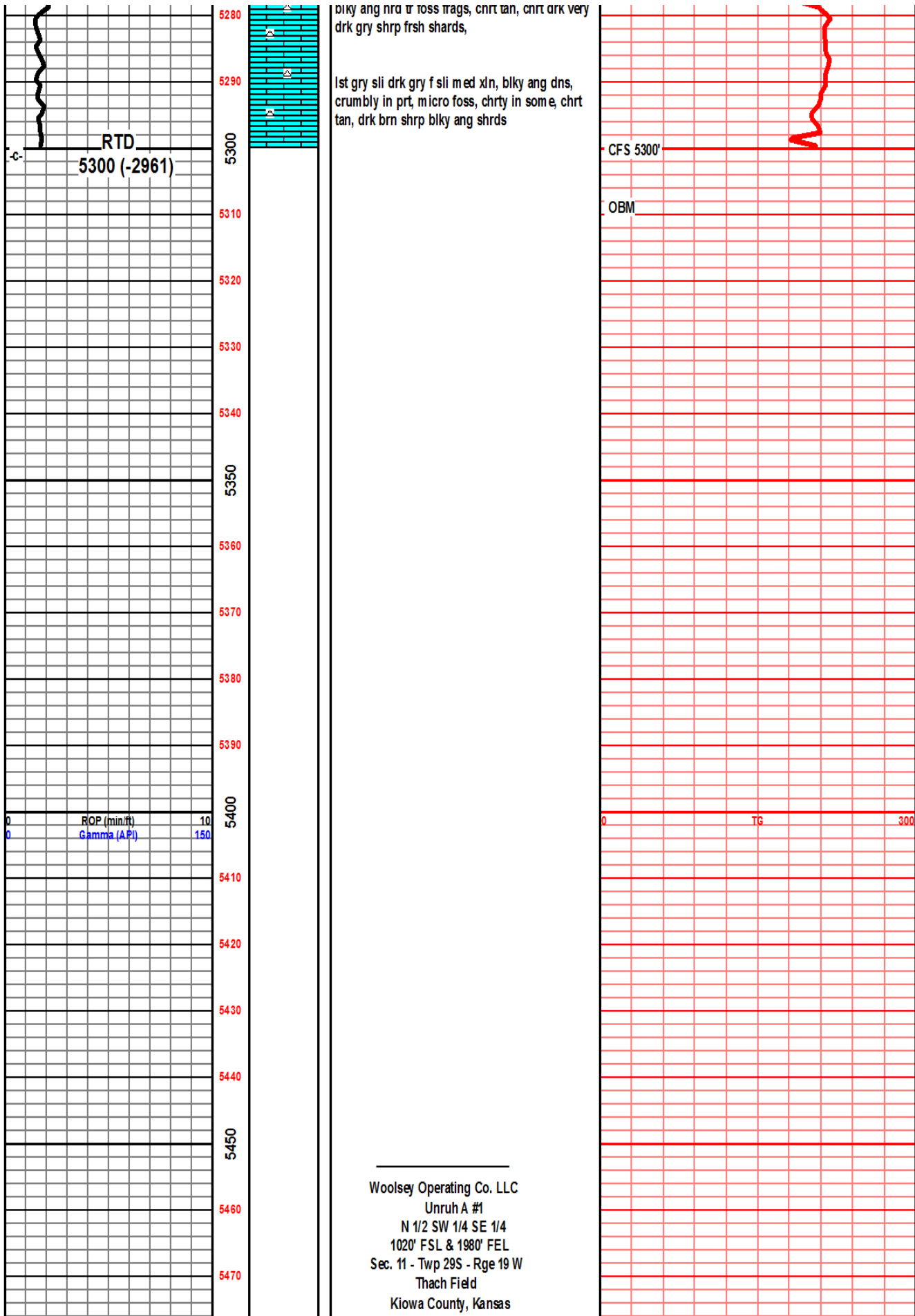
1st drk crm lt gry f sli med xln gran crumbly blkky
soft, tr foss frag imbeds, chrt wht tan shrp frsh

1st tan bec drker gry f xln bec sli med xln, dns



Pason Gas not
working, reason
unknown

IHP 2689
IFP 59-119
ICIP 1199
FFP 131-173
FCIP 1199
FHP 2542
BHT 124



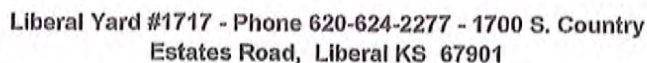
[illegible]

Customer WOOLSON OPERATING COMPANY		Lease No.		Date 11-22-17	
Lease Unit "A"		Well # 1			
Field Order # 16208	Station Pratt	Casing 9 5/8	Depth 716	County Kiowa	State KS
Type Job			Formation	Legal Description 11-29S-19W	

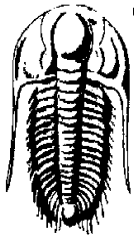
PIPE DATA		PERFORATING DATA		FLUID USED	TREATMENT RESUME		
Casing Size	Tubing Size	Shots/Ft		Acid 200 SKS A-CON	RATE 32% CC	PRESS .25	ISIP
Depth 716	Depth	From	To	Pre Pad 100 SKS 60/40 POZ	Max		5 Min.
Volume 85.3	Volume	From	To	Pad 50 SKS 60/40 POZ	Min		10 Min.
Max Press	Max Press	From	To	Frac	Avg		15 Min.
Well Connection	Annulus Vol.	From	To		HHP Used		Annulus Pressure
Plug Depth 672.23	Packer Depth	From	To	Flush 52	Gas Volume		Total Load

Customer Representative ALAN DICK		Station Manager WESTERMAN		Treater MATTAL	
Service Units 83353		84981	19843	19903	73768
Driver Names MATTAL		McGr	aw	OSBOR	

Time	Casing Pressure	Tubing Pressure	Bbbs. Pumped	Rate	Service Log
5:35					ON LOCATION / SAKREY meeting
3:10					Rig lost circ @ 690 ^{APPROX} got circ @ 720 ^{APPROX}
					Run 9 5/8 36", Baffle plate in JT 1
4:50					centralizer on JT 1
5:02					CSHY on bottom
5:19	100		3	3	hook to casing / Break circ w. Rig
5:23	100		77	3	Pump 3 bbl water
5:52	100		22	3	Mix 200 SKS A-CON
5:59					Mix 100 SKS 60/40 POZ
6:00	100			3	release plug
6:20	100		52		START disp
					plug down / shut in well
					NO circ. NO CMT
8:20	50		12	1	Mix 50 SKS 60/40 POZ (TOP OFF)
8:30					CMT TO SURFACE
9:30					CMT STAYED IN PLACE
					JOB COMPLETE
					THANK YOU!
					Mike Mattal
					Mike + Rife



Customer:	Woolsey Operating Company	Cement Pump No.:	38119-19570 5 HRS	Operator TRK No.:	39878
Address:		Ticket #:	1718-14566 L	Bulk TRK No.:	30464-37725
City, State, Zip:		Job Type:	Z42 - Plug to Abandon		
Service District:		Well Type:	OIL		
Well Name and No.:	Unruh A#1	Well Location:	11,29,19	County:	Kiowa
				State:	Ks
Type of Cmt	Sacks	Additives	Truck Loaded On		
60/40 POZ	250	4%GEL	30464-37725	Front	Back
				Front	Back
				Front	Back
Lead/Tail:	Weight #1 Gal.	Cu/Ft/sk	Water Requirements	CU. FT.	Man Hours / Personnel
Lead:	13.78	1.43	6.92	357.5	Man Hours: 28
Tail:				# of Men on Job:	3
Time (am/pm)	(BPM)	Volume (BBLS)	Pumps T C	Pressure(PSI) Tubing Casing	Description of Operation and Materials
13:00					ON LOC, SAFTEY MTG, R.U.
15:08	3.1	10		80	H2O SPACER
3:13 PM	4.1	12.7		110	MIX 50 SX @ 1320'
3:17 PM	5.5	11.8			DISPLACE
3:54 PM	3.7	8		110	H2O SPACER
15:57	4	15.2		120	MIX 60 SX @ 750'
16:01	4	2.9			DISPLACE
4:20 PM	3.7	8		50	H2O SPACER
16:24	3.7	12.7		60	MIX 50 SX @ 360'
16:28	3.7	1.4			DISPLACE
16:46	3.7	7.6		30	MIX 50 SX @ 60'
17:20		6 & 8			PLUG RAT & MOUSE
					JOB COMPLETE
					THANK YOU FOR YOUR BUSINESS!!!!
Size Hole		Depth			TYPE
Size & Wt. Csg.		Depth	New / Used		Packer
tbg.		Depth			Retainer
Top Plugs		Type			Perfs
Customer Signature:				Basic Representative:	CHAD HINZ
				Basic Signature:	
				Date of Service:	12/3/2017



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63118

DST#: 1

Test Start: 2017.11.28 @ 04:40:54

GENERAL INFORMATION:

Formation: **KC Iola**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:24:45

Time Test Ended: 17:29:29

Test Type: Conventional Bottom Hole (Initial)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 4560.00 ft (KB) To 4590.00 ft (KB) (TVD)

Reference Elevations: 2339.00 ft (KB)

Total Depth: 4590.00 ft (KB) (TVD)

2327.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 12.00 ft

Serial #: 8524 Outside

Press@RunDepth: 90.66 psig @ 4587.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.11.28

End Date:

2017.11.28

Last Calib.: 2017.11.28

Start Time: 04:40:55

End Time:

17:29:29

Time On Btm: 2017.11.28 @ 11:24:15

Time Off Btm: 2017.11.28 @ 14:56:29

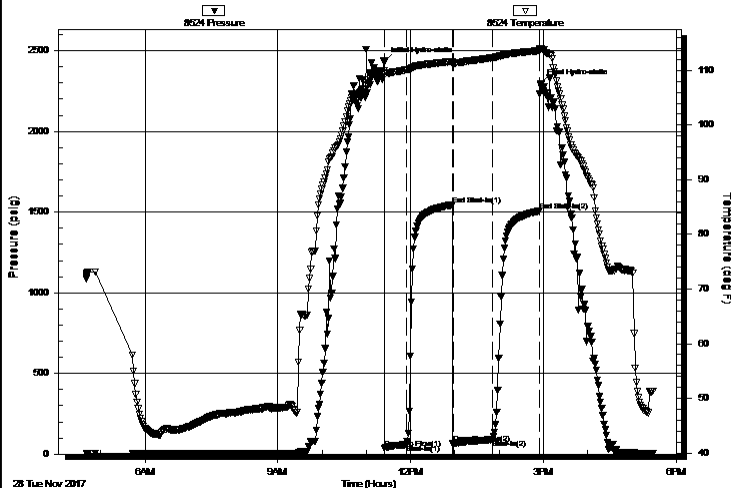
TEST COMMENT: 30- IF- Slowly built to 1.5"

60- IS- No blow

60- FF- .25" blow

60- FSI- No blow

Pressure vs. Time



PRESSURE SUMMARY

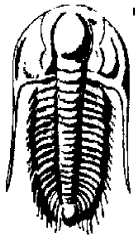
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2430.04	110.05	Initial Hydro-static
1	36.91	109.39	Open To Flow (1)
30	58.22	110.08	Shut-In(1)
92	1544.21	111.66	End Shut-In(1)
94	66.11	111.33	Open To Flow (2)
147	90.66	112.32	Shut-In(2)
211	1507.44	113.61	End Shut-In(2)
213	2298.59	113.88	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
93.00	WM, 40%W 60%M	0.46

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63118

DST#: 1

Test Start: 2017.11.28 @ 04:40:54

GENERAL INFORMATION:

Formation: **KC Iola**

Deviated: No Whipstock: ft (KB)

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Time Test Ended: 17:29:29

Test Type: Conventional Bottom Hole (Initial)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 4560.00 ft (KB) To 4590.00 ft (KB) (TVD)

Total Depth: 4590.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2339.00 ft (KB)

2327.00 ft (CF)

KB to GR/CF: 12.00 ft

Serial #: 6771 Inside

Press@RunDepth: psig @ 4587.00 ft (KB)

Start Date: 2017.11.28

End Date:

2017.11.28

Start Time: 04:41:02

End Time:

17:29:21

Capacity: 8000.00 psig

Last Calib.: 2017.11.28

Time On Btm:

Time Off Btm:

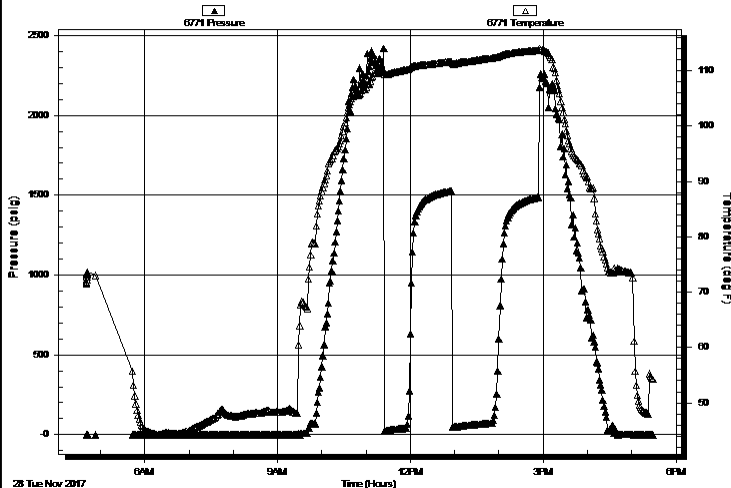
TEST COMMENT: 30- IF- Slowly built to 1.5"

60- IS- No blow

60- FF- .25" blow

60- FSI- No blow

Pressure vs. Time



PRESSURE SUMMARY

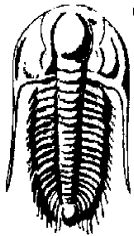
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
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Recovery

Length (ft)	Description	Volume (bbl)
93.00	WM, 40%W 60%M	0.46

Gas Rates

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

DRILL STEM TEST REPORT

FLUID SUMMARY

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63118

DST#: 1

Test Start: 2017.11.28 @ 04:40:54

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 47.00 sec/qt

Water Loss: 9.18 in³

Resistivity: ohm.m

Salinity: 6400.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

Oil API: deg API

Water Salinity: 19000 ppm

ft
bbl

psig

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
93.00	WM, 40%W 60%M	0.457

Total Length: 93.00 ft Total Volume: 0.457 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

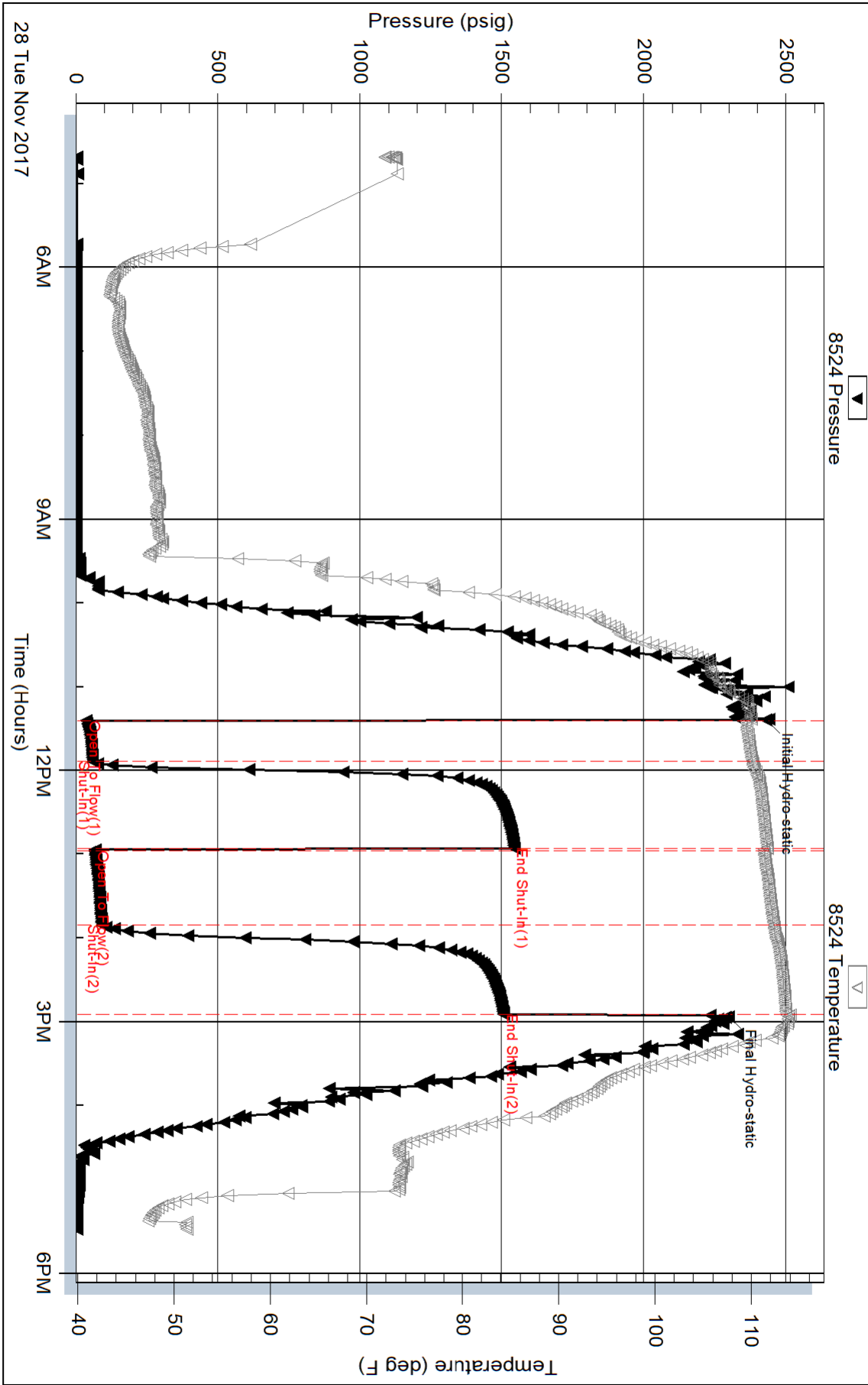
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW: .26@53deg

Pressure vs. Time



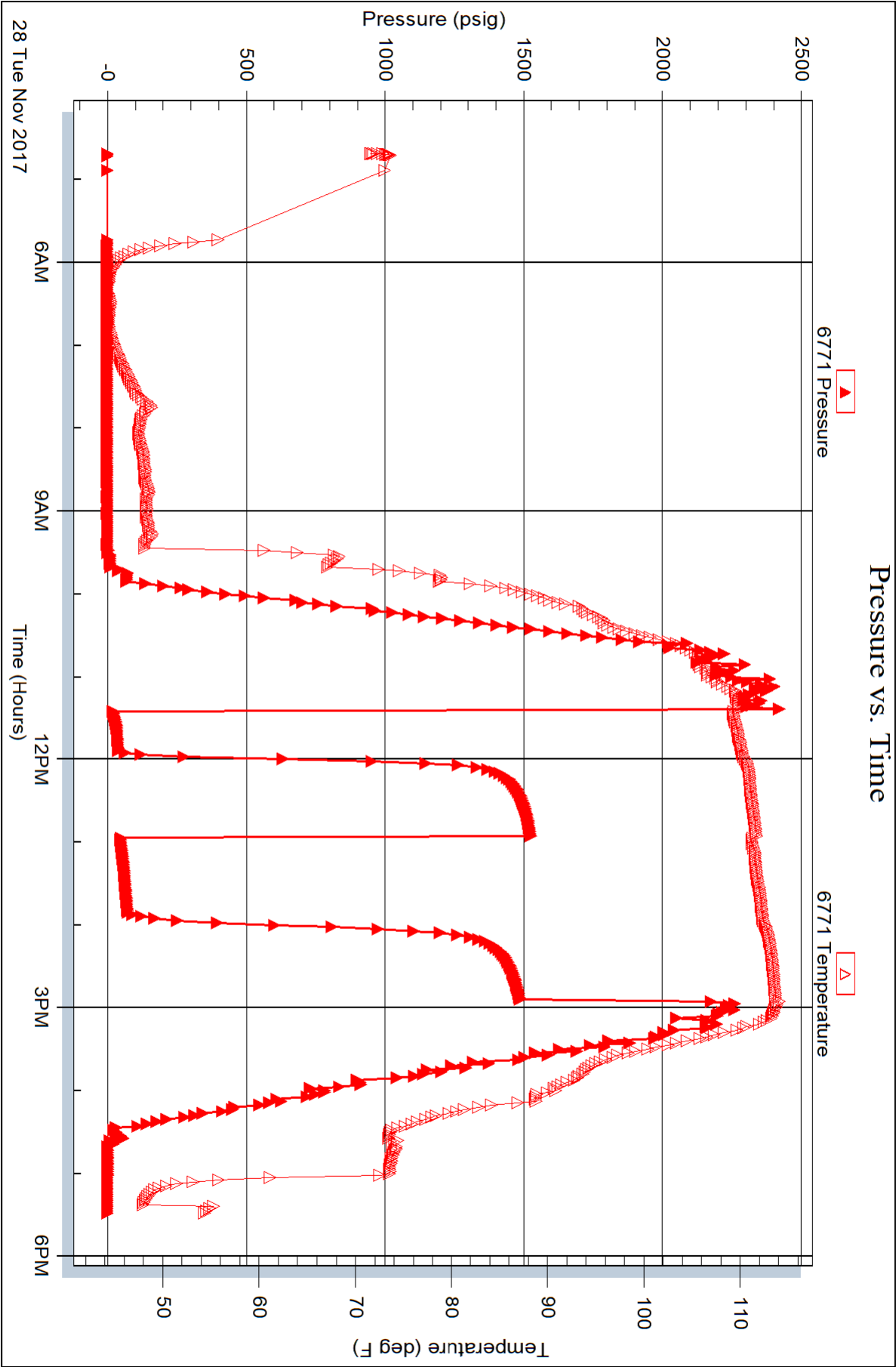
Serial #: 6771

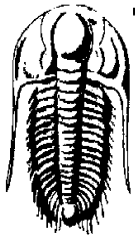
Inside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 1





TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63119

DST#: 2

Test Start: 2017.11.29 @ 14:00:34

GENERAL INFORMATION:

Formation: **KC Hertha**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:36:10

Time Test Ended: 23:07:09

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 4760.00 ft (KB) To 4792.00 ft (KB) (TVD)

Total Depth: 4792.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 2339.00 ft (KB)

2327.00 ft (CF)

KB to GR/CF: 12.00 ft

Serial #: 8524 Outside

Press@RunDepth: 69.26 psig @ 4789.00 ft (KB)

Start Date: 2017.11.29

End Date:

2017.11.29

Start Time: 14:00:35

End Time:

23:07:09

Capacity: 8000.00 psig

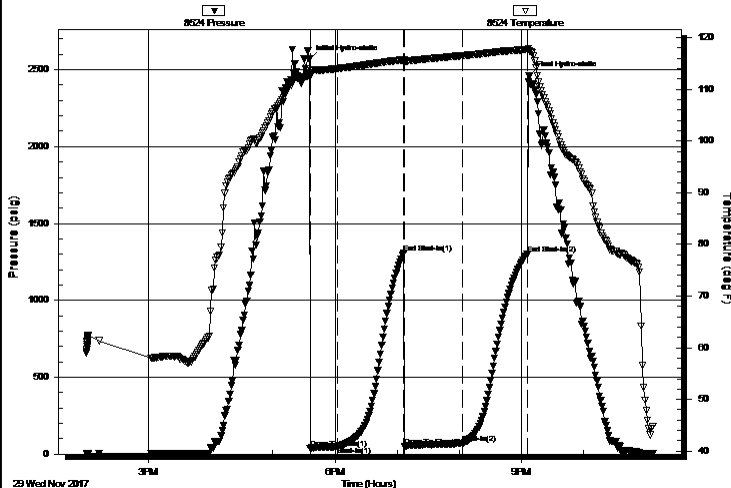
Last Calib.: 2017.11.29

Time On Btm: 2017.11.29 @ 17:35:10

Time Off Btm: 2017.11.29 @ 21:07:10

TEST COMMENT: 30- IF- Slowly built to 3.5"
60- IS- No blow
60- FF- Built very slowly to .75"
60- FSI- No blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2568.20	112.73	Initial Hydro-static
1	38.90	112.60	Open To Flow (1)
28	50.00	114.04	Shut-In(1)
92	1308.99	115.72	End Shut-In(1)
92	50.80	115.42	Open To Flow (2)
148	69.26	116.53	Shut-In(2)
211	1303.20	117.68	End Shut-In(2)
212	2463.03	117.51	Final Hydro-static

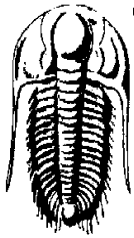
Recovery

Length (ft)	Description	Volume (bbl)
15.00	M	0.07
0.00	110' GIP	0.00

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63119

DST#: 2

Test Start: 2017.11.29 @ 14:00:34

GENERAL INFORMATION:

Formation: **KC Hertha**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:36:10

Time Test Ended: 23:07:09

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 4760.00 ft (KB) To 4792.00 ft (KB) (TVD)

Total Depth: 4792.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 2339.00 ft (KB)

2327.00 ft (CF)

KB to GR/CF: 12.00 ft

Serial #: 6771 Inside

Press@RunDepth: psig @ 4789.00 ft (KB)

Start Date: 2017.11.29

End Date:

2017.11.29

Capacity: 8000.00 psig

Last Calib.:

2017.11.29

Start Time: 14:00:58

End Time:

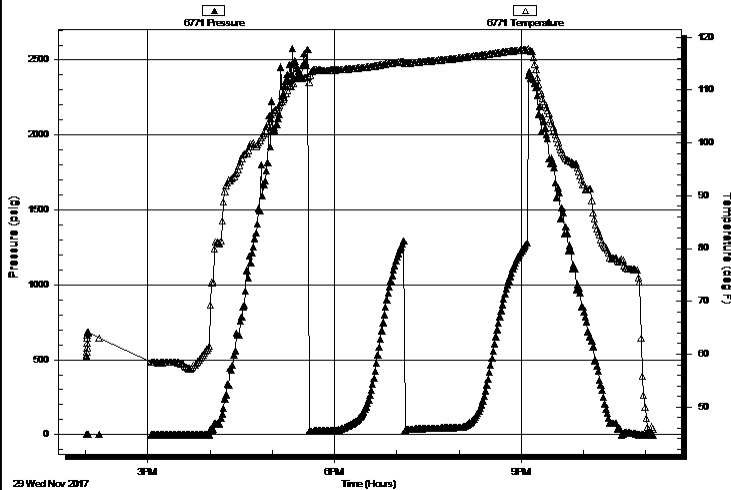
23:07:17

Time On Btm:

Time Off Btm:

TEST COMMENT: 30- IF- Slowly built to 3.5"
60- IS- No blow
60- FF- Built very slowly to .75"
60- FS- No blow

Pressure vs. Time



PRESSURE SUMMARY

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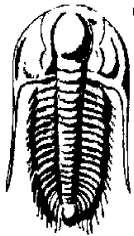
Recovery

Length (ft)	Description	Volume (bbl)
15.00	M	0.07
0.00	110' GIP	0.00

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63119

DST#: 2

Test Start: 2017.11.29 @ 14:00:34

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 53.00 sec/qt

Water Loss: 9.59 in³

Resistivity: ohm.m

Salinity: 8400.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

deg API

ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
15.00	M	0.074
0.00	110' GIP	0.000

Total Length: 15.00 ft

Total Volume: 0.074 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8524

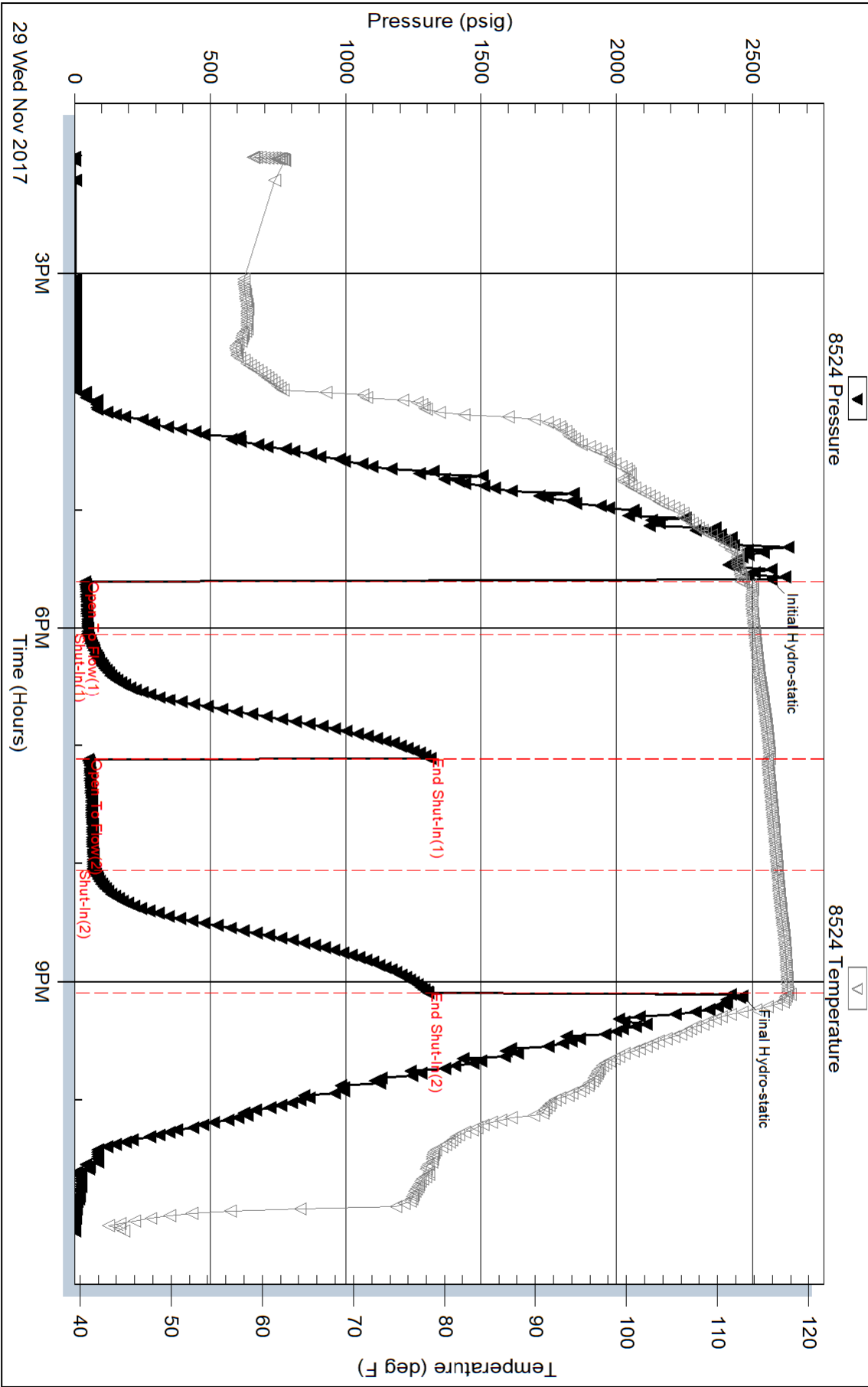
Outside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 2

Pressure vs. Time



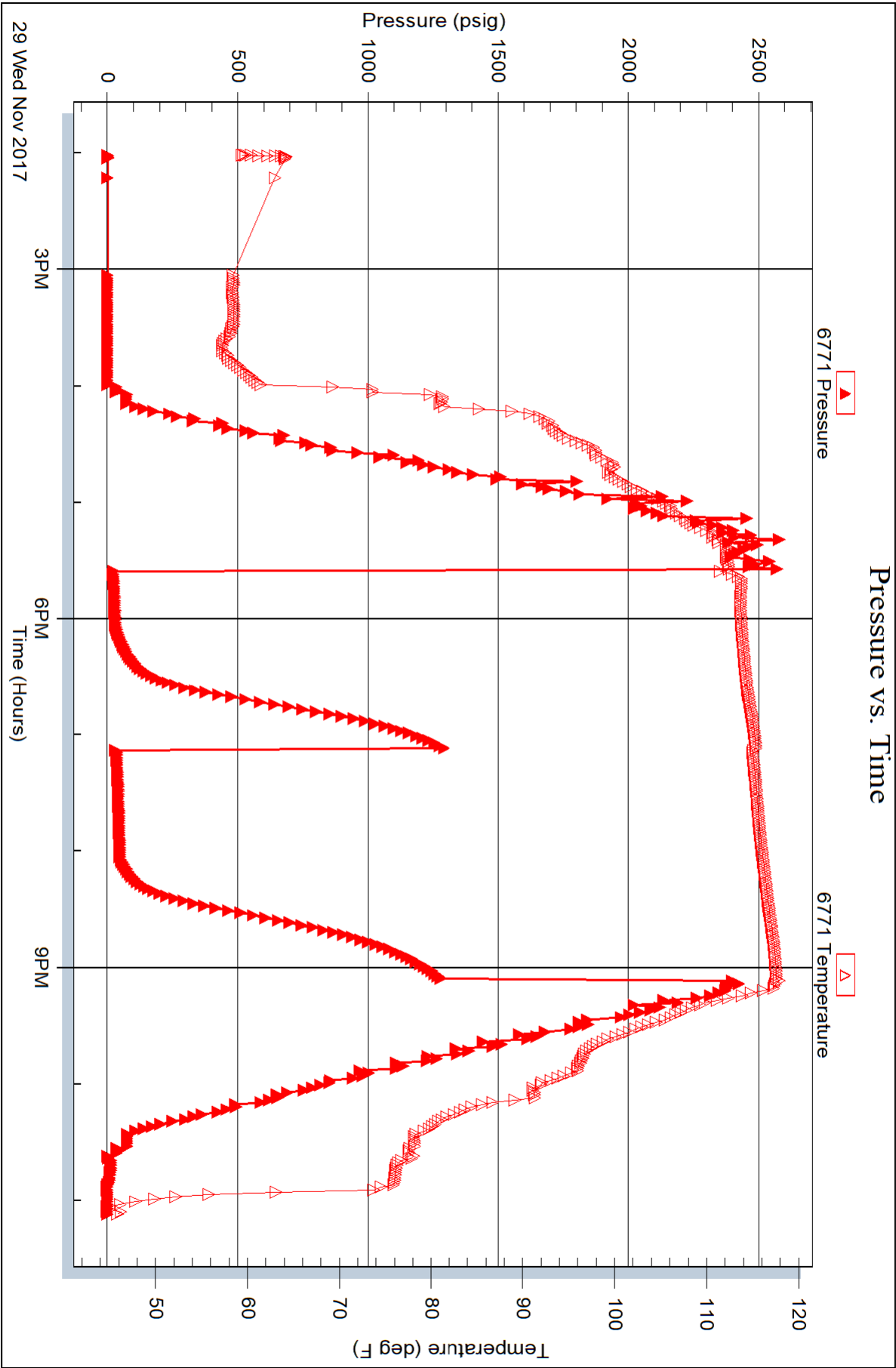
Serial #: 6771

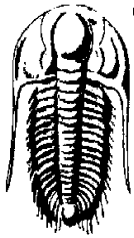
Inside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 2





TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63120

DST#: 3

Test Start: 2017.11.30 @ 21:49:31

GENERAL INFORMATION:

Formation: **Miss**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:30:22

Time Test Ended: 08:46:06

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 4952.00 ft (KB) To 5046.00 ft (KB) (TVD)

Reference Elevations: 2339.00 ft (KB)

Total Depth: 5046.00 ft (KB) (TVD)

2327.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 12.00 ft

Serial #: 8524 Outside

Press@RunDepth: 52.11 psig @ 4978.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.11.30

End Date:

2017.12.01

Last Calib.: 2017.12.01

Start Time: 21:49:32

End Time:

08:46:06

Time On Btm: 2017.12.01 @ 02:29:52

Time Off Btm: 2017.12.01 @ 05:33:22

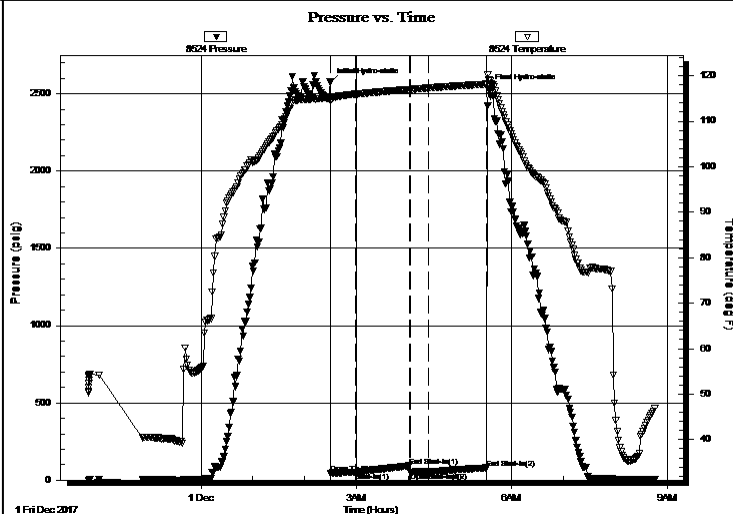
TEST COMMENT: 30- IF- Built to .75" in 8 mins then slowly died back to 1/4"

60- ISL- No blow

30- FF- No blow

60- FSL- No blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2571.01	115.38	Initial Hydro-static
1	44.31	114.55	Open To Flow (1)
29	49.10	115.93	Shut-In(1)
92	92.32	116.96	End Shut-In(1)
93	49.19	116.97	Open To Flow (2)
114	52.11	117.31	Shut-In(2)
181	79.83	118.15	End Shut-In(2)
184	2533.26	119.22	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	M	0.05

Gas Rates

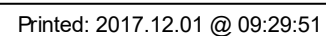
	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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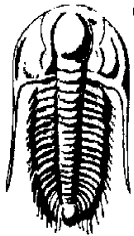
* Recovery from multiple tests



Test Start: 2017.11.30 @ 21:49:31

KB to GR/CF: 12.00 ft





TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63120

DST#: 3

Test Start: 2017.11.30 @ 21:49:31

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 48.00 sec/qt

Water Loss: 11.19 in³

Resistivity: ohm.m

Salinity: 8500.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

deg API

ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	M	0.049

Total Length: 10.00 ft

Total Volume: 0.049 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8524

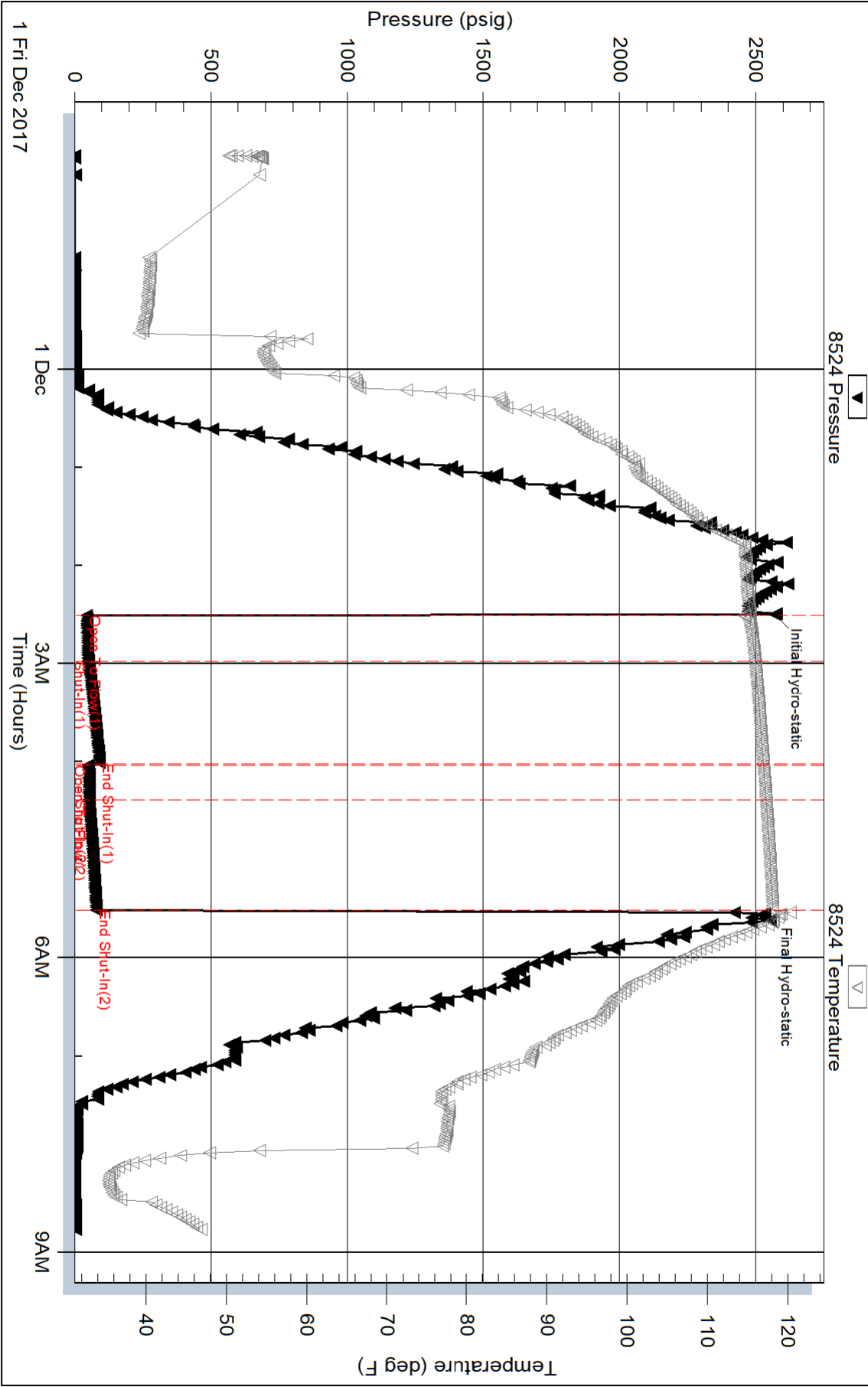
Outside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 3

Pressure vs. Time



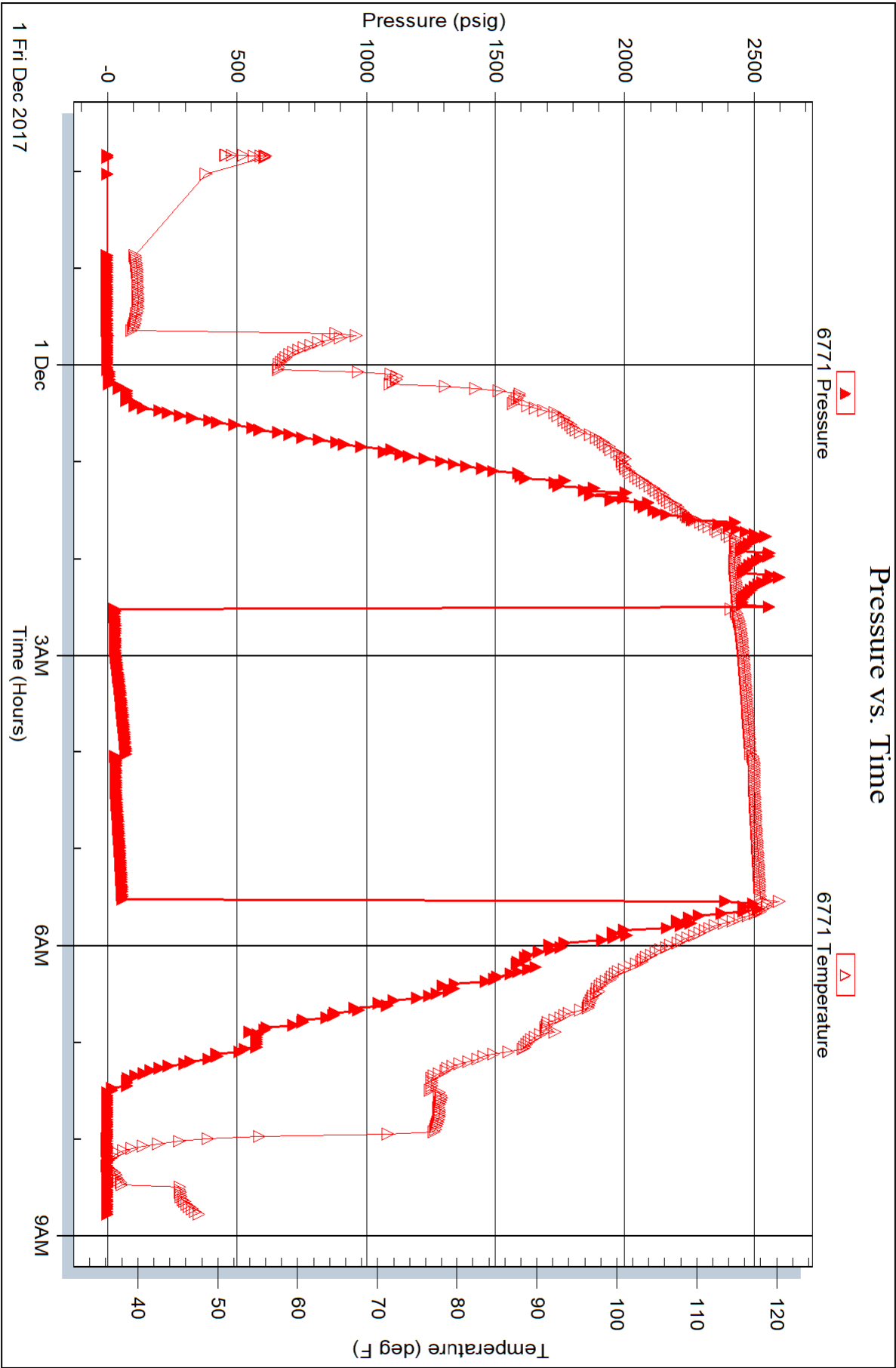
Serial #: 6771

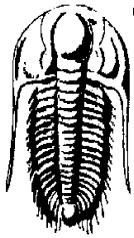
Inside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 3





TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63121

DST#: 4

Test Start: 2017.12.01 @ 17:01:55

GENERAL INFORMATION:

Formation: **Miss**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:02:16

Time Test Ended: 01:51:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 5046.00 ft (KB) To 5061.00 ft (KB) (TVD)

Total Depth: 5061.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2339.00 ft (KB)

2327.00 ft (CF)

KB to GR/CF: 12.00 ft

Serial #: 8524 Outside

Press@RunDepth: 173.12 psig @ 5058.00 ft (KB)

Start Date: 2017.12.01

End Date:

2017.12.02

Start Time: 17:01:56

End Time:

01:51:15

Capacity: 8000.00 psig

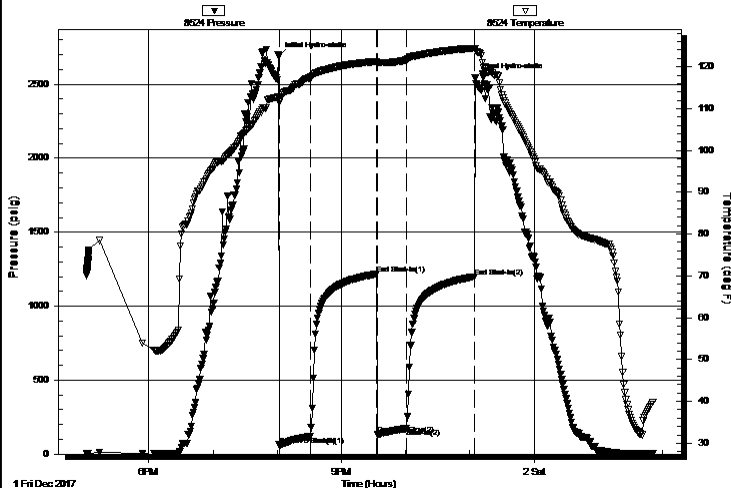
Last Calib.: 2017.12.02

Time On Btm: 2017.12.01 @ 20:01:31

Time Off Btm: 2017.12.01 @ 23:04:46

TEST COMMENT: 30- IF- BOB 5mins
60- ISL- 1.75" blow
60- FF- BOB 7mins
60- FSL- 1" blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2689.47	112.56	Initial Hydro-static
1	58.50	111.97	Open To Flow (1)
30	118.78	117.32	Shut-In(1)
92	1219.37	121.27	End Shut-In(1)
93	130.87	121.00	Open To Flow (2)
120	173.12	121.71	Shut-In(2)
183	1199.19	124.39	End Shut-In(2)
184	2542.18	124.29	Final Hydro-static

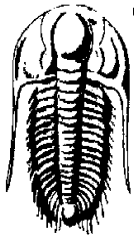
Recovery

Length (ft)	Description	Volume (bbl)
248.00	MW, 15%M 85%W	1.59
47.00	M	0.51
0.00	141' GIP	0.00

Gas Rates

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



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63121

DST#: 4

Test Start: 2017.12.01 @ 17:01:55

GENERAL INFORMATION:

Formation: **Miss**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 20:02:16

Time Test Ended: 01:51:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan Lonsdale

Unit No: 73

Interval: 5046.00 ft (KB) To 5061.00 ft (KB) (TVD)

Total Depth: 5061.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2339.00 ft (KB)

2327.00 ft (CF)

KB to GR/CF: 12.00 ft

Serial #: 6771 Inside

Press@RunDepth: psig @ 5058.00 ft (KB)

Start Date: 2017.12.01

End Date:

2017.12.02

Start Time: 17:02:49

End Time:

01:51:53

Capacity: 8000.00 psig

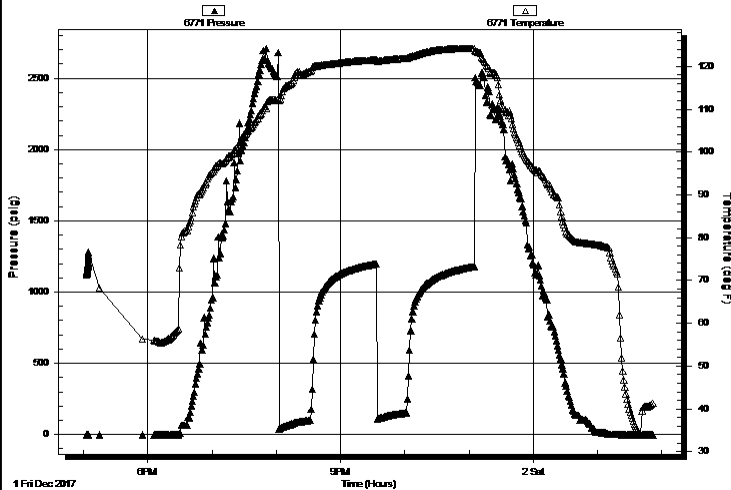
Last Calib.: 2017.12.02

Time On Btm:

Time Off Btm:

TEST COMMENT: 30- IF- BOB 5mins
60- ISL- 1.75" blow
60- FF- BOB 7mins
60- FSL- 1" blow

Pressure vs. Time



PRESSURE SUMMARY

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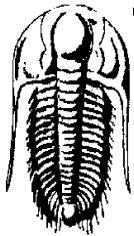
Recovery

Length (ft)	Description	Volume (bbl)
248.00	MW, 15%M 85%W	1.59
47.00	M	0.51
0.00	141' GIP	0.00

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Woolsey Operating Company, LLC

11-29S-19W Kiowa, KS

125 N. Market
Ste. 1000
Wichita, KS 67202
ATTN: B. Klaver

Unruh A #1

Job Ticket: 63121

DST#: 4

Test Start: 2017.12.01 @ 17:01:55

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 55.00 sec/qt

Water Loss: 10.39 in³

Resistivity: ohm.m

Salinity: 9100.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

Oil API: deg API

Water Salinity: 85000 ppm

ft
bbl

psig

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
248.00	MW, 15%M 85%W	1.593
47.00	M	0.509
0.00	141' GIP	0.000

Total Length: 295.00 ft

Total Volume: 2.102 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .12@46deg

Serial #: 8524

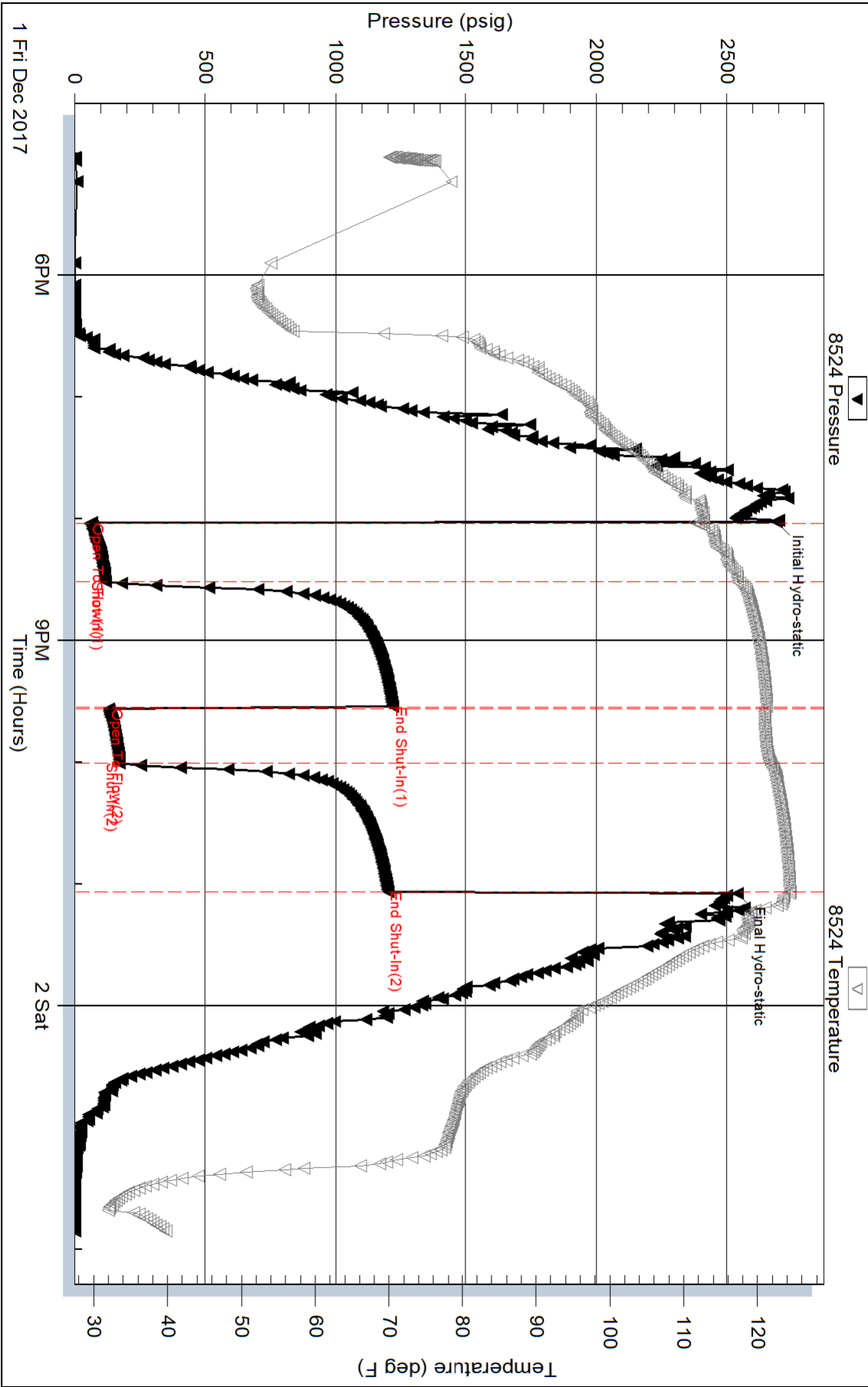
Outside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 4

Pressure vs. Time



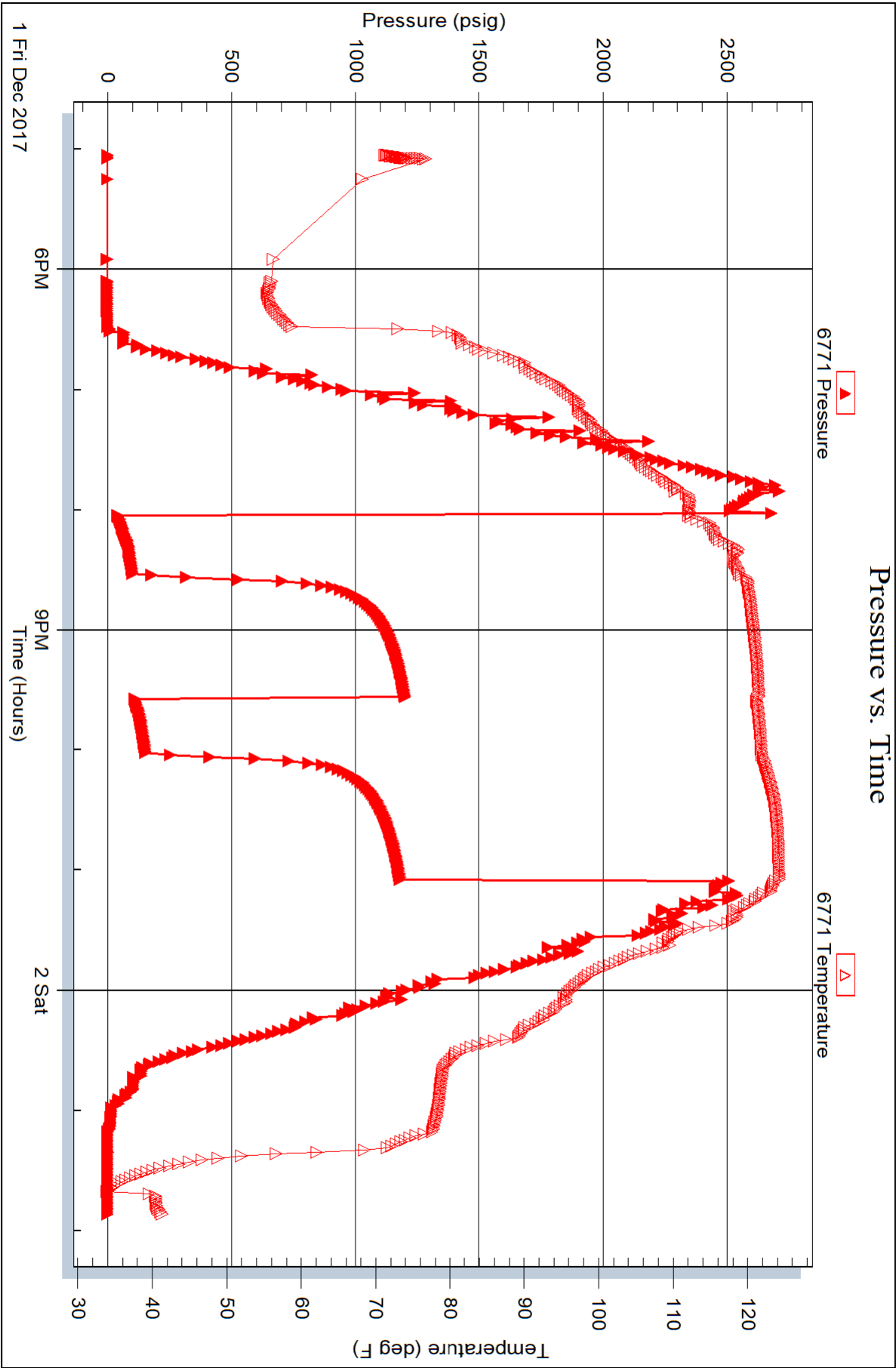
Serial #: 6771

Inside

Woodsey Operating Company, LLC

Unruh A #1

DST Test Number: 4





Woolsey Operating Company, LLC

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

Measured Depth Log

Well Name: Unruh A-1
Location: Section 11 - Township 29 South - Range 19 West
License Number: 15-097-21832-00-00 Region: Kiowa County, Kansas
Spud Date: November 21, 2017 Drilling Completed: December 2, 2017
Surface Coordinates: 1020' FSL & 1980' FEL
N 1/2 SW 1/4 SE 1/4

Bottom Hole Coordinates:

Ground Elevation (ft): 2327' K.B. Elevation (ft): 2339'
Logged Interval (ft): 3800' To: 5300' Total Depth (ft): 5300'
Formation: Topeka >> Mississippi
Type of Drilling Fluid: Chemical Mud

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

OPERATOR

Company: Woolsey Operating Company, LLC
Address: 125 N. Market, Suite 1000
Wichita, KS 67202

GEOLOGIST

Name: Bill Klaver
Company: Woolsey Operating Co. LLC
Address: 125 N. Market, Wichita Kansas, 67202

COMMENTS

Surface Casing: spud at 9 pm on 11/21/17, set 15 joints 9 5/8" X 24#/ft casing to 717' (tally) 701.7) w/ 200 sx A-con, 3% cc, 1/4# celloflake. Cement did not circulate. Lost circulation drilling surface hole, cemented with 1" Production Casing: No casing ran

Deviation Surveys: 1/2 at 721', 1/2 at 1001', 3/4 at 1348', 1 at 1913', 1 at 2415', 1/4 at 2917', 1 at 3638', 1 at 4234', 1/2 at 4590', 1/2 at 4792', 1 at 5061', 1/2 at 5300'

Pipe Strap @ 4590', Board: 4611.07, Strap: 4609.53, 1.54' short, no correction was made to the board.

Fossil Drilling Rig 3 Bit Record:

- 1) 12 1/4" RT RR in at 0' out at 721', 4 hours
- 2) 7 7/8" Varel Tool Co. PDC in at 721' out at 5300', 112 hrs

Gas Detector: Pason

Mud System: Mud Co. Justin Whiting, Mud Engineer

DSTs: Trilobite Testing, Brannon Lonsdale, Tester

E-Logs: ELI, Jeff Luebbers, Master Logger

DSTs

DST #1 Kansas City "Iola", 4560'-4590', 30"-60"-60"-60", weak 1" blow dec to 1/4" blow, Rec: 93' WM (40%W, 60%M), IHP 2430, IFP 37-50, ICIP 1544, FFP 66-91, FCIP 1507, FHP 2299, BHT 114 deg

DST #2 Kansas City "Hertha", 4760'-4792', 30"-60"-60"-60", weak 4" blow, Rec: 110' GIP, 15' Mud, IHP 2568, IFP 39-50, ICIP 1309, FFP 51-69, FCIP 1303, FHP 2463, BHT 118 deg

DST #3 Mississippi, 4952'-5046', 30"-60"-30"-60", wk 3/4" blow died, Rec: 10' Mud, IHP 2571, IFP 44-49, ICIP 92, FFP 49-52, FCIP 80, FHP 2533, BHT 118 deg

DST #4 Mississippi, 5046'-5061', 30"-60"-30"-60", SB BOB in 5 min, Rec: 141' GIP, 47' Mud, 248' MW (Chlorides 85,000 ppm, API Rw .12 @ 46 deg F), IHP 2689, IFP 59-119, ICIP 1219, FFP 131-173, FCIP 1199, FHP 2542, BHT 124 deg

CREWS

Fossil Drilling Rig 3

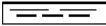
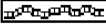
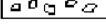
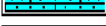
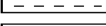
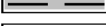
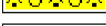
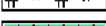
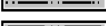
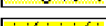
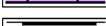
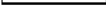
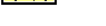
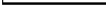
Rick Barriger, Tool Pusher

Chris Staats, Morning

Pablo Luna, Days

Gary Axtell, Evening

ROCK TYPES

	Anhy		Shy dolo		Sltst		Shale 3
	Bent		Dol		Ss		Silty dol
	Brec		Gyp		Black sh		Dol lmst
	Cht		Sdy lmst		Gry sh		Dol 2
	Clyst		Lmst		Shale		Granite wash
	Coal		Mrlst		Shysltst		Lmst
	Congl		Salt		Sltysht		Calc dol
	Sdy dolo		Shale		Ss 2		Shale 3

ACCESSORIES

MINERAL



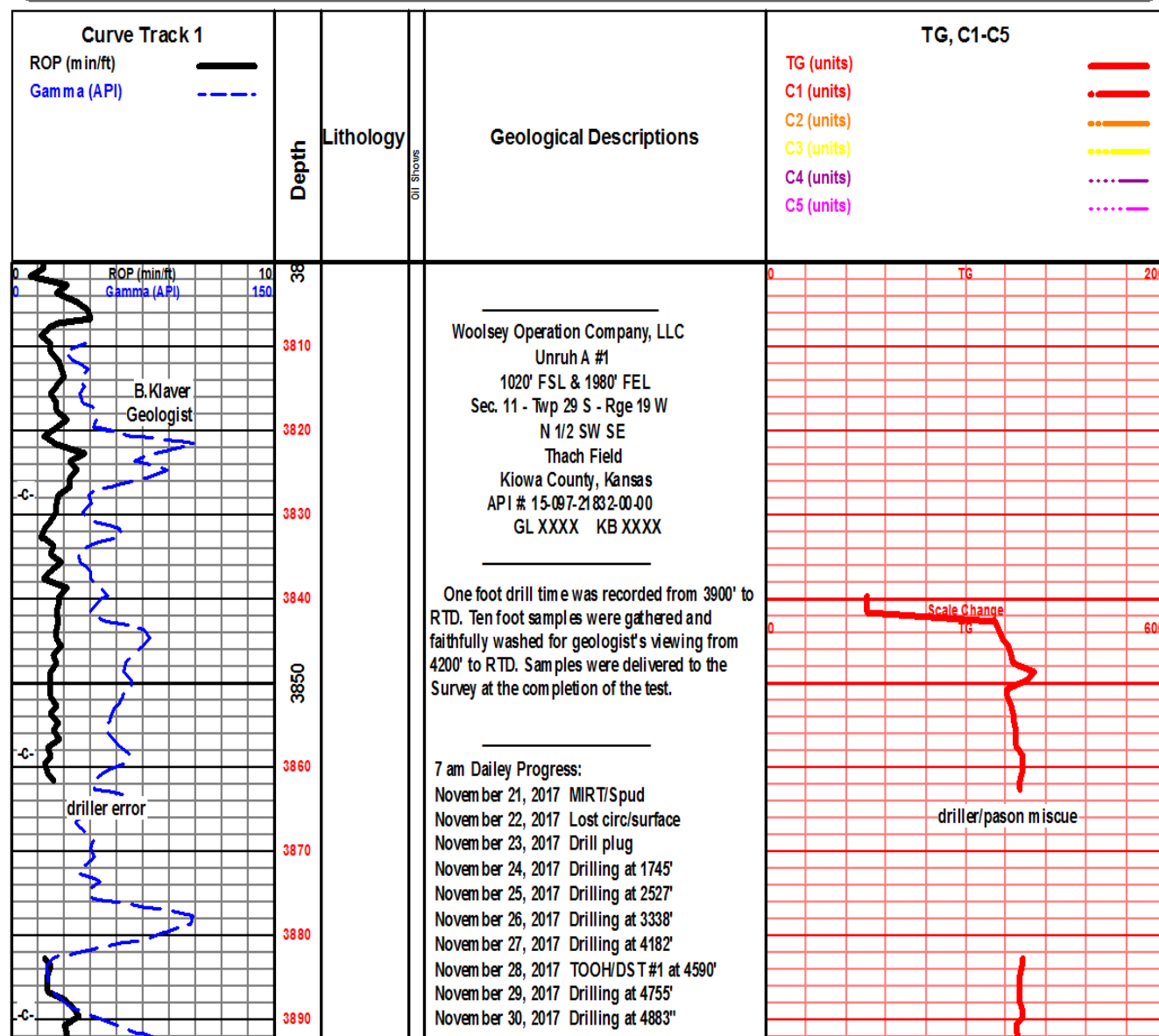
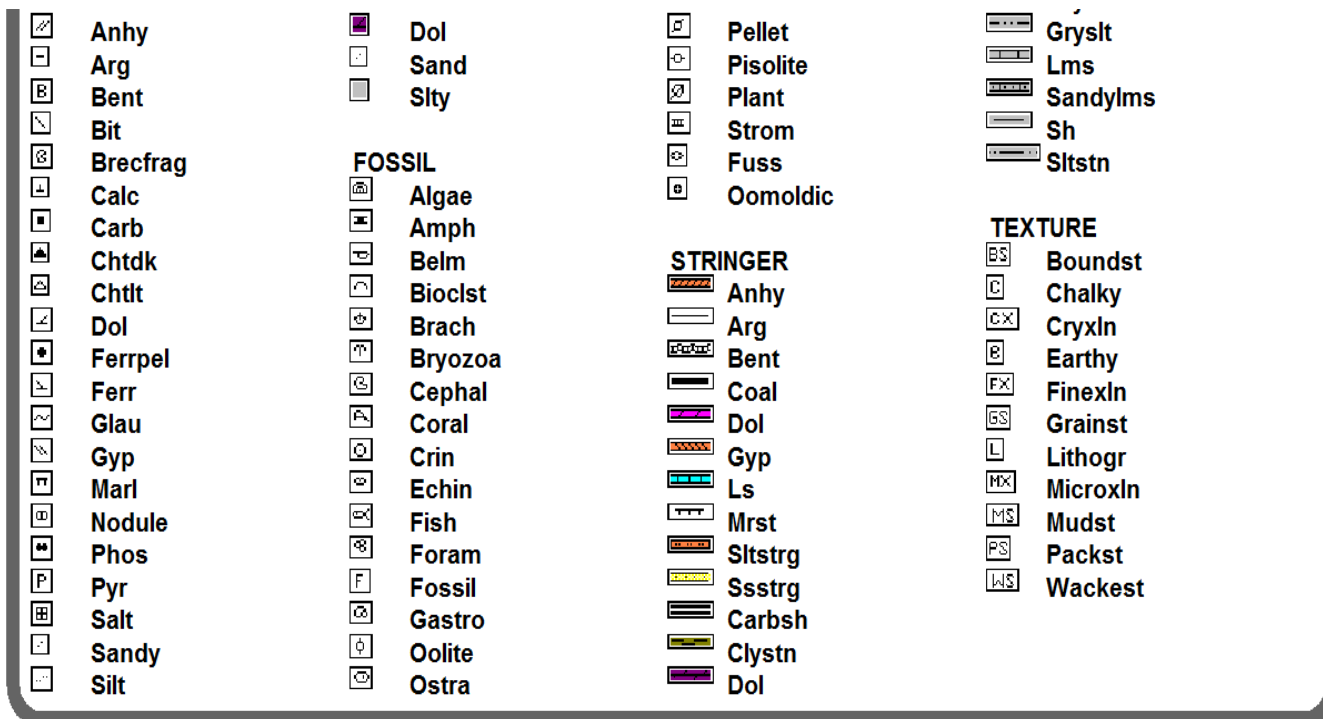
Chlorite

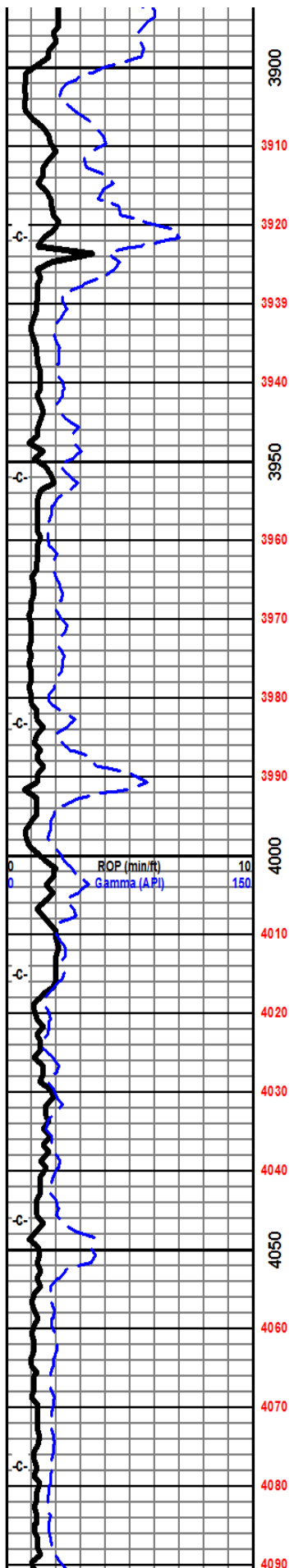


Pelec



Grvsh

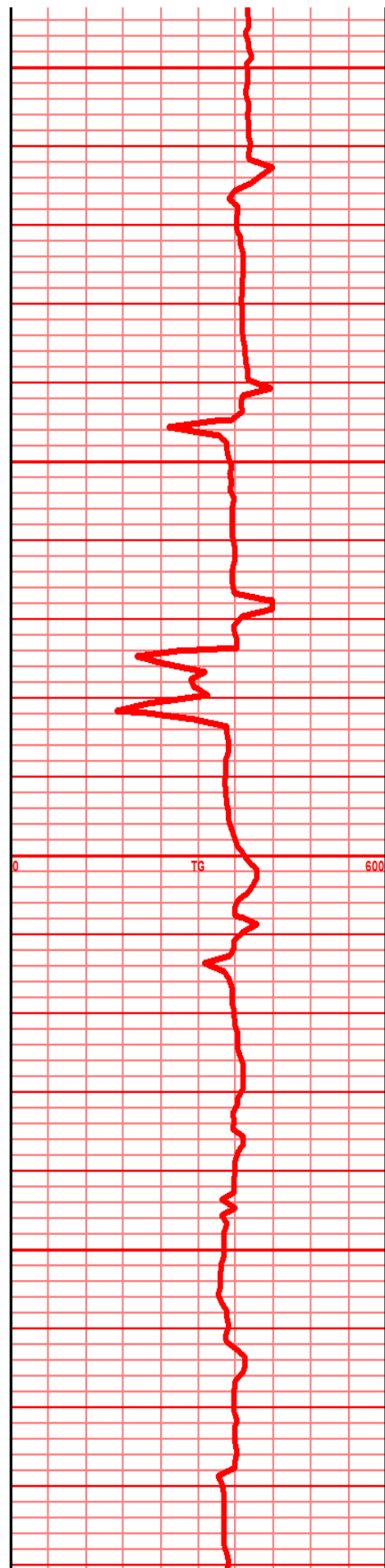


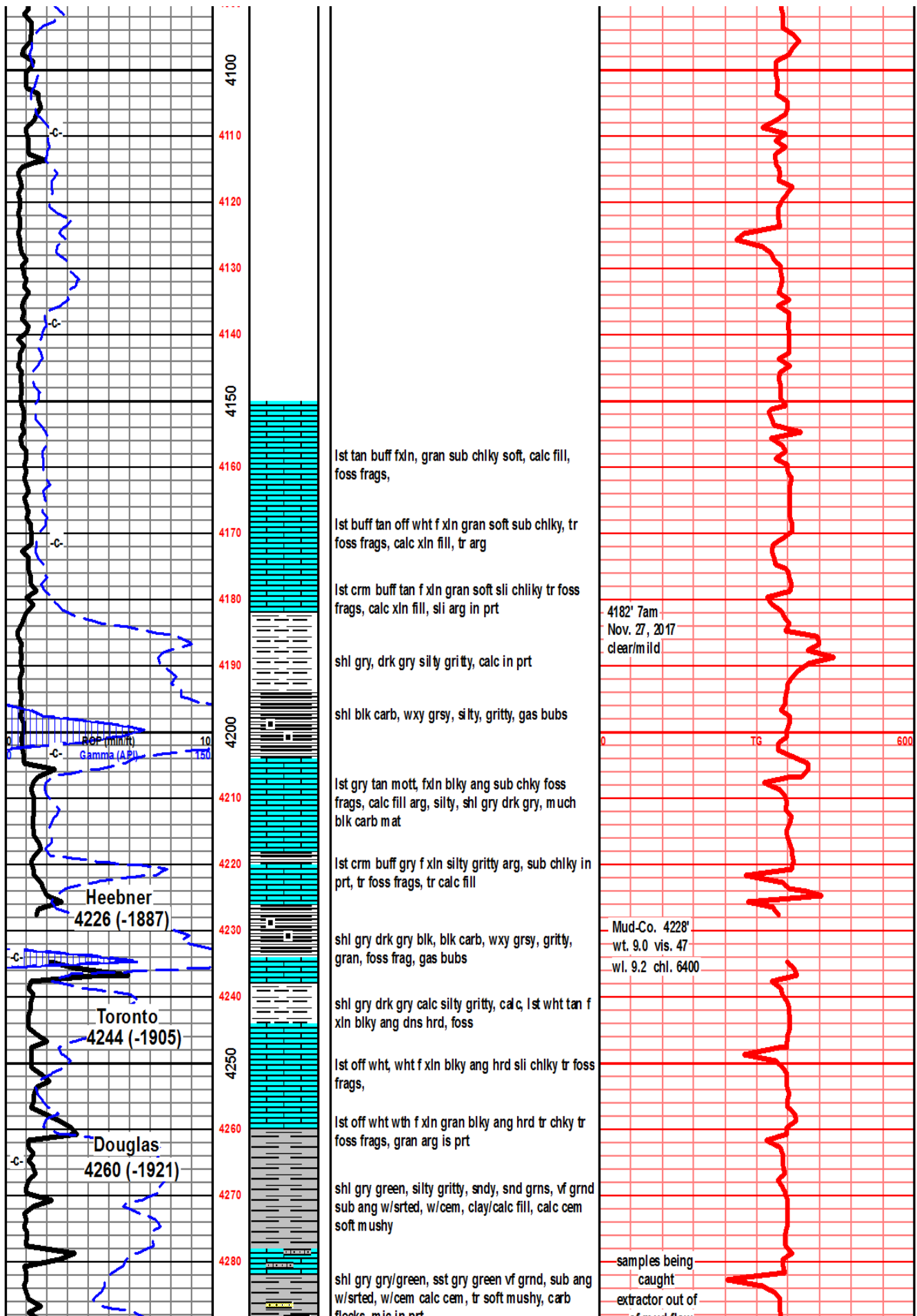


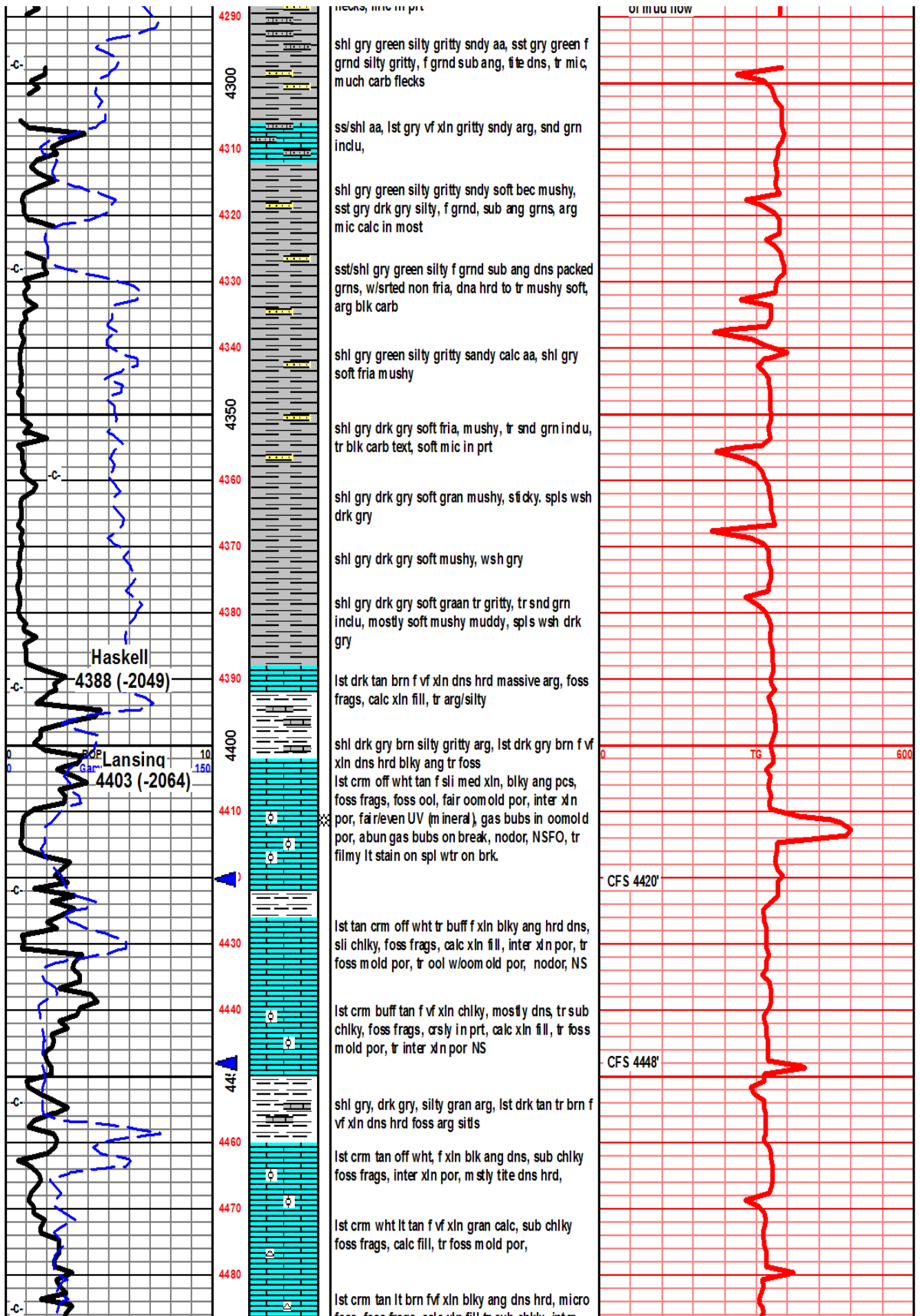
December 1, 2017 100H/DS I #3 at 5046'
 December 2, 2017 Drilling at 5092'
 December 3, 2017 E-Logs out 6 am

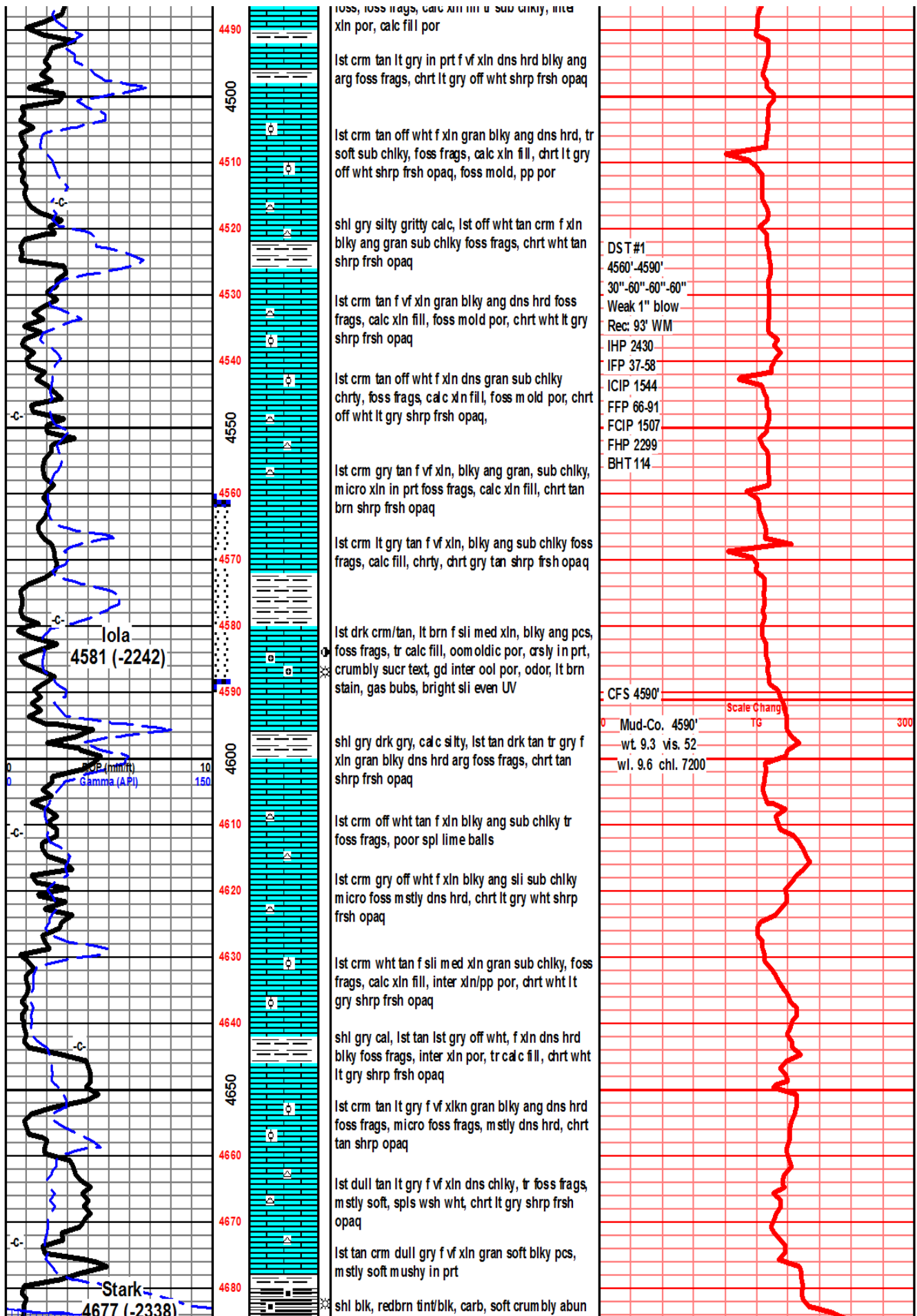
E-log Tops

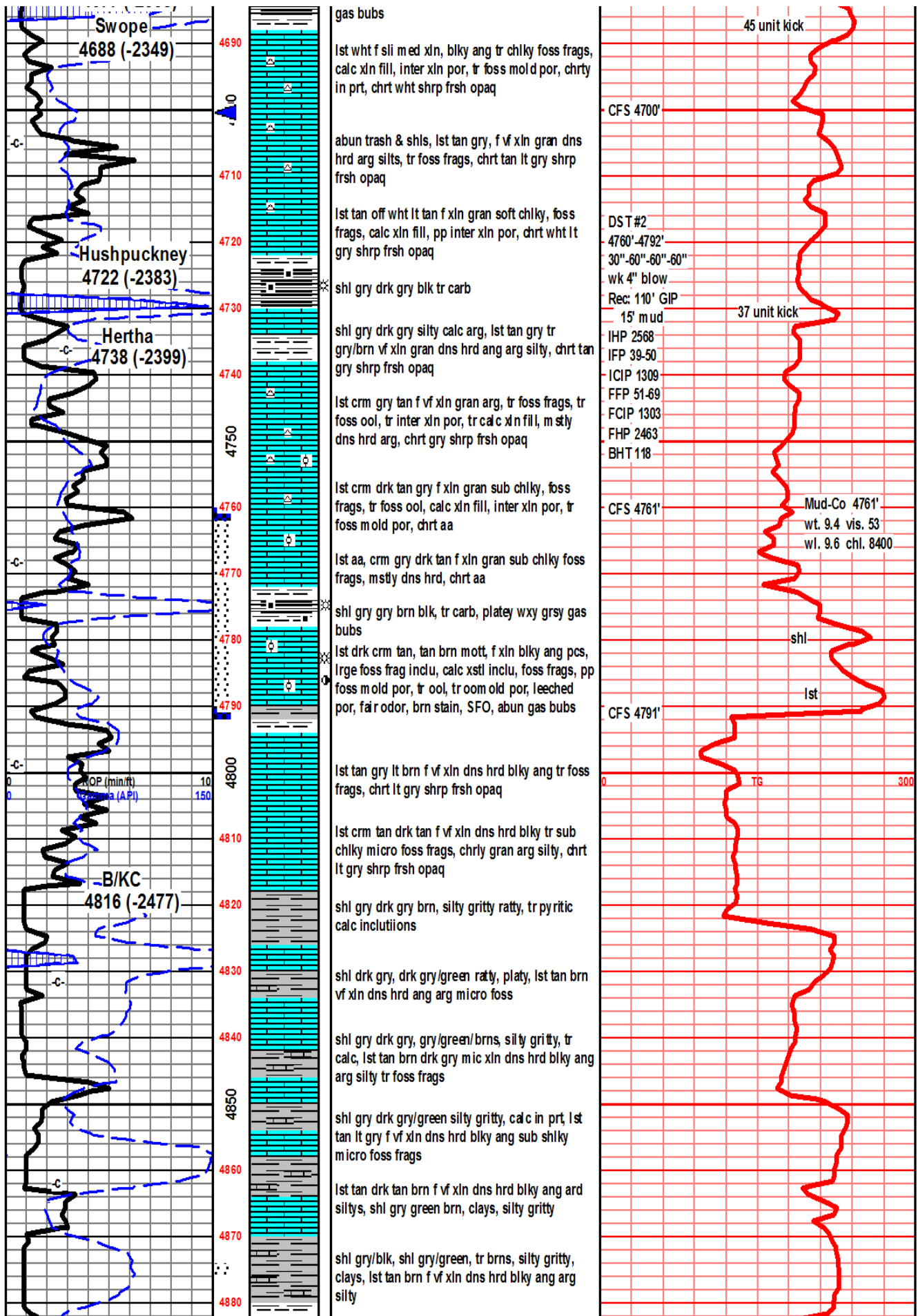
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 Onaga 3514 (-1175)
 Wabunsee 3580 (-1241)
 Heebner 4229 (-1890)
 Toronto 4247 (-1908)
 Douglas Grp 4262 (-1923)
 Haskell 4396 (-2057)
 Stanton 4411 (-2072)
 Plattsburg 4434 (-2095)
 Iola 4580 (-2241)
 Dennis 4661 (-2322)
 Stark 4680 (-2341)
 Swope 4694 (-2355)
 Hushpuckney 4725 (-2386)
 Hertha 4739 (-2400)
 B/Kanss City 4818 (-2479)
 Pawnee 4913 (-2574)
 Cherokee Grp 4961 (-2622)
 Mississippi Unc. 5031 (-2692)
 Warsaw 5044 (-2705)
 Osage 5085 (-2746)
 Compton 5244 (-2905)
 LTD 5302 (-2963)

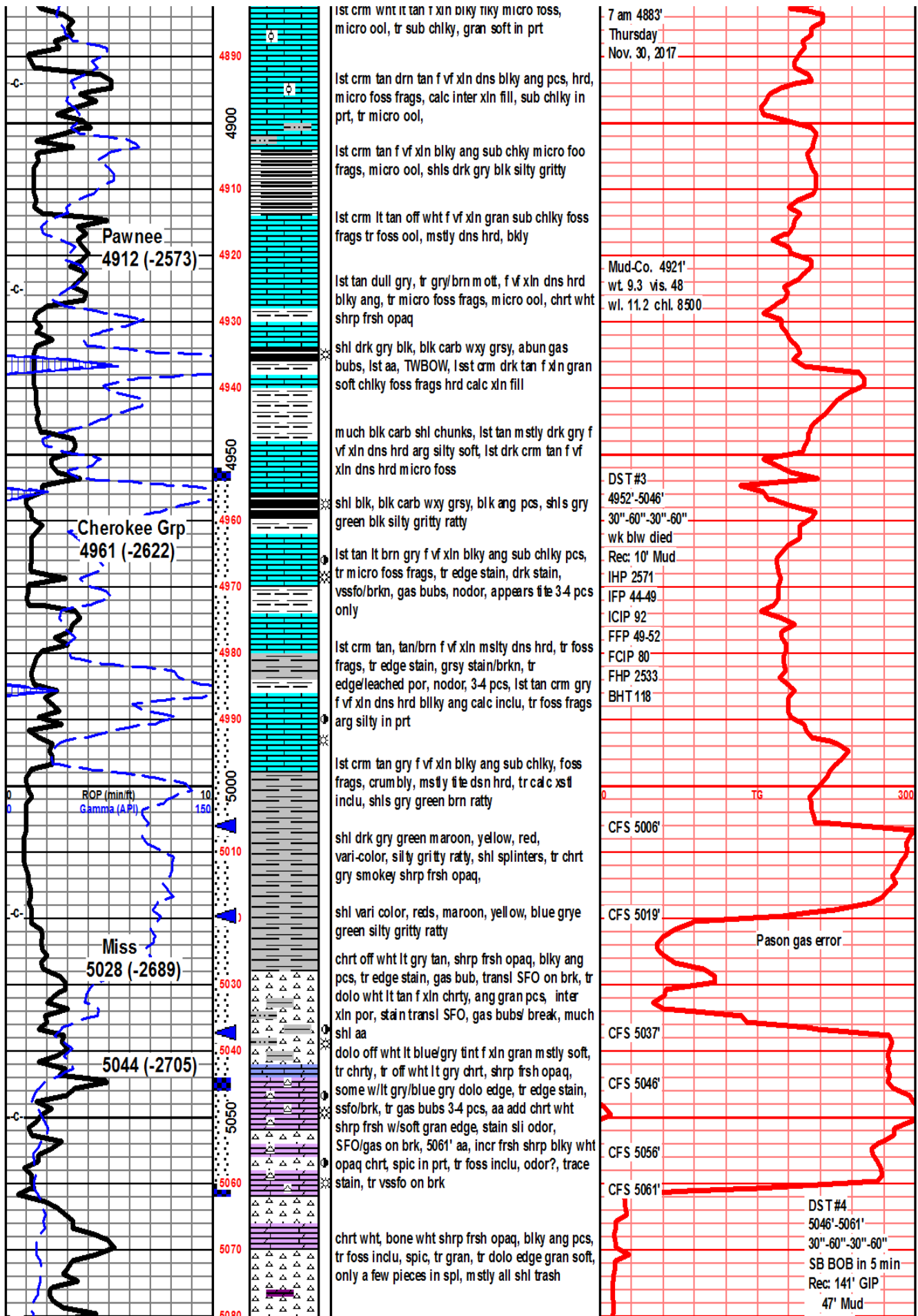


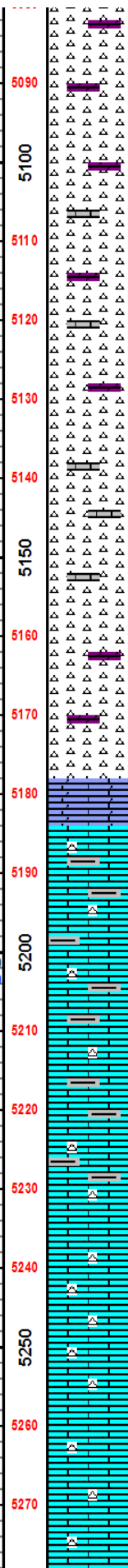
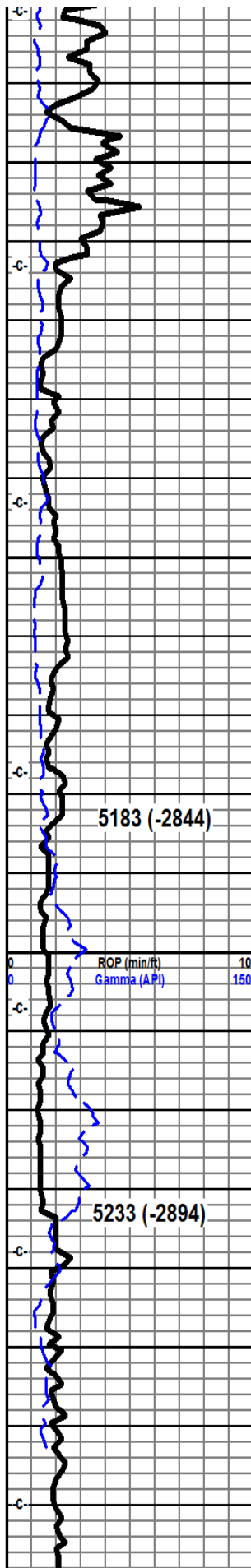












chrt wht off wht boney, soft gran sli chiky limy
trip text, chrt wht oof wht shrp frsh opa, blk
ang shrp edges

chrt wht, tr boney, shrp frsh blk with weath
gran soft trip text edge, inter gran por

chrt wht off wht shrp frsh opa spic, blkky ang
shrp pcs, chrt wht bone wht gran weath sli trip
text/edges

chrt wht off wht shrp frsh opa blkky ang pcs,
chrt wht bone wht gran weath text, trip text, gran
soft chiky edges, 1st wht off wht f vln gran soft
chiky

chrt wht shrp frsh opa, shrp ang pcs, tr spic, tr
gran weath text edge, tr gran trip text edge, tr
dolo wht off wht f xln gran suc text, chrt in prt

chrt wht shr frsh opa, shrp blkky ang pcs,
w/gran weath trip text, tr chiky soft crumbly,
dolo off wht f xln gran suc text, inter xln por, tr
glau, chrt

chrt wht shrp frsh opa, blkky ang shrp pcs,
w/weath text edge, sli trip text edge, soft crumbly
sli soft chalky edge, 1st/dolo wht tan lt gry f xln
blkky ang gran suc text in prt

chrt aa, shl gry brn/red, red calc shl w/wht calc
inclu, dolo lt gry tan f vln gran soft suc text

chrt dolo chrt aa, shl dkr gry brn, brn, calc
limy, red gritty, w/1st-calc inclu soft mushy, shl
gry brn red maroon

chrt aa, shl dkr gry blk, hrd calc, drk brn/red soft
mushy, red clay/shl w/wht 1st/calc inclu, shl brn
maroon

aa, 1st gry brn red, f vln gran gritty silty, arg,
shl gry green blk, shl lt gry lt green sily micro sd
grns gritty silty soft

shl drk gry/lt green silty gritty calc, soft mushy,
dolo lt gry/grn vln/grnd gritty silty, micro
sny in prt

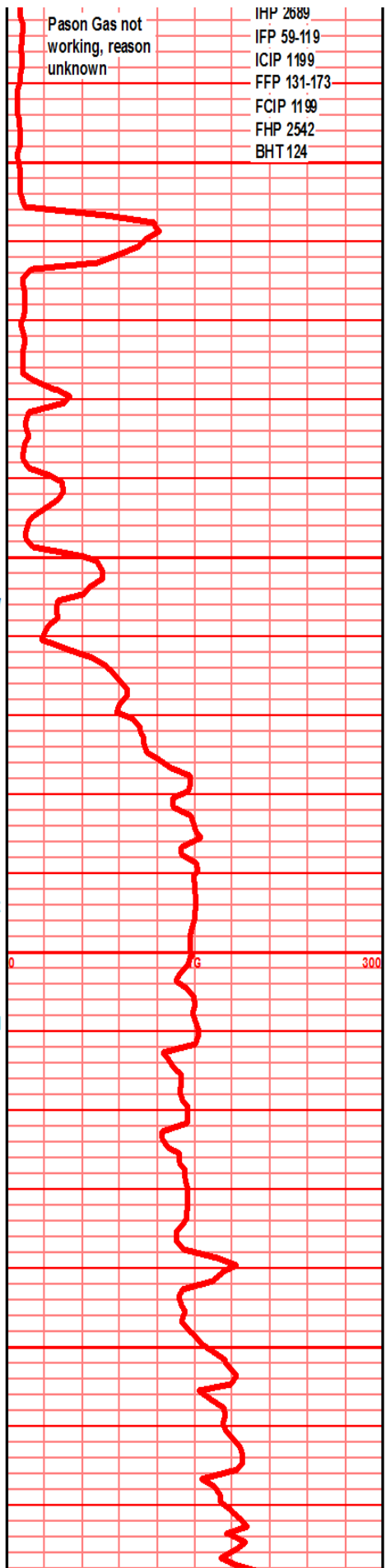
shl aa, shl gry drk gry blk, tr platy ang pcs, tr
silty gritty

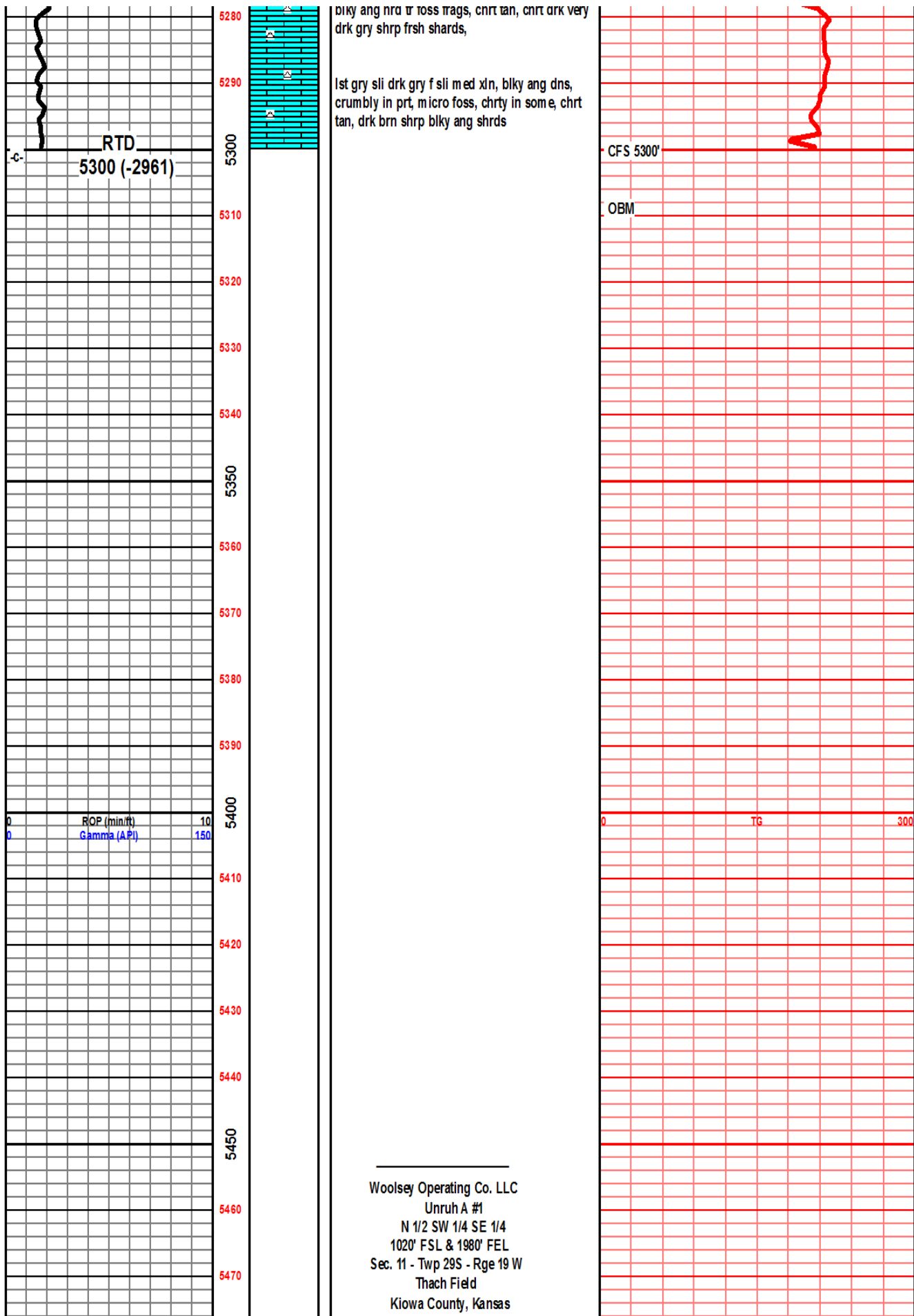
flood wht lt tan shrp frsh opa chrt, shrp ang
blkky, 1st wht off wht tan f sli med xln foss frags,
chrt inclu, soft crumbly

1st wht off wht tan f sli med xln blkky ang soft
crumbly foss inclu, chrt, chrt wht shrp frsh
foss, 1st edge

1st drk crm lt gry f sli med xln gran crumbly blkky
soft, tr foss frag imbeds, chrt wht tan shrp frsh

1st tan bec drker gry f xln bec sli med xln, dns





[illegible]