KOLAR Document ID: 1431344

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 # 34318
Name: BEREXCO LLC
Address 1: 2020 N. BRAMBLEWOOD
Address 2:
City: WICHITA State: KS Zip: 67206 + 1094
Contact Person: Brett Blazer
Phone: (316) 265-3311
CONTRACTOR: License # 34317
Name: BEREDCO LLC
Wellsite Geologist: Pete Vollmer
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 #:

09/19/2018 Spud Date or Recompletion Date
10/3/2018 Date Reached TD
11/30/2018 Completion Date or Recompletion Date

API No.: 15-055-22503-00-00
Spot Description:
NE - SW - SW - NE Sec. 29 Twp. 23 S. R. 32 ☐ East ☑ West
2295 Feet from ☑ North / ☐ South Line of Section
2225 Feet from ☑ East / ☐ West Line of Section
Footages Calculated from Nearest Outside Section Corner:
☑ NE ☐ NW ☐ SE ☐ SW
GPS Location: Lat: *(e.g. xx.xxxxx)* , Long: *(e.g. -xxx.xxxxx)*
Datum: ☐ NAD27 ☐ NAD83 ☐ WGS84
County: Finney
Lease Name: LENA MAI Well #: 5-29
Field Name:
Producing Formation: Morrow
Elevation: Ground: 2842 Kelly Bushing: 2854
Total Vertical Depth: 4910 Plug Back Total Depth:
Amount of Surface Pipe Set and Cemented at: 1786 Feet
Multiple Stage Cementing Collar Used? ☑ Yes ☐ No
If yes, show depth set: 3189 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: 18200 ppm Fluid volume: 450 bbls
Dewatering method used: Evaporated
Location of fluid disposal if hauled offsite:
Operator Name:
Lease Name: License #:
Quarter Sec. Twp. S. R. ☐ East ☐ West
County: Permit #:

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

Submitted Electronically

KCC Office Use ONLY
☐ **Confidentiality Requested**
Date: 01/14/2019
☐ **Confidential Release Date:** 01/13/2021
☑ **Wireline Log Received** ☑ **Drill Stem Tests Received**
☑ **Geologist Report / Mud Logs Received**
☐ **UIC Distribution**
ALT ☑ **I** ☐ **II** ☐ **III** **Approved by:** Karen Ritter **Date:** 01/14/2019

Operator Name: BEREXCO LLC Lease Name: LENA MAI Well #: 5-29

Sec. 29 Twp. 23 S. R. 32 ☐ East ☑ West County: Finney

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

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

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

List All E. Logs Run:

Neutron-Density
Dual Induction
Micro

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

Name	Top	Datum
B. Heebner	3845	-991
Lansing	3882	-1028
Morrow	4698	-1844
Mississippi	4795	-1941

CASING RECORD ☑ New ☐ Used

Report all strings set-conductor, surface, intermediate, production, etc.

Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives
Surface	12.25	8.625	23	1786	Class C	775	1/4# flakes 3% CC
Production	7.875	5.5	15.5	4912	Class H	520	1/4# flakes 10% gyp 10% salt 5# gilsonite

ADDITIONAL CEMENTING / SQUEEZE RECORD

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

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:
01/03/2019	☐ Flowing ☑ Pumping ☐ Gas Lift ☐ Other *(Explain)*

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity
	7	0	5		

DISPOSITION OF GAS:	METHOD OF COMPLETION:	PRODUCTION INTERVAL:	
		Top	Bottom
☐ Vented ☐ Sold ☐ Used on Lease *(If vented, Submit ACO-18.)*	☐ Open Hole ☑ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)*	4783	4793

Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record *(Amount and Kind of Material Used)*
4	4783	4793			1000 gallons 7.5% MCA

TUBING RECORD:	Size:	Set At:	Packer At:
	2.875	4861	

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

Form	ACO1 - Well Completion
Operator	BEREXCO LLC
Well Name	LENA MAI 5-29
Doc ID	1431344

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Surface	12.25	8.625	23	1786	Class C	775	1/4# flakes 3% CC
Production	7.875	5.5	15.5	4912	Class H	520	1/4# flakes 10% gyp 10% salt 5# gilsonite 0.5% fluid loss 0.25# defoamer

HALLIBURTON

ARRAY COMPENSATED TRUE RESISTIVITY LOG

BEREXCO LLC | LENA MAI 5-29 | CONGDON NORTH | FINNEY | KANSAS

COMPANY BEREXCO LLC

WELL LENA MAI 5-29

FIELD/BLOCK CONGDON NORTH

COUNTY FINNEY STATE KANSAS

API No. 15-055-22503-00-00

Location (SHL) NE SW SW NE
2295' FNL & 2225' FEL

Sect. 29 Twp. 23S Rge. 32W

Other Services:
ACRT
SDL-DSN
MICLOG
BSAT

Permanent Datum	GL	Elev. 2842.0 ft	Elev.: K.B. 2854.0 ft
Log measured from	KB	12.0 ft above perm. Datum	D.F. 2852.0 ft
Drilling measured from	KB		G.L. 2842.0 ft

Date		03-Oct-18					
Run No.		1					
Depth - Driller		4910.0 ft					
Depth - Logger		4914.0 ft					
Bottom - Logged Interval		4904					
Top - Logged Interval		1782					
Casing - Driller		8.625 in	@ 1786.0 ft	@		@	
Casing - Logger		1782.0 ft					
Bit Size		7.875 in		@		@	
Type Fluid in Hole		Water Based Mud					
Density	Viscosity	9.1 ppg	51.00 s/qt				
PH	Fluid Loss	10.00 pH	9.6 cptm				
Source of Sample		FLOWLINE					
Rm @ Meas. Temperature		0.76 ohmm	@ 88.00 degF	@		@	
Rmf @ Meas. Temperature		0.62 ohmm	@ 86.00 degF	@		@	
Rmc @ Meas. Temperature		0.93 ohmm	@ 86.00 degF	@		@	
Source Rmf	Rmc	MEAS	MEAS				
Rm @ BHT		0.53 ohmm	@ 128.0 degF	@		@	
Time Since Circulation		12:00 hr					
Time on Bottom		03-Oct-18 14:08					
Max. Rec. Temperature		128.00 degF	@ 4914.0 ft	@		@	
Equipment	Location	12156883	EL RENO, OK				
Recorded By		WHITLOCK					
Witnessed By		BRETT BLAZER		PETER VOLLMER			

Fold here

PGM Version: WL INSITE R5.8.9 (Build 6)

Service Ticket No.: 905174527

API No.: 15-055-22503-00-00

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

RESISTIVITY SCALE CHANGES

	Type Log	Depth	Scale Up Hole	Scale Down Hole

RESISTIVITY EQUIPMENT DATA

	Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
Source of Sample					
Rm @ Meas. Temp	@	@			
Rmf @ Meas. Temp.	@	@			
Rmc @ Meas. Temp.	@	@			
Source Rmf					
Rm @ BHT	@	@			
Rmf @ BHT	@	@			
Rmc @ BHT	@	@			

EQUIPMENT DATA

	GAMMA	ACOUSTIC	DENSITY	NEUTRON
Run No.				
Serial No.				
Model No.				
Diameter				
Detector Model No.		No. of Cent.		
Type		Spacing	Log Type	Log Type
Length		LSA [Y/N]	Source Type	Source Type
Distance to Source		FWDA [Y/N]	Serial No.	Serial No.
			Strength	Strength

LOGGING DATA

	GENERAL				GAMMA		ACOUSTIC		DENSITY		NEUTRON	
	Run No.	Depth From	Depth To	Speed ft/min	Scale L	Scale R	Scale L	Scale R	Scale L	Scale R	Scale L	Scale R
Matrix												

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

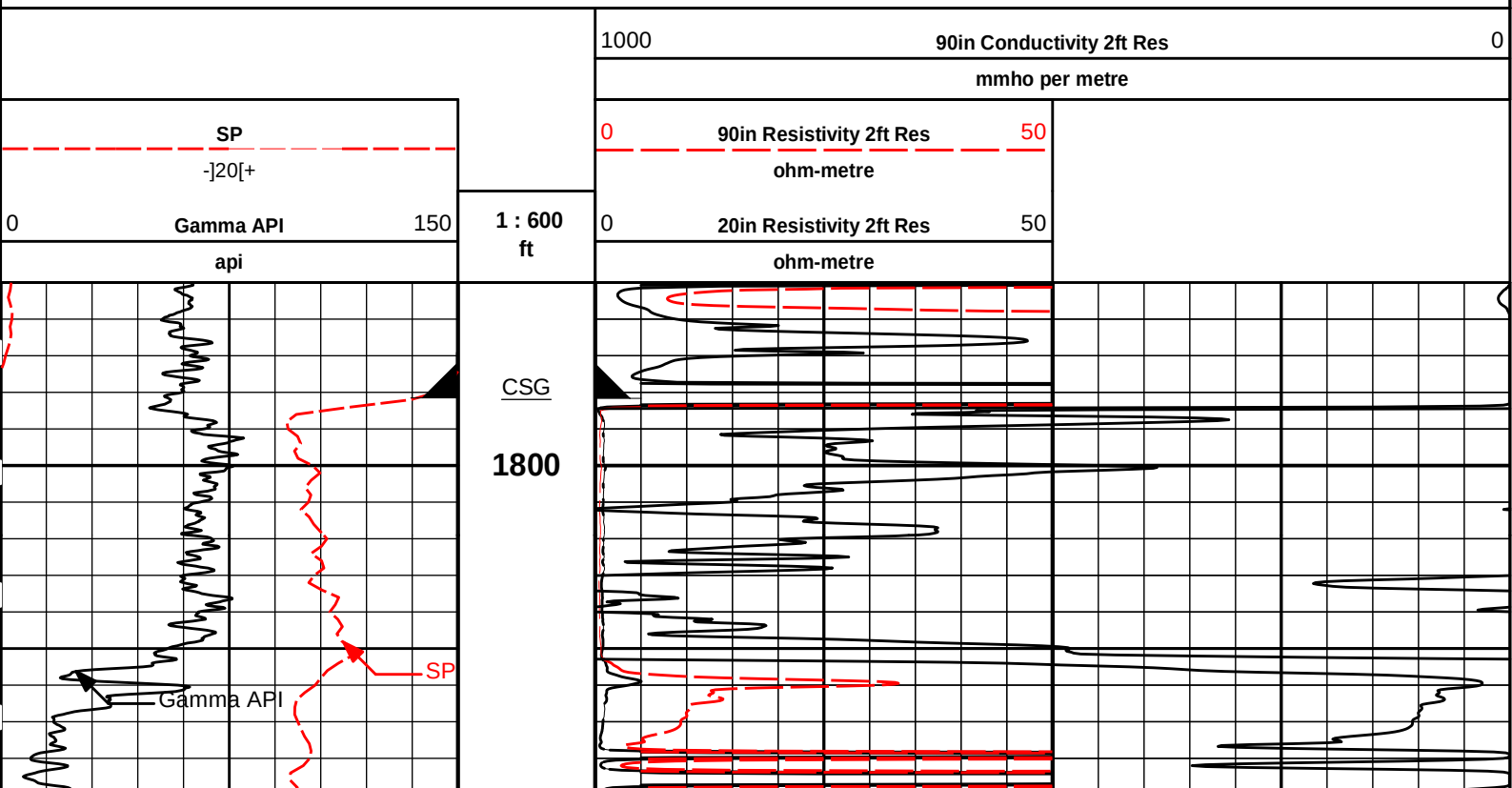
Remarks: 5 1/2" CASING USED FOR ANNULAR HOLE VOLUME

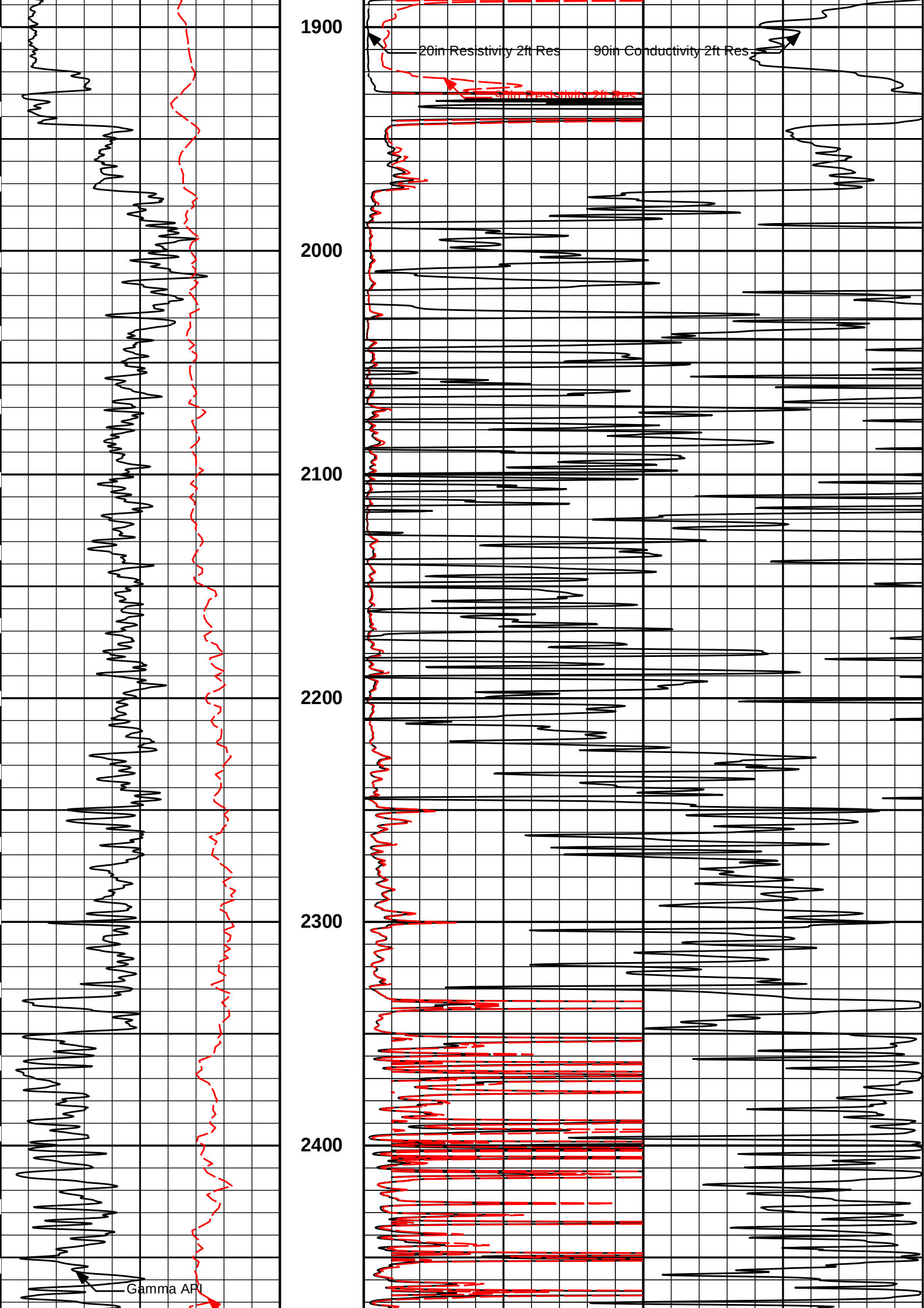
HALLIBURTON

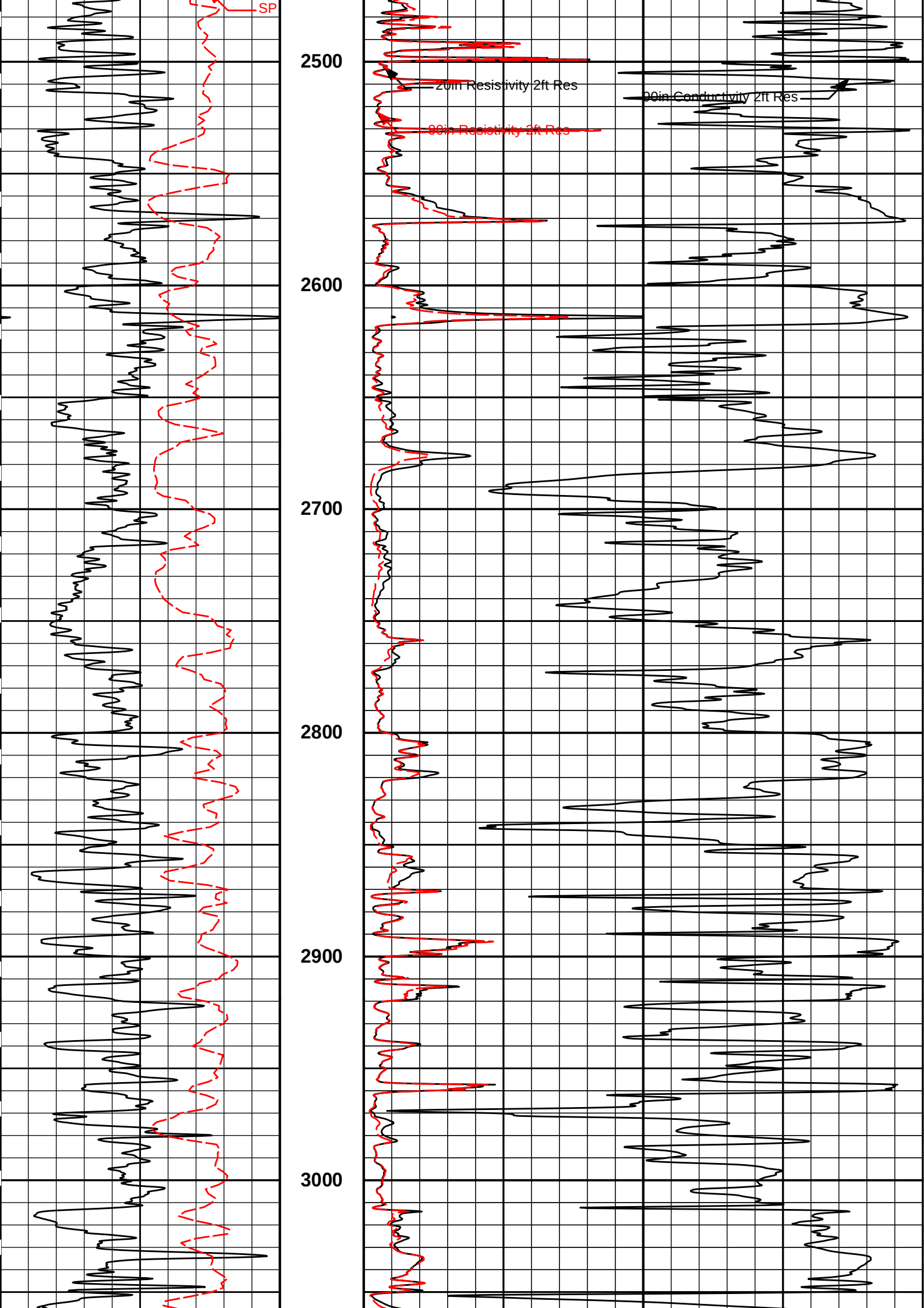
Plot Time: 03-Oct-18 19:00:09
Plot Range: 1750 ft to 4915.67 ft
Data: BEREX_LENA_MAI\Well Based\DAQ-0001-002
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_2_main

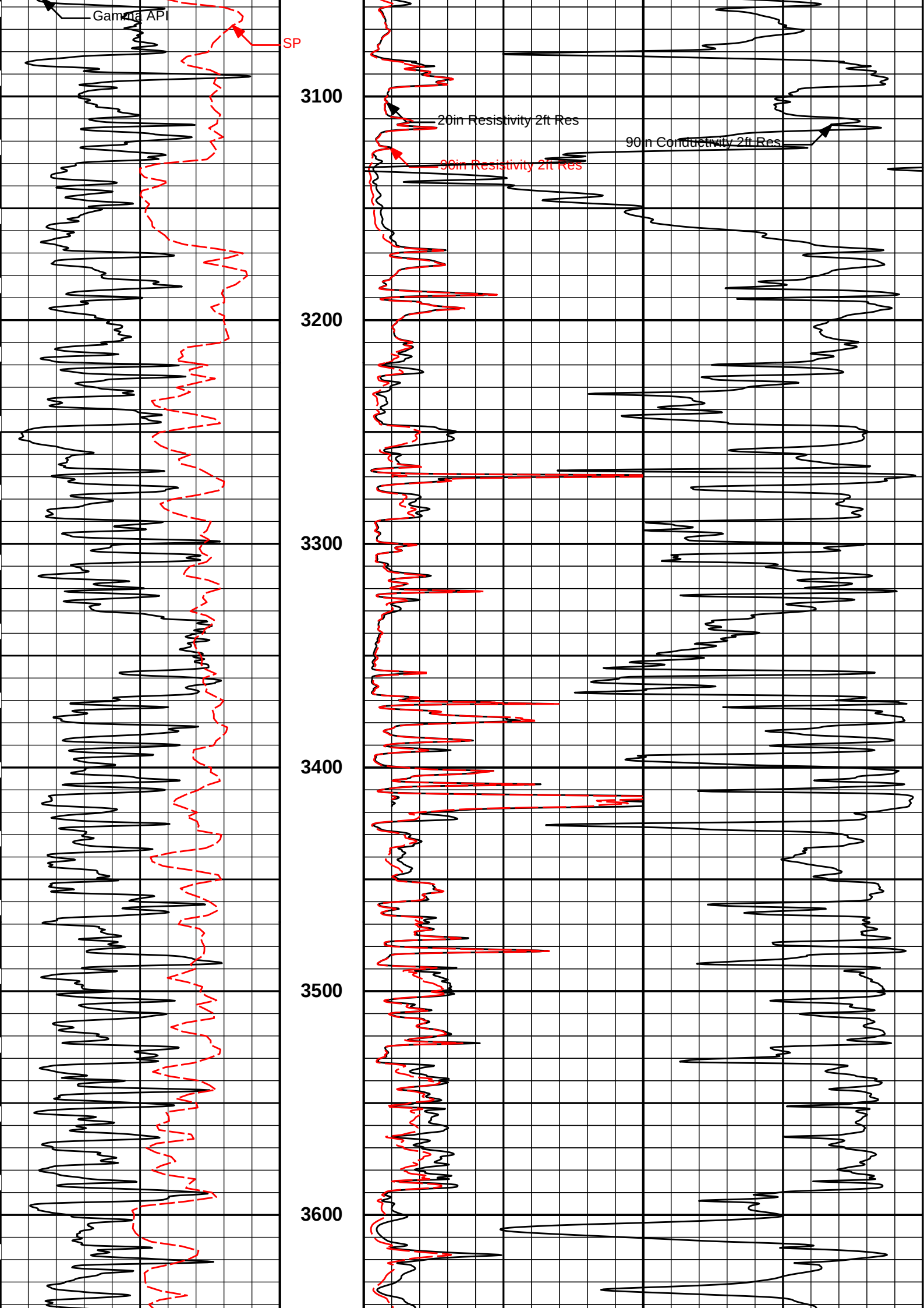
2 INCH MAIN LOG

2 INCH MAIN LOG




1900
2000
2100
2200
2300
2400
20in Resistivity 2ft Res
90in Conductivity 2ft Res
90in Resistivity 2ft Res
Gamma API


SP
2500
20in Resistivity 2ft Res
90in Resistivity 2ft Res
90in Conductivity 2ft Res
2600
2700
2800
2900
3000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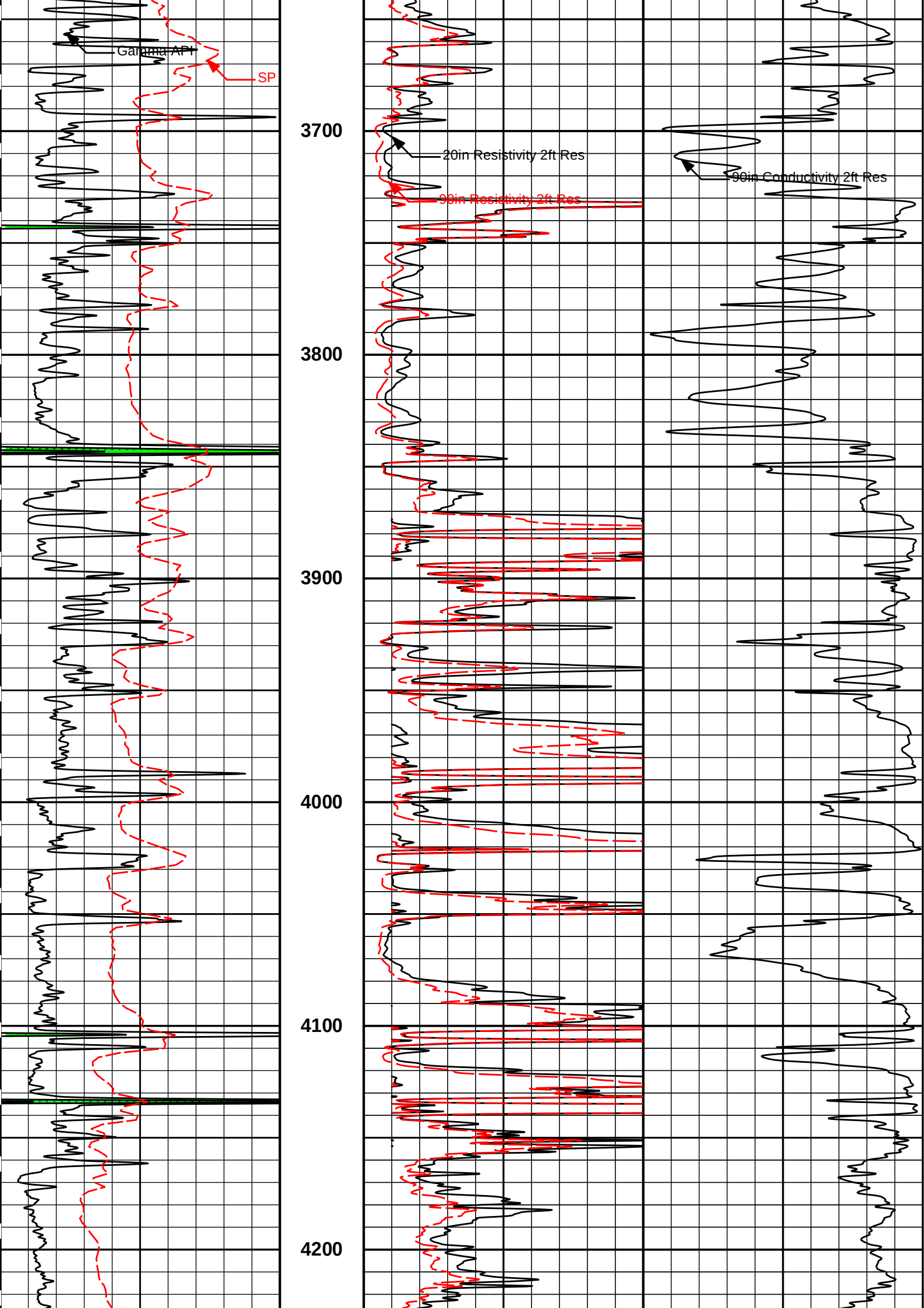
90in Conductivity 2ft Res
90in Resistivity 2ft Res
3200
3300
3400
3500
3600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SP
3700
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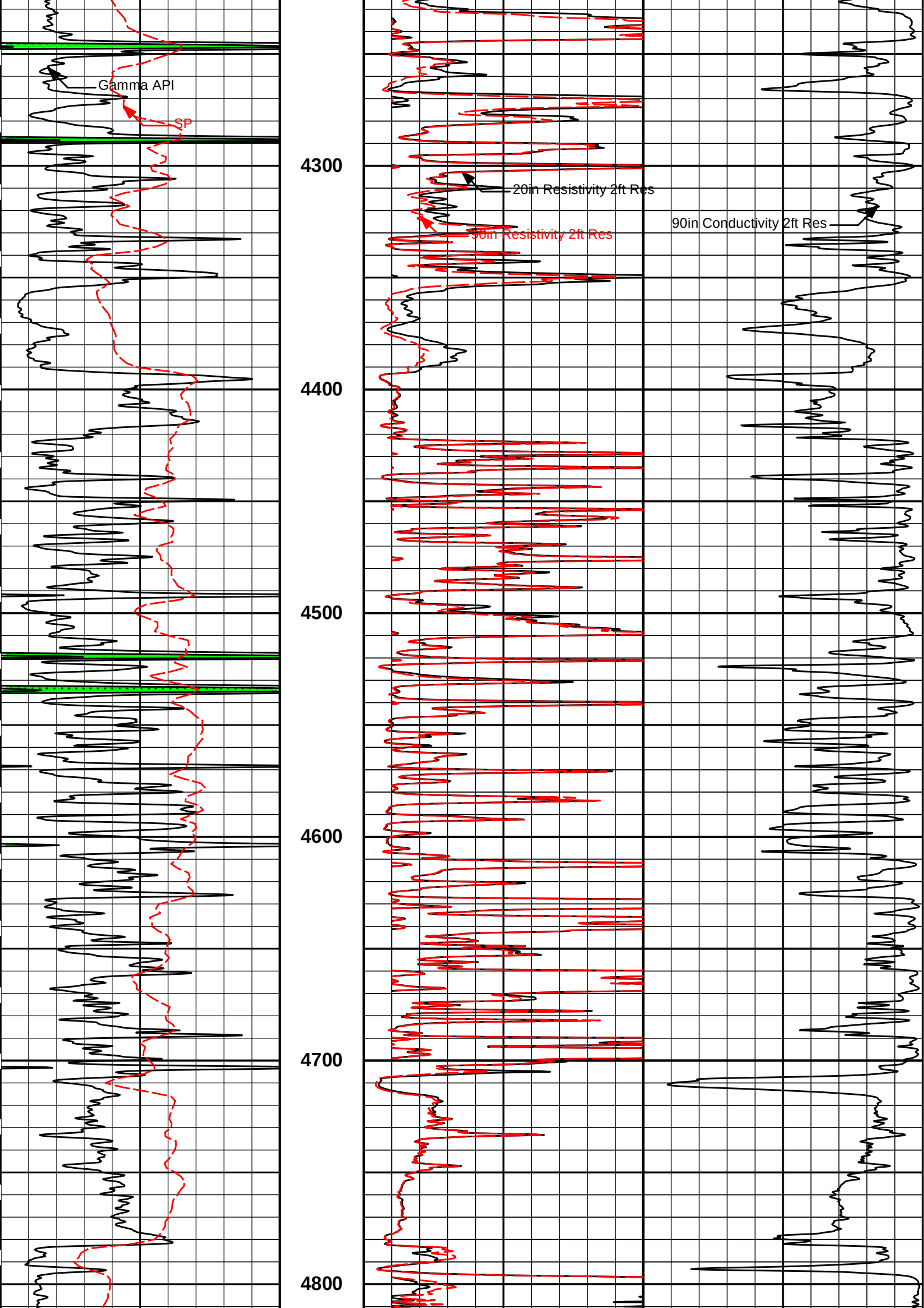
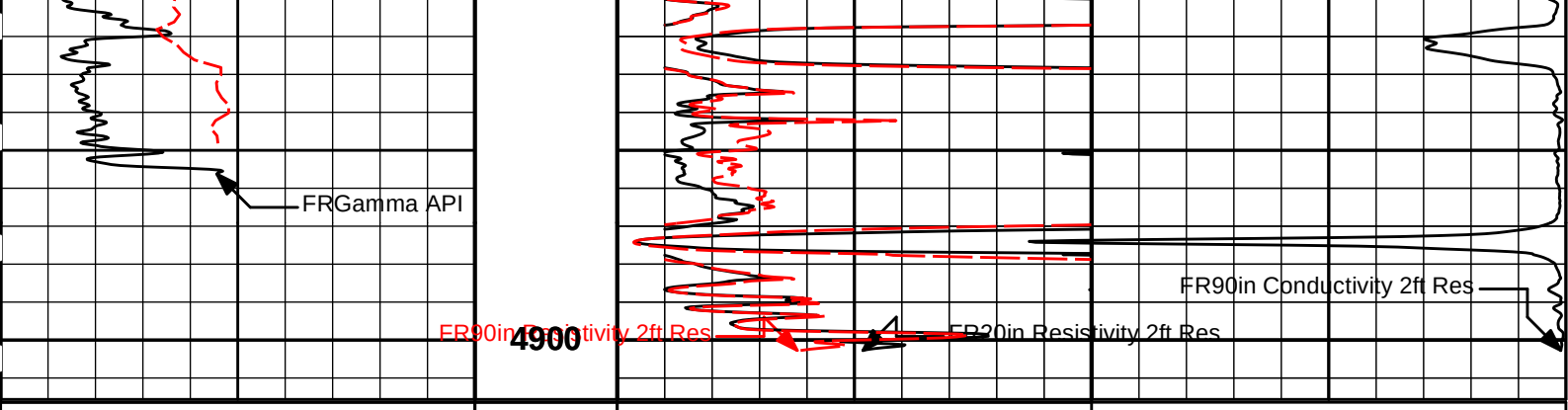
90in Resistivity 2ft Res
90in Conductivity 2ft Res
3800
3900
4000
4100
4200


Gamma API
SP
4300
20in Resistivity 2ft Res
90in Resistivity 2ft Res
90in Conductivity 2ft Res
4400
4500
4600
4700
4800



0 Gamma API 150	1 : 600 ft	0 20in Resistivity 2ft Res 50
api		ohm-metre
SP		0 90in Resistivity 2ft Res 50
-]20[+		ohm-metre
		1000 90in Conductivity 2ft Res 0
		mmho per metre

HALLIBURTON

Plot Time: 03-Oct-18 19:00:11
Plot Range: 1750 ft to 4915.67 ft
Data: BEREX_LENA_MAI\Well Based\DAQ-0001-002\
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_2_main

2 INCH MAIN LOG

2 INCH MAIN LOG

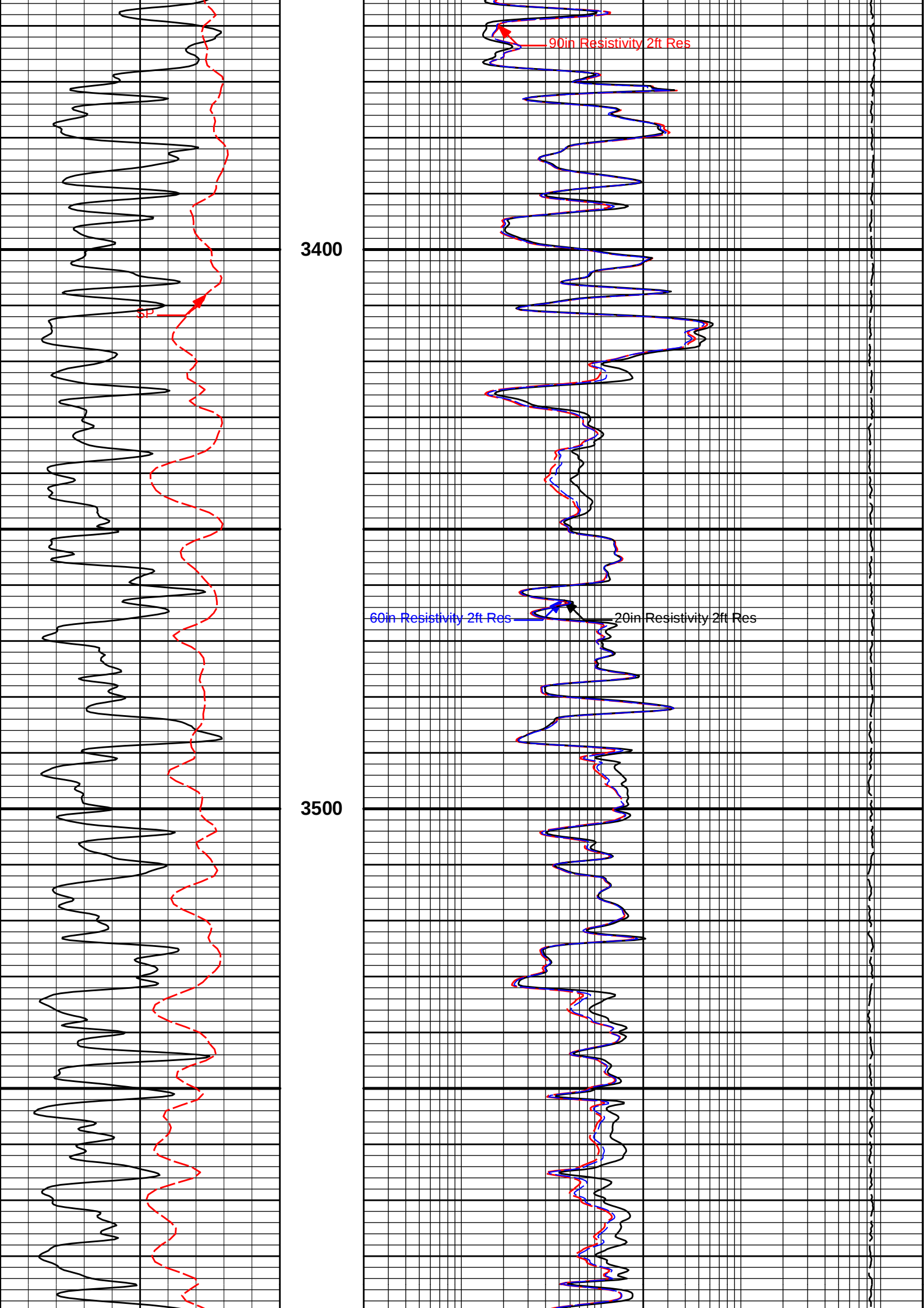
HALLIBURTON

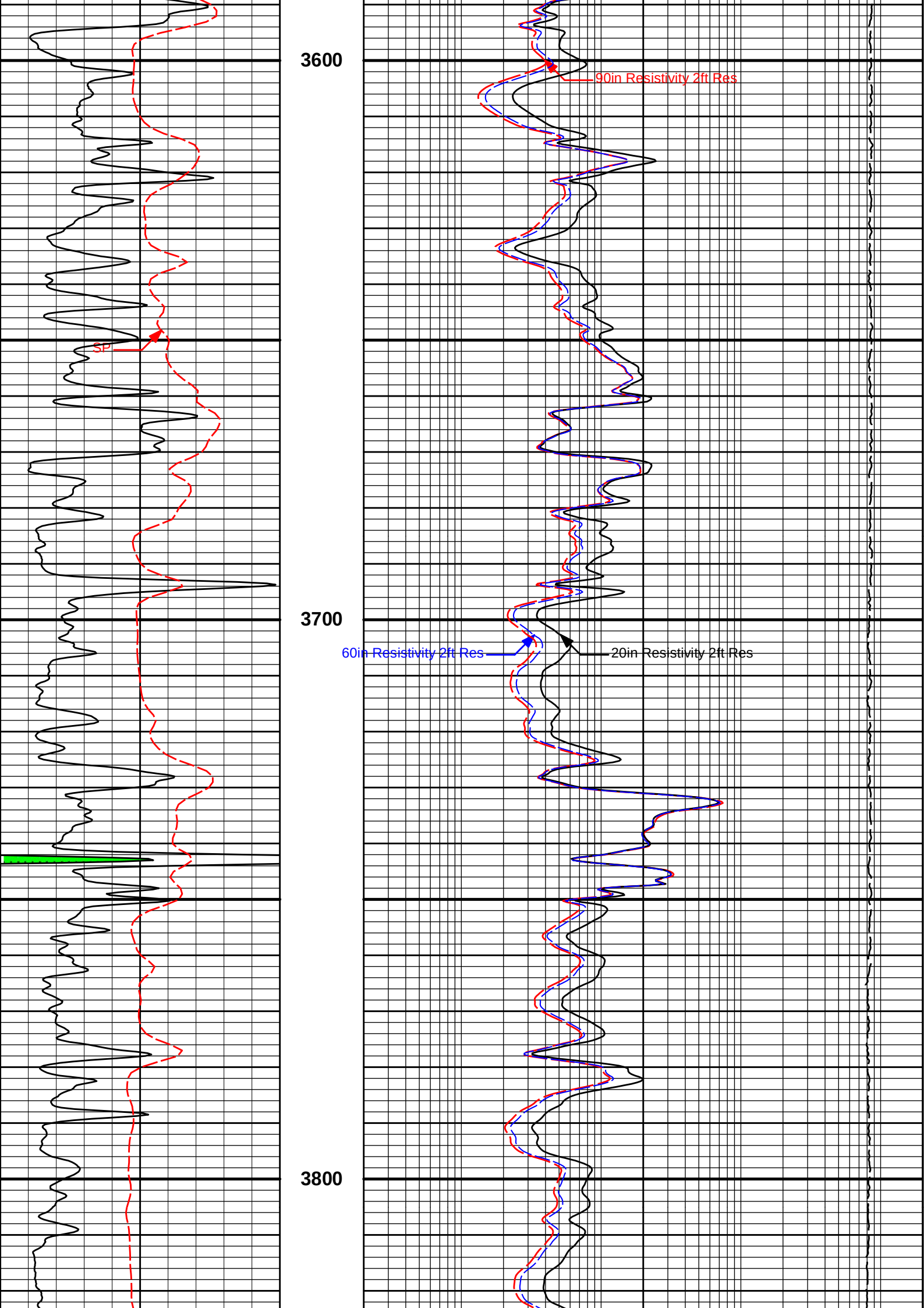
Plot Time: 03-Oct-18 19:00:11
Plot Range: 3350 ft to 4915.67 ft
Data: BEREX_LENA_MAI\Well Based\DAQ-0001-002\
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_5inch_main

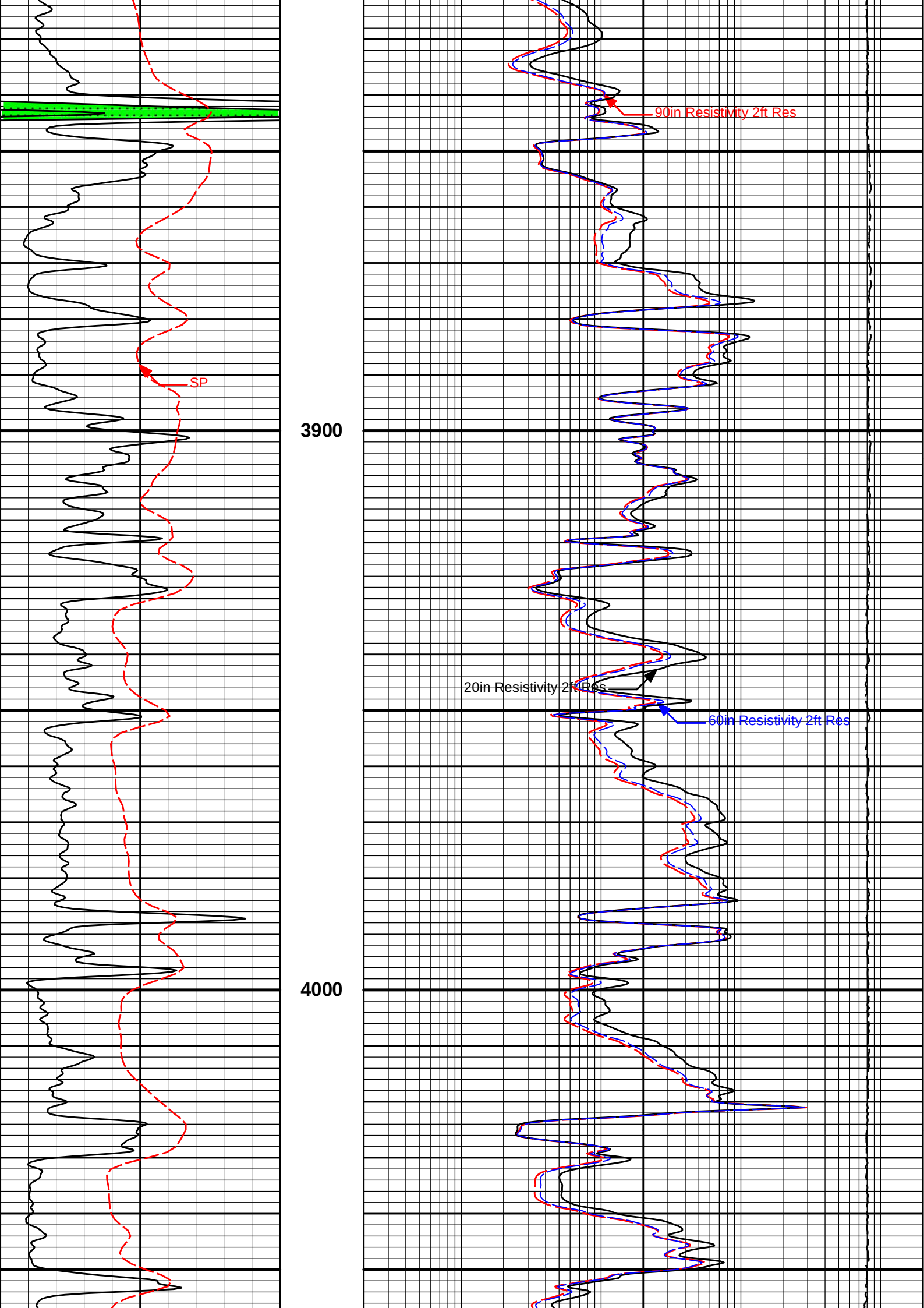
5 INCH MAIN LOG

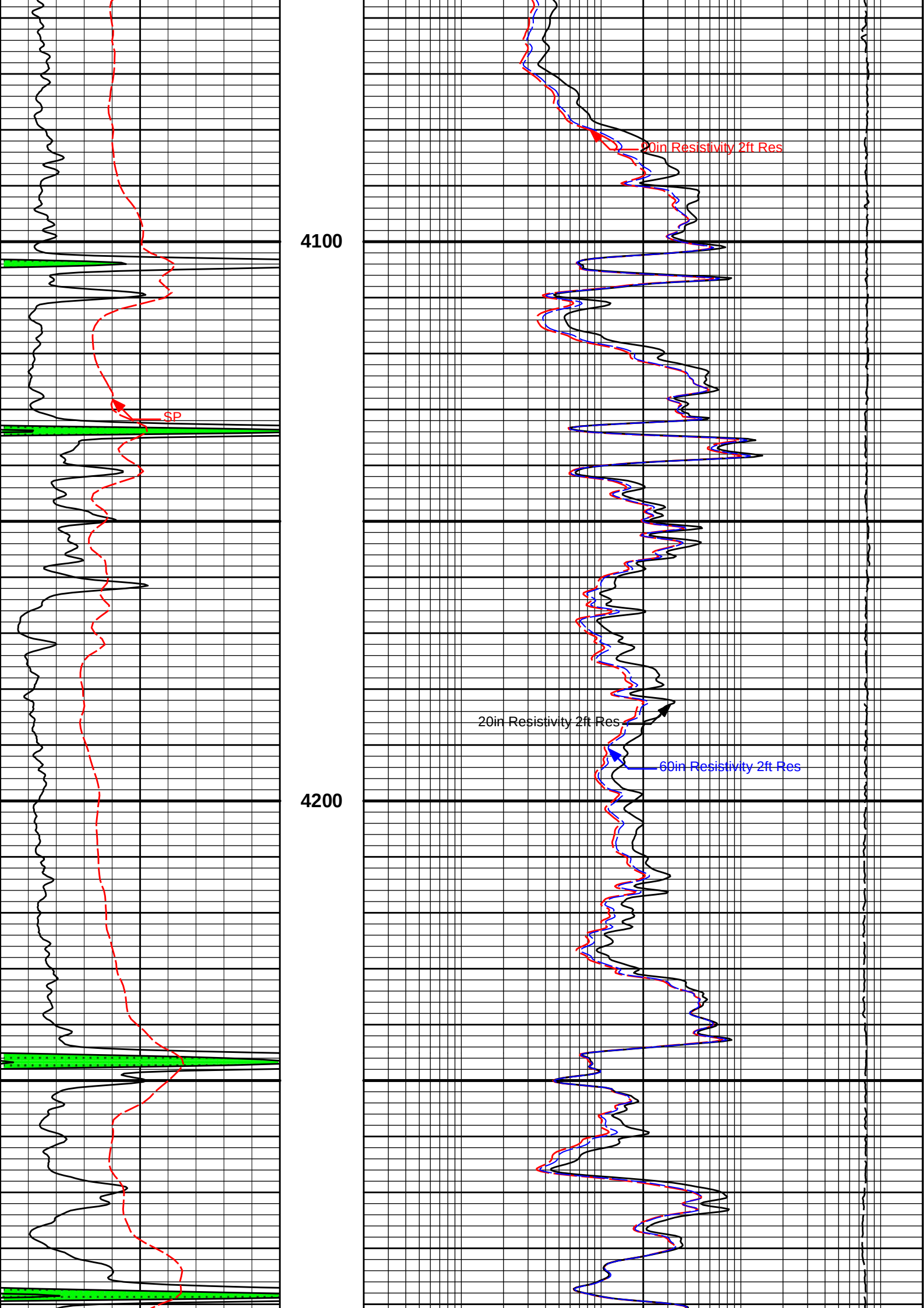
5 INCH MAIN LOG

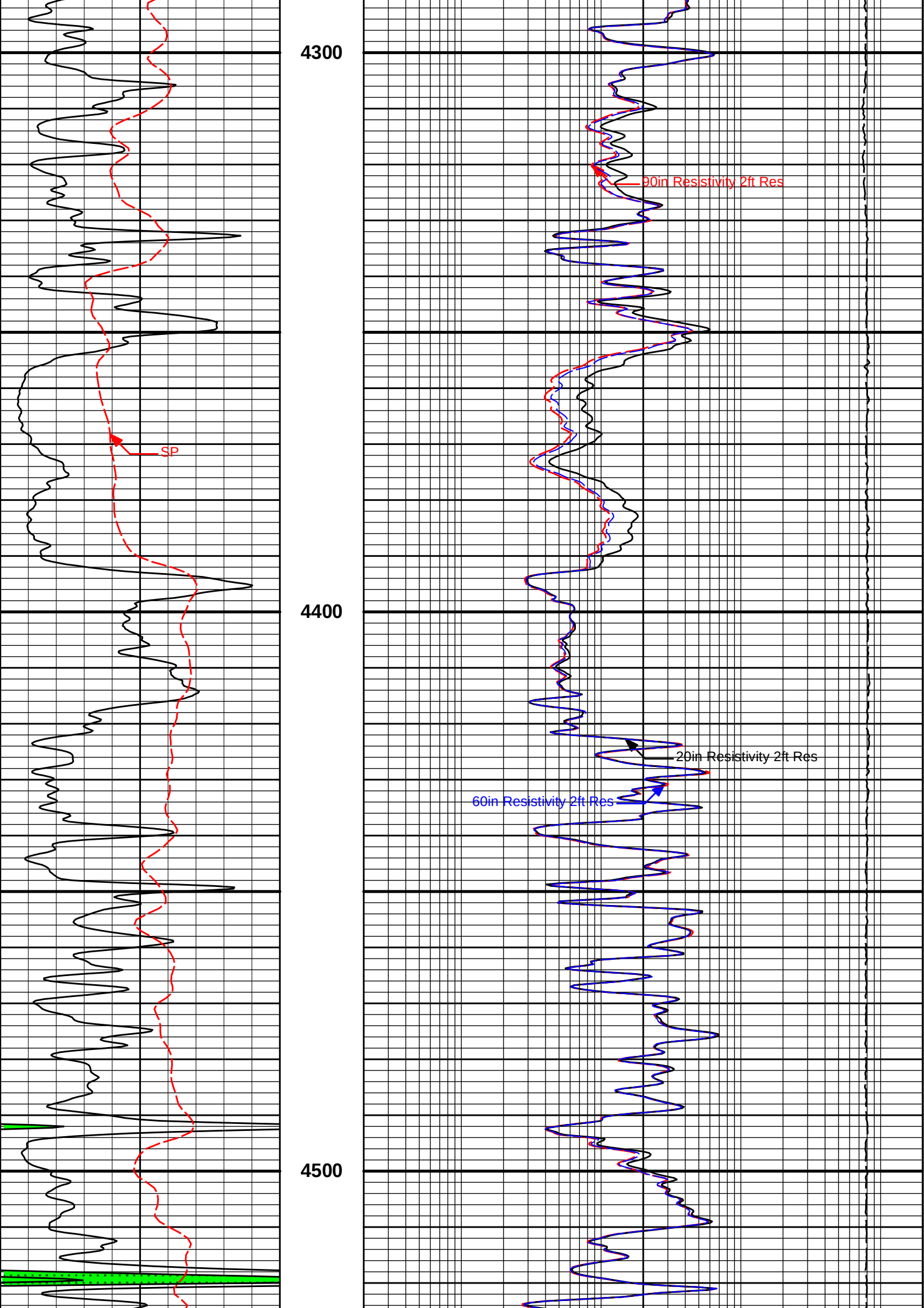
	0.2 20in Resistivity 2ft Res 2000
	ohmm
	0.2 60in Resistivity 2ft Res 2000
	ohmm
SP	0.2 90in Resistivity 2ft Res 2K
-]20[+	ohmm
0 Gamma API 150	15K Tension 0
api	pounds

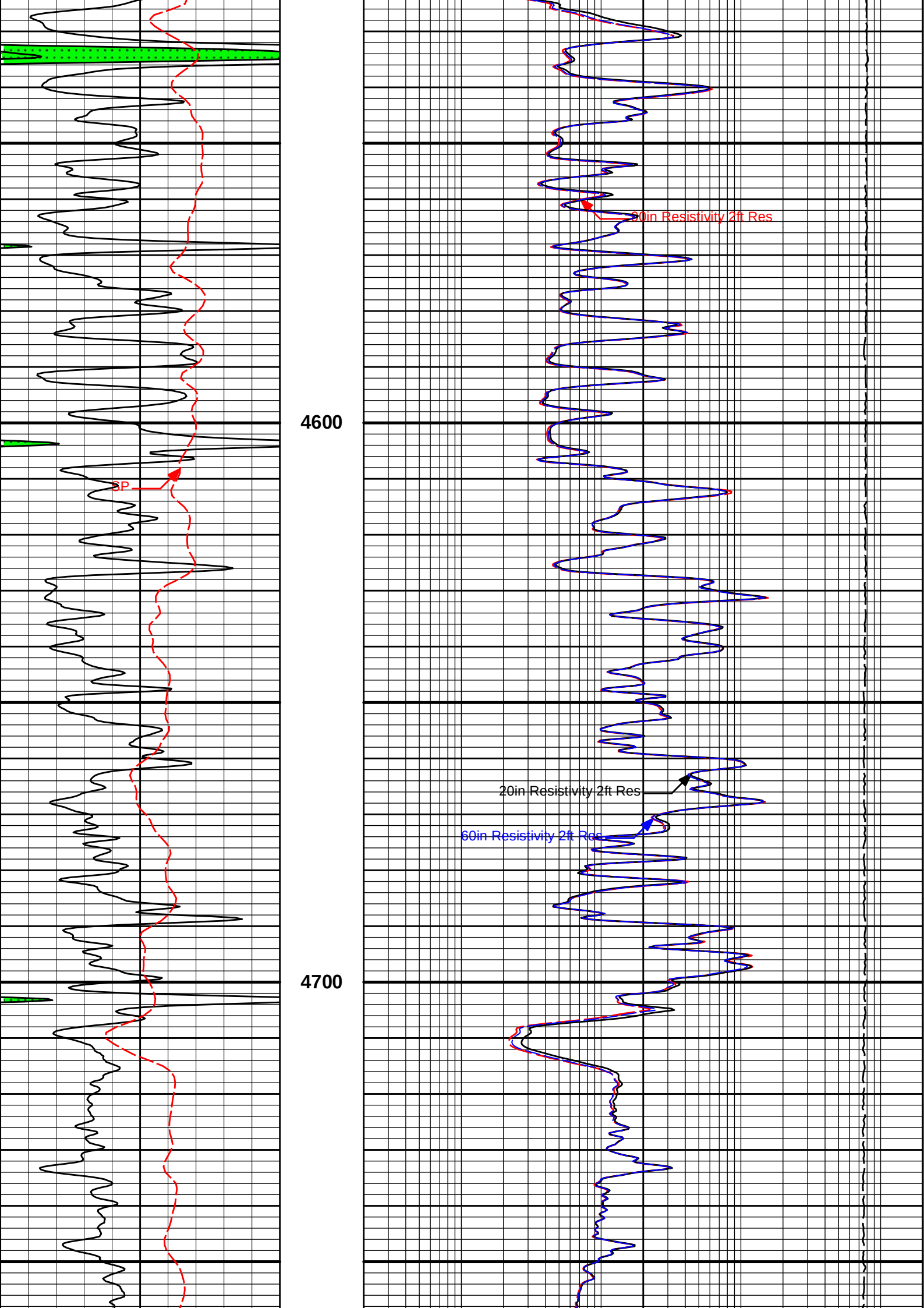

90in Resistivity 2ft Res
3400
SP
60in Resistivity 2ft Res
20in Resistivity 2ft Res
3500

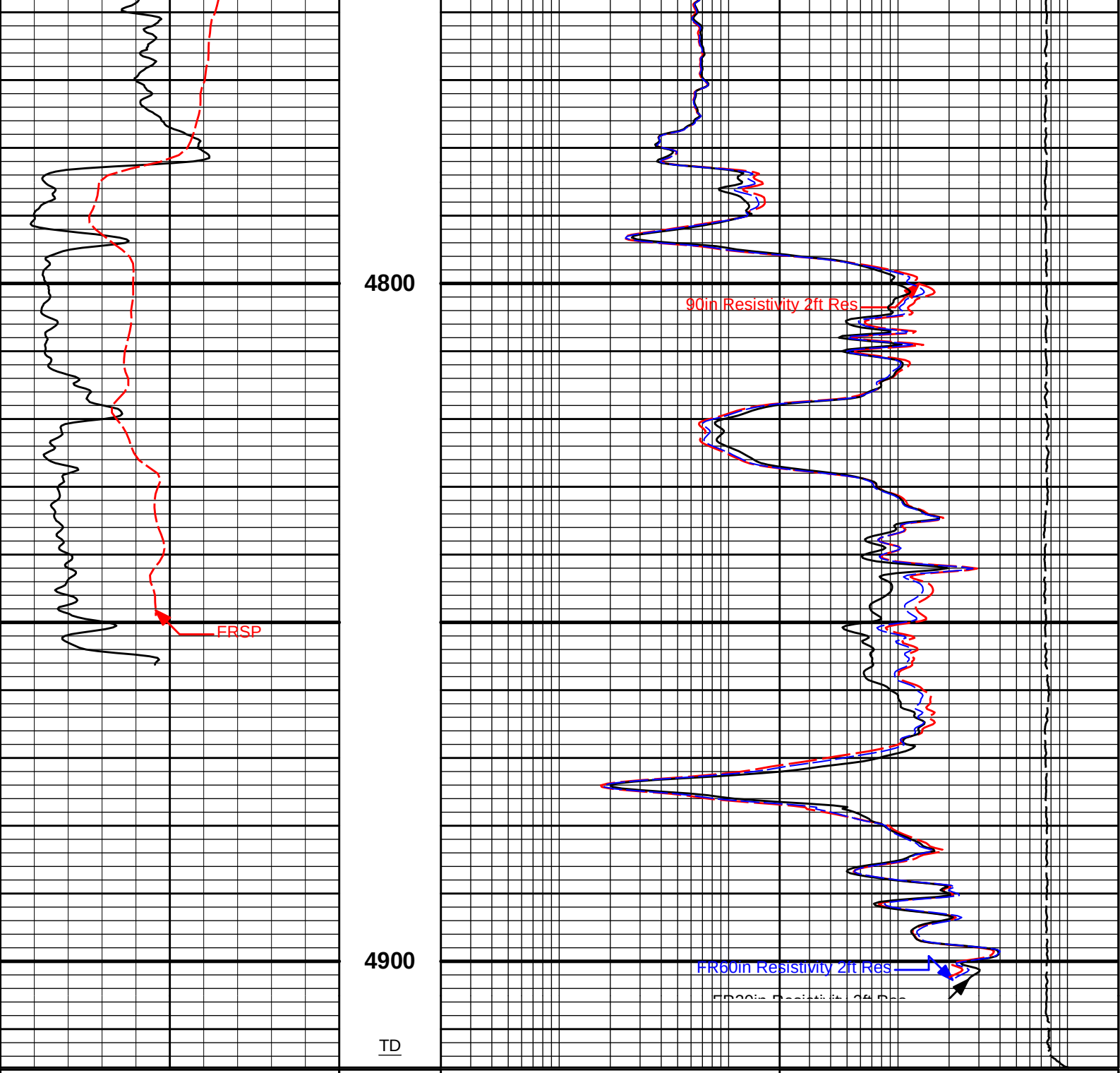

3600
3700
3800
90in Resistivity 2ft Res
SP
60in Resistivity 2ft Res
20in Resistivity 2ft Res


SP
90in Resistivity 2ft Res
20in Resistivity 2ft Res
60in Resistivity 2ft Res
3900
4000


20in Resistivity 2ft Res
4100
SP
20in Resistivity 2ft Res
60in Resistivity 2ft Res
4200


4300
4400
4500
SP
90in Resistivity 2ft Res
20in Resistivity 2ft Res
60in Resistivity 2ft Res


4600
4700
SP
90in Resistivity 2ft Res
20in Resistivity 2ft Res
60in Resistivity 2ft Res



0	Gamma API	150
	api	
	SP	
	-]20[+	
15K	Tension	0
	pounds	
0.2	90in Resistivity 2ft Res	2K
	ohmm	
0.2	60in Resistivity 2ft Res	2000
	ohmm	
0.2	20in Resistivity 2ft Res	2000
	ohmm	

HALLIBURTON

Plot Time: 03-Oct-18 19:00:13
Plot Range: 3350 ft to 4915.67 ft
Data: BEREX_LENA_MAI\Well Based\DAQ-0001-002\
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_5inch_main

5 INCH MAIN LOG

5 INCH MAIN LOG

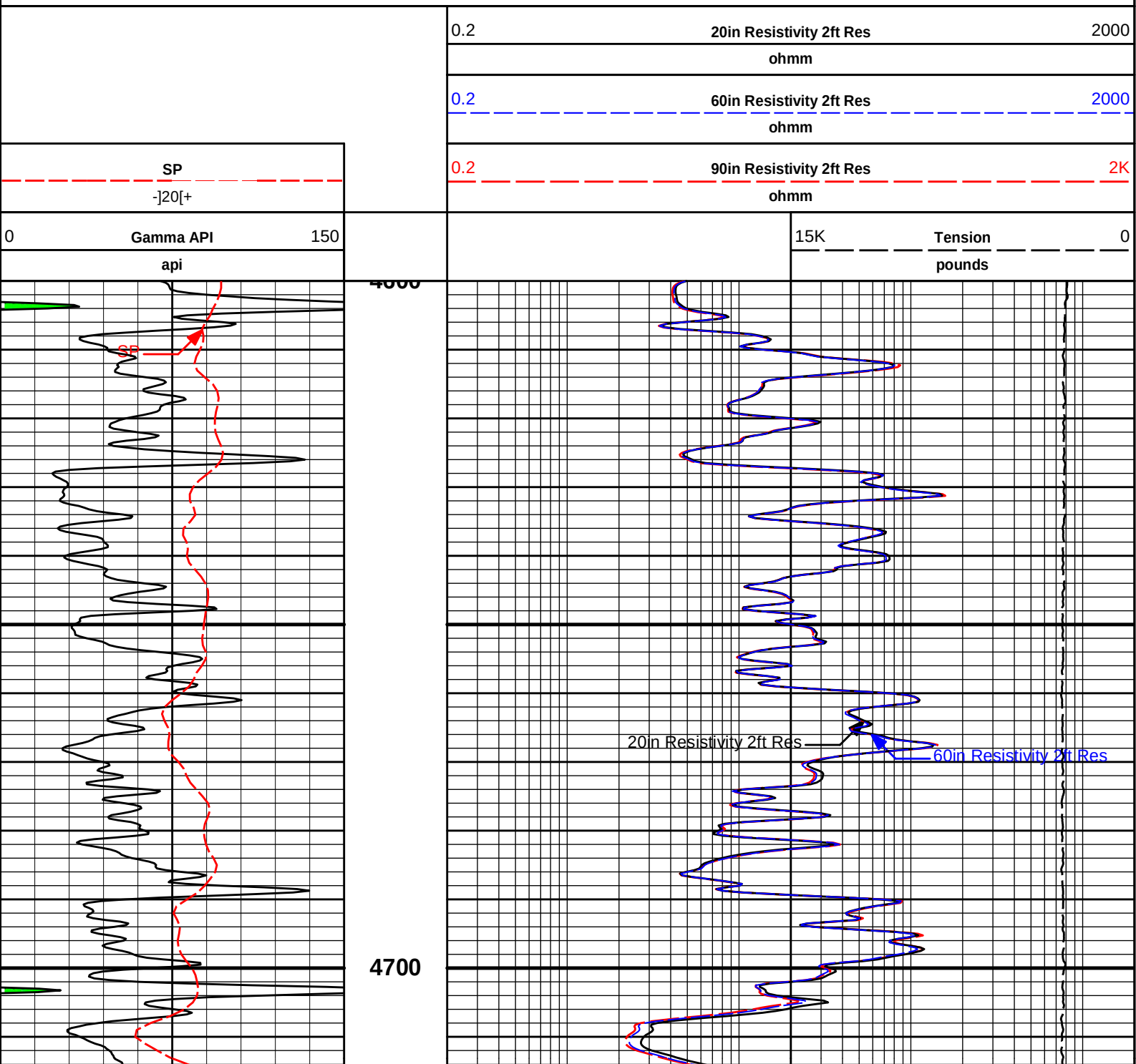
5 INCH MAIN LOG

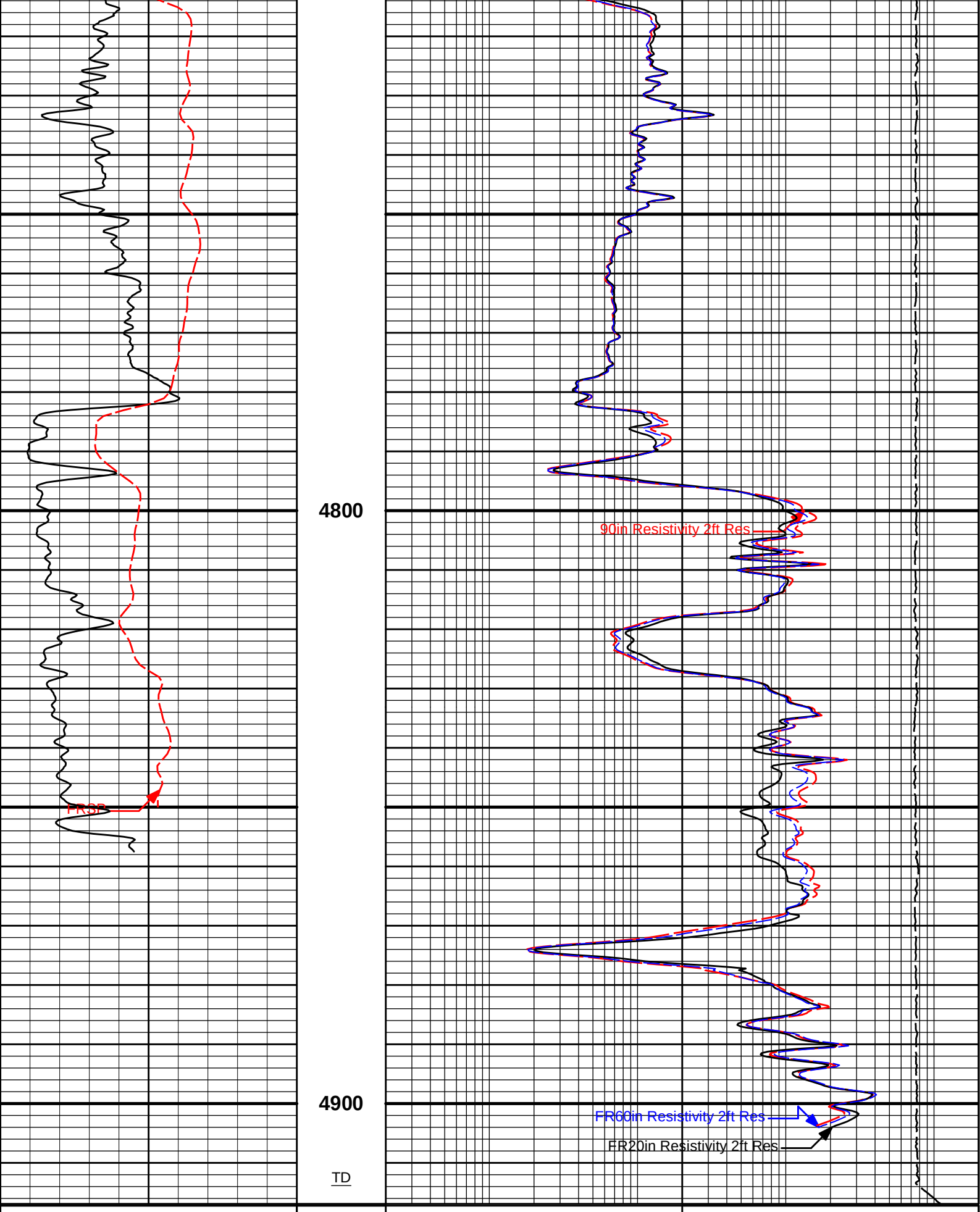
HALLIBURTON

Plot Time: 03-Oct-18 19:00:13
Plot Range: 4600 ft to 4916.92 ft
Data: BEREX_LENA_MAI\Well Based\REPEAT\
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_5inch_main

REPEAT SECTION

REPEAT SECTION





0	**Gamma API**	150
	api	
	SP	
	-]20[+	
15K	**Tension**	0
	pounds	
0.2	**90in Resistivity 2ft Res**	2K
	ohmm	
0.2	**60in Resistivity 2ft Res**	2000
	ohmm	

0.2	20in Resistivity 2ft Res	2000
	ohmm	

HALLIBURTON

Plot Time: 03-Oct-18 19:00:14
Plot Range: 4600 ft to 4916.92 ft
Data: BEREX_LENA_MAI\Well Based\REPEAT\
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_5inch_main

REPEAT SECTION

REPEAT SECTION

HALLIBURTON

CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name:	**Depth Panel - 12345678**	**Reference Calibration Date:**	**27-Sep-18 12:42:20**
Engineer:	**SEAN WOLTEMATH**	**Calibration Date:**	**28-Sep-18 12:48:18**
Software Version:	**WL INSITE R5.8.9 (Build 6)**	**Calibration Version:**	**1**

SURFACE TENSION LOAD CELL

Measurement	Load Cell Value	Measurement	Calibrated	Units
Low	10173.27	12.23	0.00	lbs
High	17562.87	7941.31	7830.00	lbs

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name:	**RWCH - 12345678**	**Reference Calibration Date:**	**28-Sep-18 12:50:19**
Engineer:	**WHITLOCK**	**Calibration Date:**	**02-Oct-18 05:08:35**
Software Version:	**WL INSITE R5.8.9 (Build 6)**	**Calibration Version:**	**1**

DOWNHOLE LOAD CELL

Measurement	Tool Value	Measurement	Calibrated	Units
Low	-336.49	-3.58	0.00	lbs
High	10973.20	1278.61	1500.00	lbs

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11013113**	**Reference Calibration Date:**	**02-May-18 11:20:36**
Engineer:	**WHITLOCK**	**Calibration Date:**	**05-Aug-18 09:58:00**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB-79
Calibrator API Reference:222.00 api
Equivalent Calibrator API Reference:225.9 api

Measurement	Measured	Calibrated	Units
Background	26.4	26.2	api
Background + Calibrator	253.6	252.1	api
Calibrator	227.2	225.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11013113**	**Reference Calibration Date:**	**05-Aug-18 09:58:00**
Engineer:	**WHITLOCK**	**Calibration Date:**	**30-Sep-18 10:17:04**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB-79

Calibrator API Reference:222.00 api

Equivalent Calibrator API Reference:225.9 api

Field Verification	Shop	Field	Units
Background	26.2	13.5	api
Background + Calibrator	252.1	246.2	api
Calibrator	225.9	232.7	api

Shop	Field	Difference	Tolerance
225.9	232.7	-6.8	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11019641 **Reference Calibration Date:** 04-Aug-18 12:03:14

Engineer: SCHLIEM **Calibration Date:** 04-Aug-18 12:26:27

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Logging Source S/N: DSN-436

Tank Serial Number: EL RENO HWT

Reference value assigned to Tank: 56.100

Snow Block S/N: 12156883

Calibration Tank Water Temperature: 89 degF

Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.97922	0.97742	0.900 - 1.100

WATER TANK SUMMARY (Horizontal Water Tank)				
Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decp):	0.2364	0.2358	0.0006	+/- 0.0020
Calibrated Ratio:	10.5794	10.5599	0.019	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0667	0.02000 - 0.09000

PASS/FAIL SUMMARY	
Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name: DSNT - 11019641 **Reference Calibration Date:** 04-Aug-18 12:26:27

Engineer: WHITLOCK **Calibration Date:** 30-Sep-18 09:21:36

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Logging Source S/N: DSN-436

Snow Block S/N: 12156883

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0667	0.0665	-0.0002	+/- 0.0150

PASS/FAIL SUMMARY	
Block Change Check:	Passed
Snow Block Stat Check:	Passed

Temperature Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	**SDLT - 10960494**	**Reference Calibration Date:**	**01-Jan-70 00:00:00**
Engineer:	**WHITLOCK**	**Calibration Date:**	**08-Jun-18 16:19:27**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**Calibration Version:**	**1**
Host Tool Name:	**DSNT - 11019641**		

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-3977.11	-3977.11	-7000.00 - -1000.00
Pad Gain	0.0003897	0.0003897	0.0002000 - 0.0006000
Arm Offset	-3073.13	-3073.13	-5000.00 - 3000.00
Arm Gain	0.0005210	0.0005210	0.000300 - 0.000700
Arm Power	-0.000005094	-0.000005094	-0.000010000 - 0.000010000

The ring diameter is computed from: DIAMETER = PAD EXTENSION + ARM EXTENSION + TOOL DIAMETER

Tool Diameter: 4.50 in

CALIBRATION RINGS

Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	Control Limit On New Value
PAD EXTENSION:				
Small Ring (in)	2.00	2.00	0.00	+/- 0.20
Medium Ring (in)	3.75	3.75	0.00	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.50	6.50	0.00	+/- 0.20
Medium Ring (in)	8.25	8.25	0.00	+/- 0.20
Large Ring (in)	15.00	15.00	0.00	+/- 0.20

PASS/FAIL SUMMARY

Calibration-Coefficients Range Check:	Passed
Ring-Measurement Check:	Passed

PASS/FAIL SUMMARY

Calibration-Coefficients Range Check:	Passed

SDLT CALIPER FIELD CALIBRATION

Tool Name:	**SDLT - 10960494**	**Reference Calibration Date:**	**08-Jun-18 16:19:27**
Engineer:	**WHITLOCK**	**Calibration Date:**	**30-Sep-18 09:40:30**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**Calibration Version:**	**1**

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.79	0.04	+/- 0.10
Ring Diameter	8.25	8.25	-0.00	+/- 0.15

PASS/FAIL SUMMARY

Pad Extension Check:	Passed
Diameter Check:	Passed

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name:	**ACRt Sonde - 11830728**	**Reference Calibration Date:**	**23-Feb-18 10:15:37**
Engineer:	**WHITLOCK**	**Calibration Date:**	**06-Jun-18 13:24:46**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**Calibration Version:**	**1**
Host Tool Name:	**ACRt Instrument - 11830684**		

TYPICAL GAIN RANGE

Subarray	R12KHz	R36KHz	R72KHz

	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0279	1.05	0.95	1.0076	1.05	0.95	0.9997	1.05
A2 (50")	0.95	1.0334	1.05	0.95	1.0139	1.05	0.95	1.0097	1.05
A3 (29")	0.95	1.0346	1.05	0.95	1.0146	1.05	0.95	1.0081	1.05
A4 (17")	0.95	1.0279	1.05	0.95	1.0063	1.05	0.95	1.0018	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0001	1.05	0.95	0.9950	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9869	1.05	0.95	0.9818	1.05

SONDE OFFSET

Subarray	R12KHz	R36KHz	R72KHz
	(mmho/m)	(mmho/m)	(mmho/m)
A1 (80")	0.315	-4.964	-5.711
A2 (50")	0.409	-3.450	-5.485
A3 (29")	-11.648	-3.720	-3.783
A4 (17")	-90.980	-28.724	-23.707
A5 (10")	N/A	-76.200	-37.537
A6 (6")	N/A	280.488	149.005

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.82	1.3
36K	1.0	1.80	2.0
72K	1.0	1.05	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	0.99	1.05

PASS/FAIL SUMMARY

GAIN RANGE CHK	PASS
SONDE OFFSET CHK	PASS

TOOL OK TO LOG

QUALITY CHECK SHOP CALIBRATION

Tool Name: ACRt Sonde - 11830728
Engineer: WHITLOCK
Software Version: WL INSITE R5.6.3 (Build 4)
Host Tool Name: ACRt Instrument - 11830684
Reference Calibration Date: 23-Feb-18 10:21:17
Calibration Date: 06-Jun-18 14:01:20
Calibration Version: 1

STANDARD DEVIATIONS

	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A2 (50")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A3 (29")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A4 (17")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A5 (10")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A6 (6")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass

AVERAGES

	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.006	> -0.500	Pass
A2 (50")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.005	> -0.500	Pass
A3 (29")	-0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.003	> -0.500	Pass
A4 (17")	-0.002	> -0.500	Pass	-0.006	> -0.500	Pass	-0.022	> -0.500	Pass

A5 (10")	-0.010	> -0.500	Pass	-0.017	> -0.500	Pass	-0.036	> -0.500	Pass
A6 (6")	0.014	< 0.500	Pass	0.063	< 0.500	Pass	0.138	< 0.500	Pass

GAIN TOLERANCE

R12KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-213173456.000	-213653808.000	480352.000	10682690.400	Pass
A2 (50")	-205651744.000	-206143280.000	491536.000	10307164.000	Pass
A3 (29")	-200817664.000	-201197776.000	380112.000	10059888.800	Pass
A4 (17")	-200193568.000	-200629872.000	436304.000	10031493.600	Pass
A5 (10")	-200252336.000	-200678960.000	426624.000	10033948.000	Pass
A6 (6")	-199820688.000	-200219344.000	398656.000	10010967.200	Pass

R36KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	48114080.000	48477272.000	363192.000	2423863.600	Pass
A2 (50")	33966292.000	34324412.000	358120.000	1716220.600	Pass
A3 (29")	28032378.000	28346680.000	314302.000	1417334.000	Pass
A4 (17")	27853682.000	28207516.000	353834.000	1410375.800	Pass
A5 (10")	27373208.000	27716930.000	343722.000	1385846.500	Pass
A6 (6")	26035236.000	26360300.000	325064.000	1318015.000	Pass

R72KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-92927656.000	-93022904.000	95248.000	4651145.200	Pass
A2 (50")	-90501024.000	-90617752.000	116728.000	4530887.600	Pass
A3 (29")	-88192472.000	-88292832.000	100360.000	4414641.600	Pass
A4 (17")	-88397088.000	-88515880.000	118792.000	4425794.000	Pass
A5 (10")	-86957704.000	-87076952.000	119248.000	4353847.600	Pass
A6 (6")	-87976216.000	-88080696.000	104480.000	4404034.800	Pass

PASS/FAIL SUMMARY

Std Deviation Verification	Pass
Average Verification	Pass
Gain Tolerance Verification	Pass

MICRO LOG SHOP CALIBRATION

Tool Name:	**Microlog Pad - 10960494**	**Reference Calibration Date:**	**08-Jun-18 16:08:54**
Engineer:	**WHITLOCK**	**Calibration Date:**	**30-Sep-18 13:47:51**
Software Version:	**WL INSITE R5.8.9 (Build 6)**	**Calibration Version:**	**1**
Host Tool Name:	**DSNT - 11019641**		

CALIBRATION COEFFICIENT SUMMARY

Measurement	Micro Log Normal		Micro Log Lateral		
	Measured	Calibrated	Measured	Calibrated	Units
Tool Zero	-0.07	-0.14	-0.00	-0.01	ohmm
Calibration Point #1	0.07	0.00	0.00	0.00	ohmm
Calibration Point #2	20.01	20.00	19.95	20.00	ohmm
Internal Reference	19.84	19.83	19.92	19.97	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	-0.08	0.35	V
Calibration Point #1	37.72	2.09	V
Calibration Point #2	5356.95	6956.77	V

Internal Reference	5312.51	6945.81	V

MICRO LOG FIELD CHECK

Tool Name:	**Microlog Pad - 10960494**	**Reference Calibration Date:**	**30-Sep-18 13:47:51**
Engineer:	**WHITLOCK**	**Calibration Date:**	**30-Sep-18 13:49:10**
Software Version:	**WL INSITE R5.8.9 (Build 6)**	**Calibration Version:**	**1**

Measurement	Micro Log Normal		Micro Log Lateral		
	Shop	Field	Shop	Field	Units
Tool Zero	-0.14	-0.14	-0.01	-0.01	ohmm
Internal Reference	19.83	19.86	19.97	19.99	ohmm

Summary				
Signal	Shop	Field	Difference	Tolerence
Microlog Normal	19.83	19.86	-0.03	+/- 0.80
Microlog Lateral	19.97	19.99	-0.02	+/- 0.80

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name:	**SDLT Pad - 11213308**	**Reference Calibration Date:**	**17-Sep-18 12:07:25**
Engineer:	**WHITLOCK**	**Calibration Date:**	**17-Sep-18 12:30:06**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**Calibration Version:**	**1**

Logging Source S/N: 5475GW

Aluminum Block S/N: EL RENO Density: 2.581g/cc Pe: 3.170

Magnesium Block S/N: EL RENO Density: 1.687g/cc Pe: 2.594

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0089	1.0095	0.90 - 1.10
Near Dens Gain	0.9949	0.9972	0.90 - 1.10
Near Peak Gain	1.0098	1.0259	0.90 - 1.10
Near Lith Gain	1.0052	1.0142	0.90 - 1.10
Far Bar Gain	1.0078	1.0061	0.90 - 1.10
Far Dens Gain	0.9950	0.9953	0.90 - 1.10
Far Peak Gain	0.9901	0.9911	0.90 - 1.10
Far Lith Gain	0.9745	0.9764	0.90 - 1.10
Near Bar Offset	0.0471	0.0438	NONE
Near Dens Offset	0.1758	0.1544	NONE
Near Peak Offset	0.0270	-0.1077	NONE
Near Lith Offset	0.0345	-0.0412	NONE
Far Bar Offset	-0.0195	-0.0036	NONE
Far Dens Offset	0.1103	0.1086	NONE
Far Peak Offset	0.1339	0.1248	NONE
Far Lith Offset	0.2115	0.1964	NONE
Near Bar Background	945.62	947.60	700 - 1450
Near Dens Background	315.82	314.50	230 - 480
Near Peak Background	136.57	137.87	100 - 210
Near Lith Background	168.89	168.30	125 - 260
Far Bar Background	482.51	480.15	450 - 900
Far Dens Background	193.40	193.79	175 - 345
Far Peak Background	78.35	78.65	70 - 140
Far Lith Background	80.88	79.56	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				

Density (g/cc)	1.685	1.687	0.002	+/- 0.015
Pe	2.557	2.563	0.006	+/- 0.150
ALUMINUM				
Density (g/cc)	2.580	2.580	-0.000	+/- 0.01500
Pe	3.115	3.136	0.021	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0003	+/- 0.0110	0.0015	+/- 0.0140
Magnesium Block	0.0001	+/- 0.0110	-0.0007	+/- 0.0140
Aluminum Block	-0.0000	+/- 0.0110	-0.0006	+/- 0.0140
Resolution	9.24	6.00 - 11.50	9.28	6.00 - 11.50
Internal Verifier(B+D+P+L)	1568	1200 - 2700	832	800 - 1700

PASS/FAIL SUMMARY

Background Quality Check:	Passed
Background Range Check:	Passed
Background Resolution Check:	Passed
Background Verification Check:	Passed
Magnesium Quality Check:	Passed
Aluminum Quality Check:	Passed
Gains Check:	Passed
Changes in Calibration Blocks:	Passed

SPECTRAL DENSITY FIELD CHECK

Tool Name: SDLT Pad - 11213308 **Reference Calibration Date:** 17-Sep-18 12:30:06

Engineer: WHITLOCK **Calibration Date:** 30-Sep-18 13:46:13

Software Version: WL INSITE R5.8.9 (Build 6) **Calibration Version:** 1

Pad Temperature: 75.2 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1568.269	1573.398	5.129	15.935
Far (B+D+P+L) cps	832.156	833.273	1.117	15.879
Near Resolution	9.24	9.43	0.190	0.50
Far Resolution	9.28	9.96	0.680	1.00

PASS/FAIL SUMMARY

Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
Depth Panel-12345678						
Tension Zero	0.00	----------	----------	0.00	----------	lbs
Tension Cal	7830.00	----------	----------	0.00	----------	lbs
RWCH-12345678						
DH Tension Zero	0.00	----------	----------	0.00	----------	lbs
DH Tension Cal	1500.00	----------	----------	0.00	----------	lbs
GTET-11013113						
Gamma Ray Calibrator	225.9	232.7	----------	-6.8	+/- 9.00	api
DSNT-11019641						

Snow-Block Porosity	0.0667	0.0665	----------	0.0002	+/- 0.0150	decp
SDLT-10960494						
Pad Extension	3.75	3.79	----------	-0.04	+/-0.10	in
Ring Diameter	8.25	8.25	----------	0.00	+/-0.15	in
ACRt Sonde-11830728						
Mud Cell	0.99	----------	----------	0	----------	ohm-m
Microlog Pad-10960494						
MicroLog Normal	19.83	19.86	----------	-0.03	+/-0.80	ohmm
MicroLog Lateral	19.97	19.99	----------	-0.02	+/-0.80	ohmm
SDLT Pad-11213308						
Near(B+D+P+L)	1568.269	1573.398	----------	-5.129	+/-15.935	cps
Far(B+D+P+L)	832.156	833.273	----------	-1.117	+/-15.879	cps

Data: BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\IDLE **Date: 03-Oct-18 10:30:28**

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PARAMETERS REPORT

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.100	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	0.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	0.700	ohmm
	SHARED	TRM	Temperature of Mud	75.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	5.500	in
	SHARED	CSTR	Compressive Strength	1000.00	psia
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	4911.00	ft
	SHARED	BHT	Bottom Hole Temperature	125.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	CBM Temperature Master Tool	GTET	
	SHARED	SOCI	Source of Casing Information	Parameters	
	SHARED	MSAL	Water-base mud filtrate salinity	0.00	ppm
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa / CrossPlot	AFAC	Archie A factor	0.6200	
	Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
	Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
	Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
	Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
	Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
	Rwa / CrossPlot	BHSM	Borehole Size Source Tool	SDLT	
	Rwa /	ROIN	Input for RO Calculation	Rwa	

CrossPlot				
GTET	GROK	Process Gamma Ray?	Yes	
GTET	GEOK	Process Gamma Ray EVR?	No	
GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
GTET	BHSM	Borehole Size Source Tool	SDLT	
DSNT	DNOK	Process DSN?	Yes	
DSNT	DEOK	Process DSN EVR?	No	
DSNT	NLIT	Neutron Lithology	Limestone	
DSNT	DNSO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
DSNT	DNTT	Temperature Correction Type	None	
DSNT	DPRS	DSN Pressure Correction Type	None	
DSNT	SHCO	View More Correction Options	No	
DSNT	UTVD	Use TVD for Gradient Corrections?	No	
DSNT	LHWT	Logging Horizontal Water Tank?	No	
DSNT	UCLA	Classic Neutron Parameter utilized?	No	
DSNT	BHSM	Borehole Size Source Tool	SDLT	
SDLT	CLOK	Process Caliper Outputs?	Yes	
Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
SDLT Pad	DNOK	Process Density?	Yes	
SDLT Pad	DNOK	Process Density EVR?	No	
SDLT Pad	CB	Logging Calibration Blocks?	No	
SDLT Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT Pad	DTWN	Disable temperature warning	No	
SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
SDLT Pad	BHSM	Borehole Size Source Tool	SDLT	
BSAT	MBOK	Compute BCAS Results?	Yes	
BSAT	FLLO	Frequency Filter Low Pass Value?	5000	Hz
BSAT	FLHI	Frequency Filter High Pass Value?	27000	Hz
BSAT	DTFL	Delta -T Pore Fluid	189.00	uspf
BSAT	DTMT	Delta -T Matrix Type	Limestone 47.6	
BSAT	DTSH	Delta -T Shale	100.00	uspf
BSAT	SPEQ	Acoustic Porosity Equation	Wylie	
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Upr	
ACRt Sonde	TPOS	Tool Position	Free Hanging	
ACRt Sonde	RMOP	Rmud Source	Mud Cell	
ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	RMAX	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm
ACRt Sonde	BHSM	Borehole Size Source Tool	SDLT	
ACRt Sonde	MBFL	Apply Corkscrew Effect?	No	

BOTTOM

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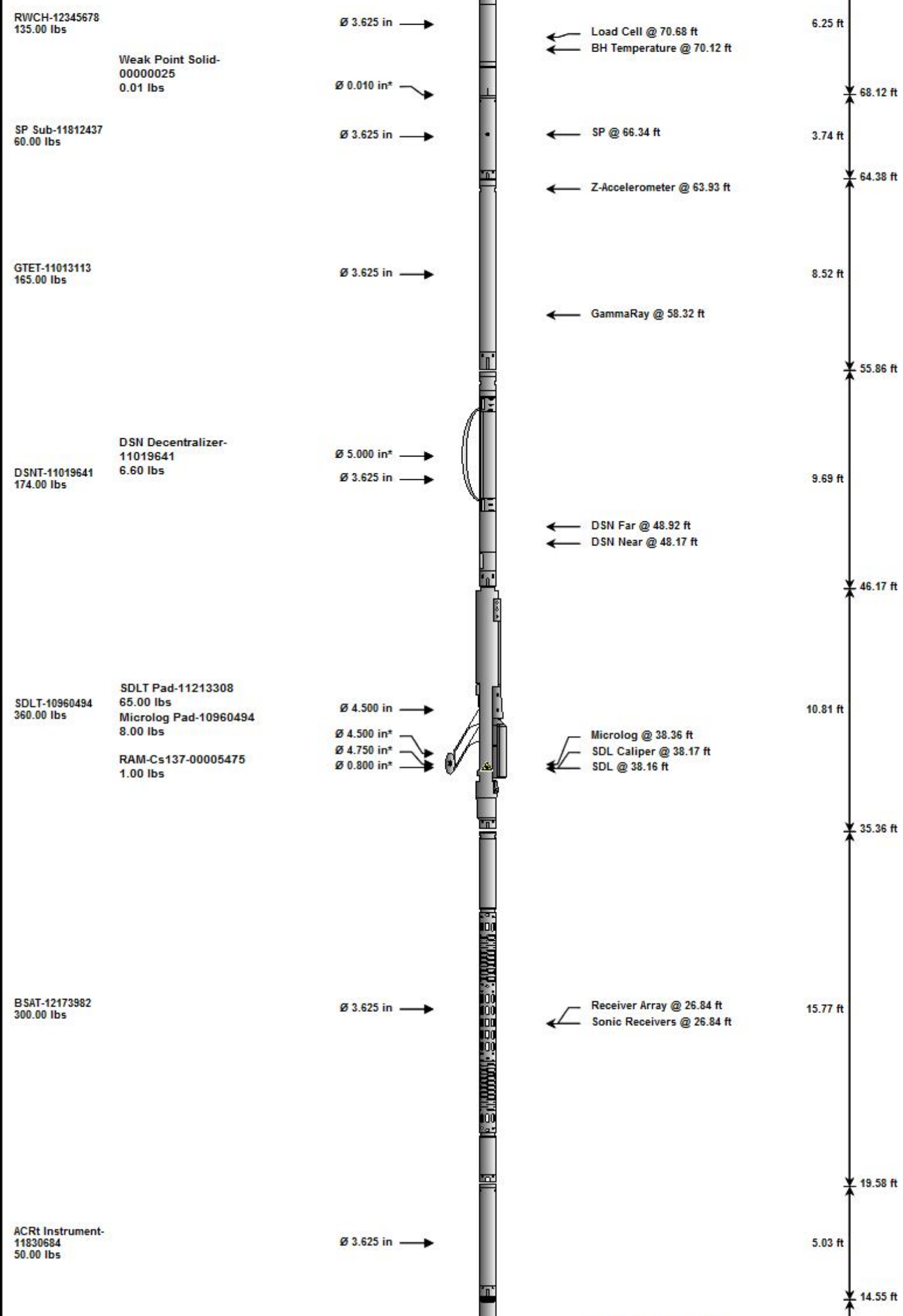
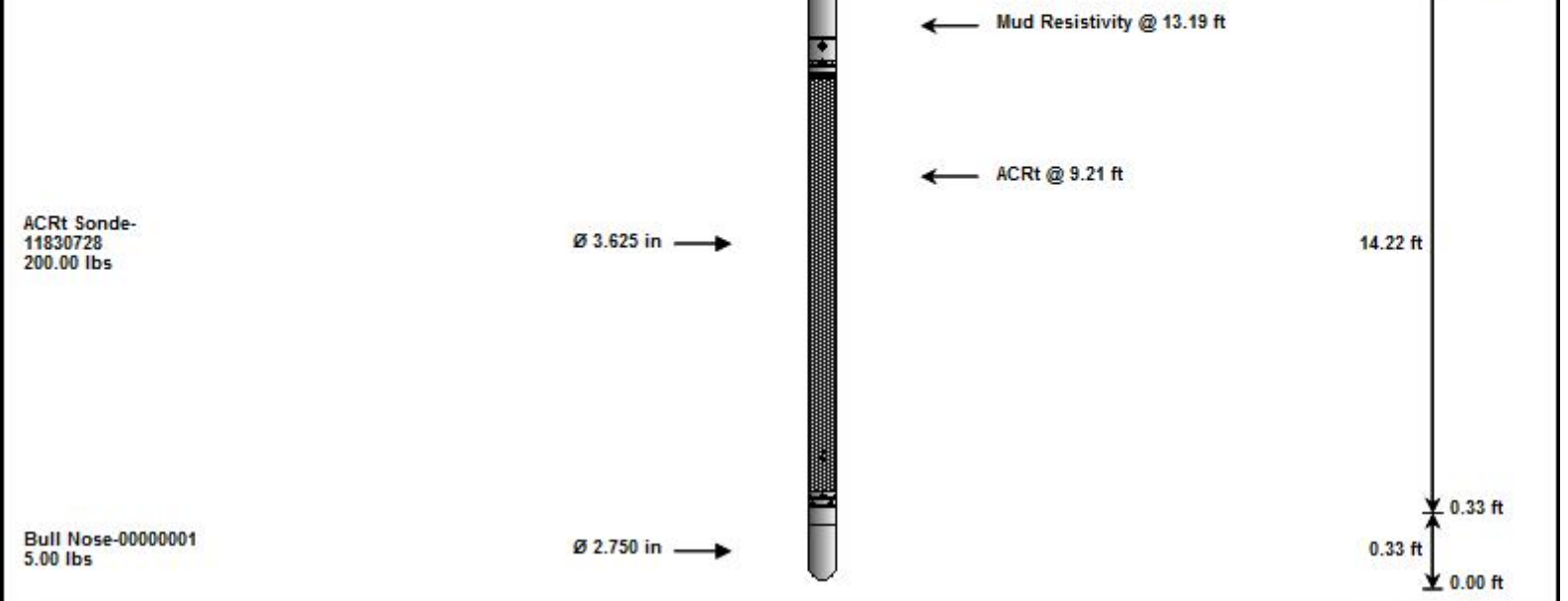
TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length


RWCH-12345678
135.00 lbs
Ø 3.625 in
Load Cell @ 70.68 ft
BH Temperature @ 70.12 ft
6.25 ft
Weak Point Solid-00000025
0.01 lbs
Ø 0.010 in*
68.12 ft
SP Sub-11812437
60.00 lbs
Ø 3.625 in
SP @ 66.34 ft
3.74 ft
64.38 ft
Z-Accelerometer @ 63.93 ft
GTET-11013113
165.00 lbs
Ø 3.625 in
8.52 ft
GammaRay @ 58.32 ft
55.86 ft
DSN Decentralizer-11019641
6.60 lbs
Ø 5.000 in*
DSNT-11019641
174.00 lbs
Ø 3.625 in
9.69 ft
DSN Far @ 48.92 ft
DSN Near @ 48.17 ft
46.17 ft
SDLT Pad-11213308
65.00 lbs
SDLT-10960494
360.00 lbs
Ø 4.500 in
10.81 ft
Microlog Pad-10960494
8.00 lbs
Ø 4.500 in*
Microlog @ 38.36 ft
Ø 4.750 in*
SDL Caliper @ 38.17 ft
RAM-Cs137-00005475
1.00 lbs
Ø 0.800 in*
SDL @ 38.16 ft
35.36 ft
BSAT-12173982
300.00 lbs
Ø 3.625 in
Receiver Array @ 26.84 ft
Sonic Receivers @ 26.84 ft
15.77 ft
19.58 ft
ACRt Instrument-11830684
50.00 lbs
Ø 3.625 in
5.03 ft
14.55 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	12345678	135.00	6.25		68.12	300.00
WPSS	Weak Point Solid	00000025	0.01	0.01	*	68.12	300.00
SP	SP Sub	11812437	60.00	3.74		64.38	300.00
GTET	Gamma Telemetry Tool	11013113	165.00	8.52		55.86	60.00
DSNT	Dual Spaced Neutron	11019641	174.00	9.69		46.17	60.00
DCNT	DSN Decentralizer	11019641	6.60	5.13	*	49.50	300.00
SDLT	Spectral Density Tool	10960494	360.00	10.81		35.36	60.00
SDLP	Density Insite Pad	11213308	65.00	2.55	*	37.57	60.00
Cs137	Logging Source, SDLT-I, 1.78 Ci - Cs137	00005475	1.00	0.80	*	37.80	300.00
MICP	Microlog Pad	10960494	8.00	1.00	*	37.86	60.00
BSAT	Borehole Sonic Array Tool	12173982	300.00	15.77		19.58	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11830684	50.00	5.03		14.55	120.00
ACRt	Array Compensated True Resistivity Sonde Section	11830728	200.00	14.22		0.33	120.00
BLNS	Bull Nose	00000001	5.00	0.33		0.00	300.00
Total			**1,529.61**	**74.37**			

* Not included in Total Length and Length Accumulation.

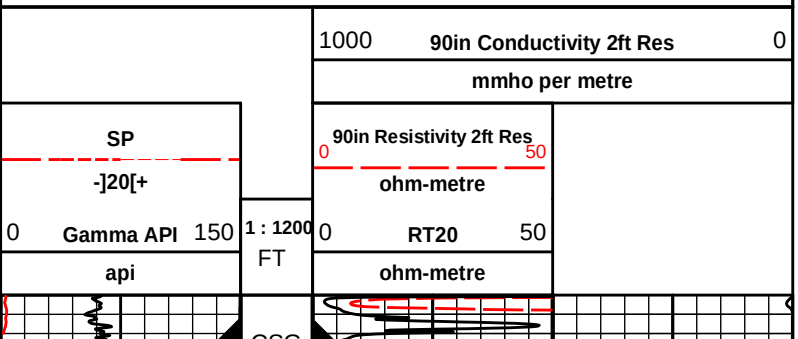
Data: BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\IDLE **Date: 03-Oct-18 10:31:55**

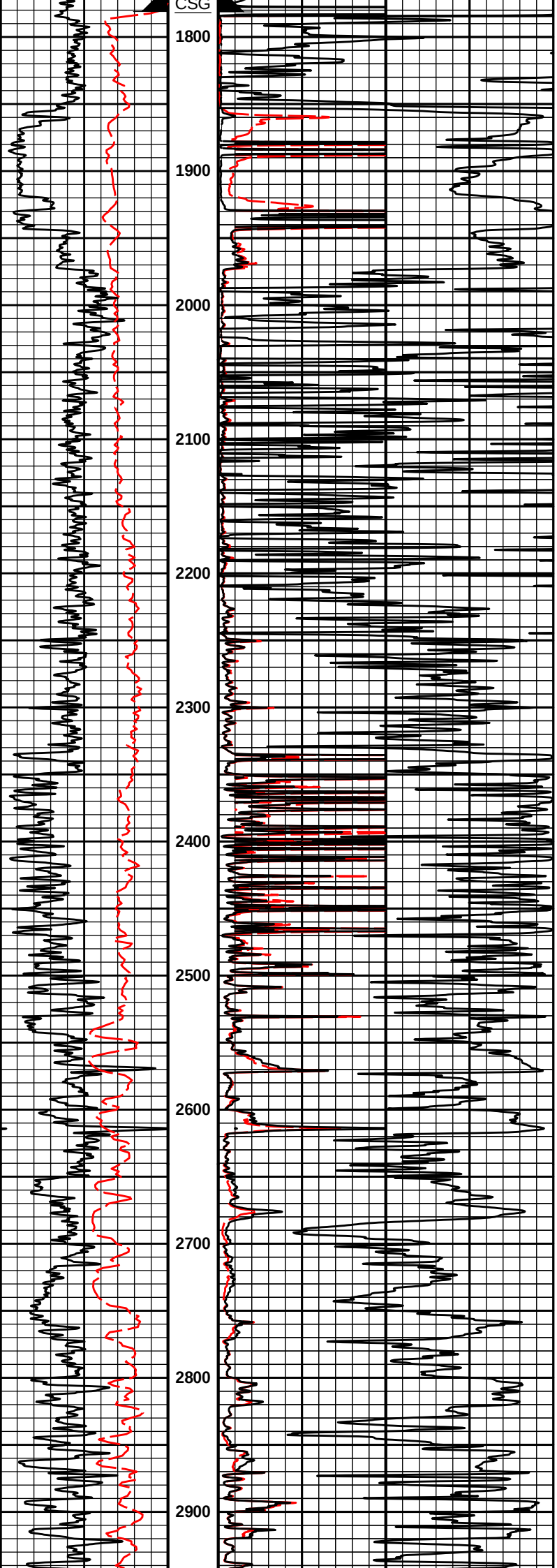
HALLIBURTON

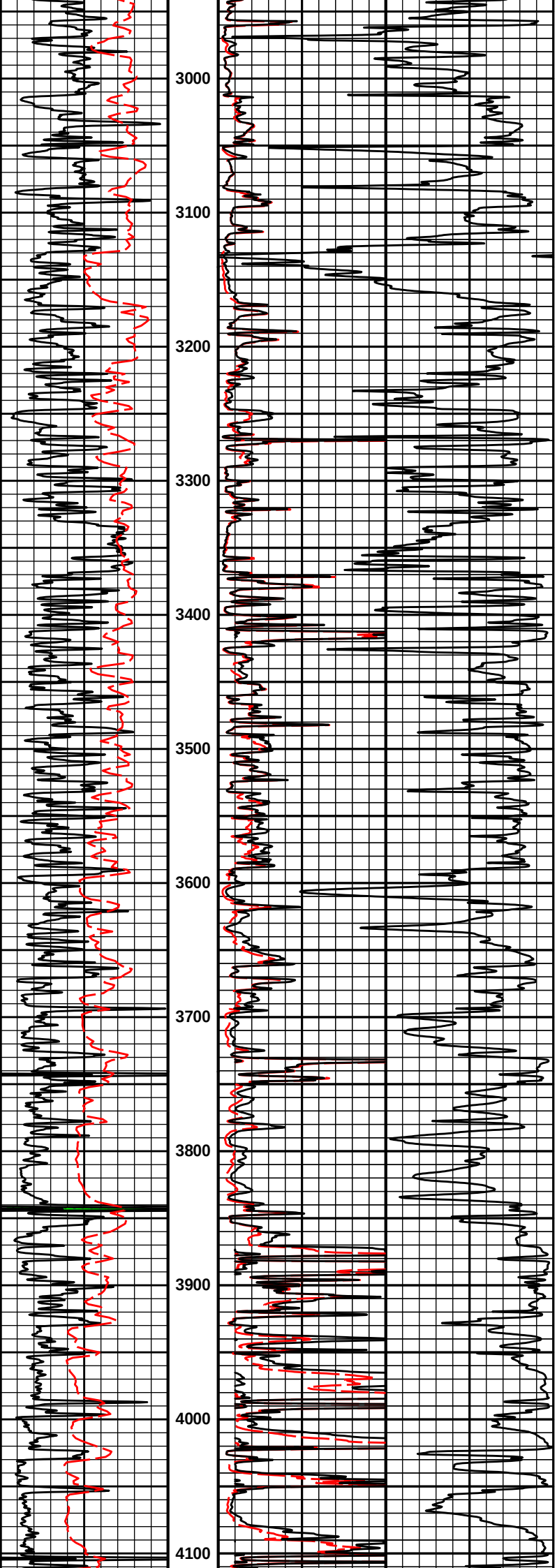
Plot Time: 03-Oct-18 19:00:25
Plot Range: 1750 ft to 4915 ft
Data: BEREX_LENA_MAI\Well Based\DAQ-0001-002
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_1_main

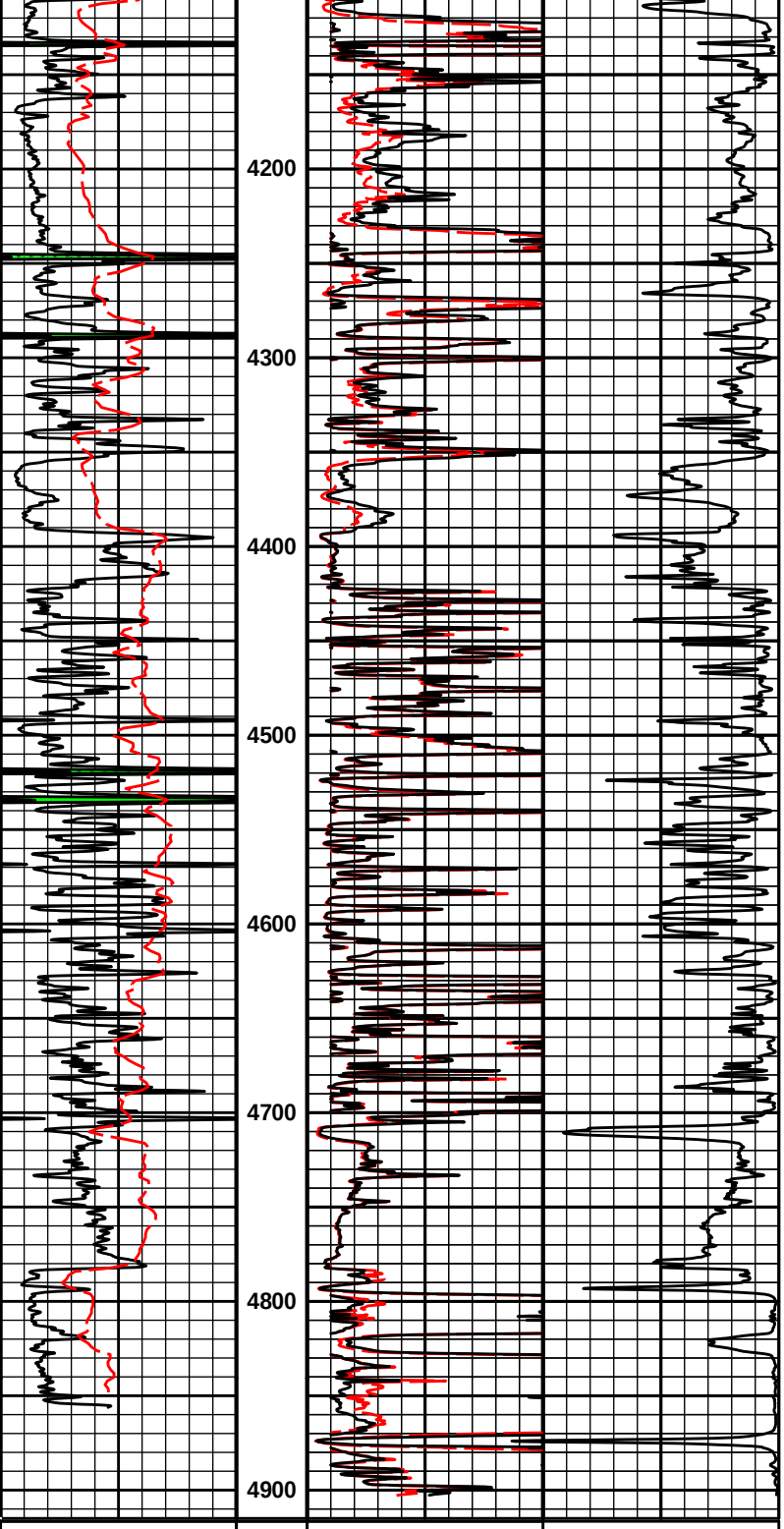
1 INCH MAIN LOG

1 INCH CORRELATION LOG




CSG
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
2900


3000
3100
3200
3300
3400
3500
3600
3700
3800
3900
4000
4100



0 Gamma API 150	1 : 1200 FT	0 RT20 50
api		ohm-metre
SP		90in Resistivity 2ft Res 0 50
-]20[+		ohm-metre
		1000 90in Conductivity 2ft Res 0
		mmho per metre

HALLIBURTON

Plot Time: 03-Oct-18 19:00:26
Plot Range: 1750 ft to 4915 ft
Data: BEREX_LENA_MAI\Well Based\DAQ-0001-002
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\ACRT\ACRT_1_main

1 INCH MAIN LOG

1 INCH CORRELATION LOG

LITHOLOGY STRIP LOG

WellSight Systems

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

Well Name:	Lena Mai #5-29		
Location:	NE SW SW NE Sec. 29, T23S-R32W Finney County, Kansas		
License Number:	15-055-22503	**Region:**	Congdon North
Spud Date:	18 SEP 18	**Drilling Completed:**	3 OCT 18
Surface Coordinates:	2295' FNL & 2225' FEL N38.026595196, W101.855319988		
Bottom Hole Coordinates:			
Ground Elevation (ft):	2842'	**K.B. Elevation (ft):**	2854'
Logged Interval (ft):	3750' To: 4910'	**Total Depth (ft):**	4910'
Formation:	ST. LOUIS		
Type of Drilling Fluid:	Freshwater Chemical		

OPERATOR

Company: BEREXCO, LLC
Address: 2020 North Bramblewood Drive
Wichita, Kansas 67206 1094

GEOLOGIST

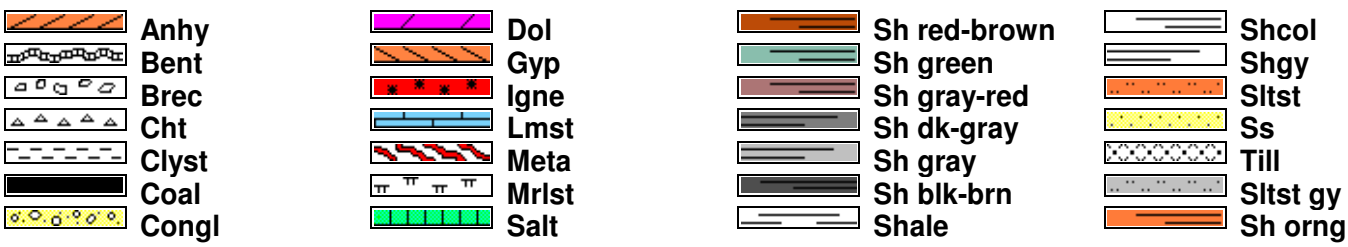
Name: Peter Vollmer WPG #3369
Company: T.M. McCoy & Co., Inc.
Address: P.O. Box 608
Wilson, Wyoming 83014
307-733-4332

SURVEYS

DSTs

Comments

ROCK TYPES



ACCESSORIES

MINERAL
- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Brecfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff

FOSSIL
- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite
- Plant
- Strom

STRINGER
- Lsstrg
- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg

TEXTURE
- Boundst
- Chalky
- Cryxln
- Earthy
- Finexln
- Grainst
- Lithogr
- Microxln
- Mudst
- Packst
- Wackest

OTHER SYMBOLS

POROSITY
- Earthy
- Fenest
- Fracture
- Inter
- Moldic
- Organic
- Pinpoint
- Vuggy
- Sh orng
- Sltst gy
- Sh orng
- Lsstrg

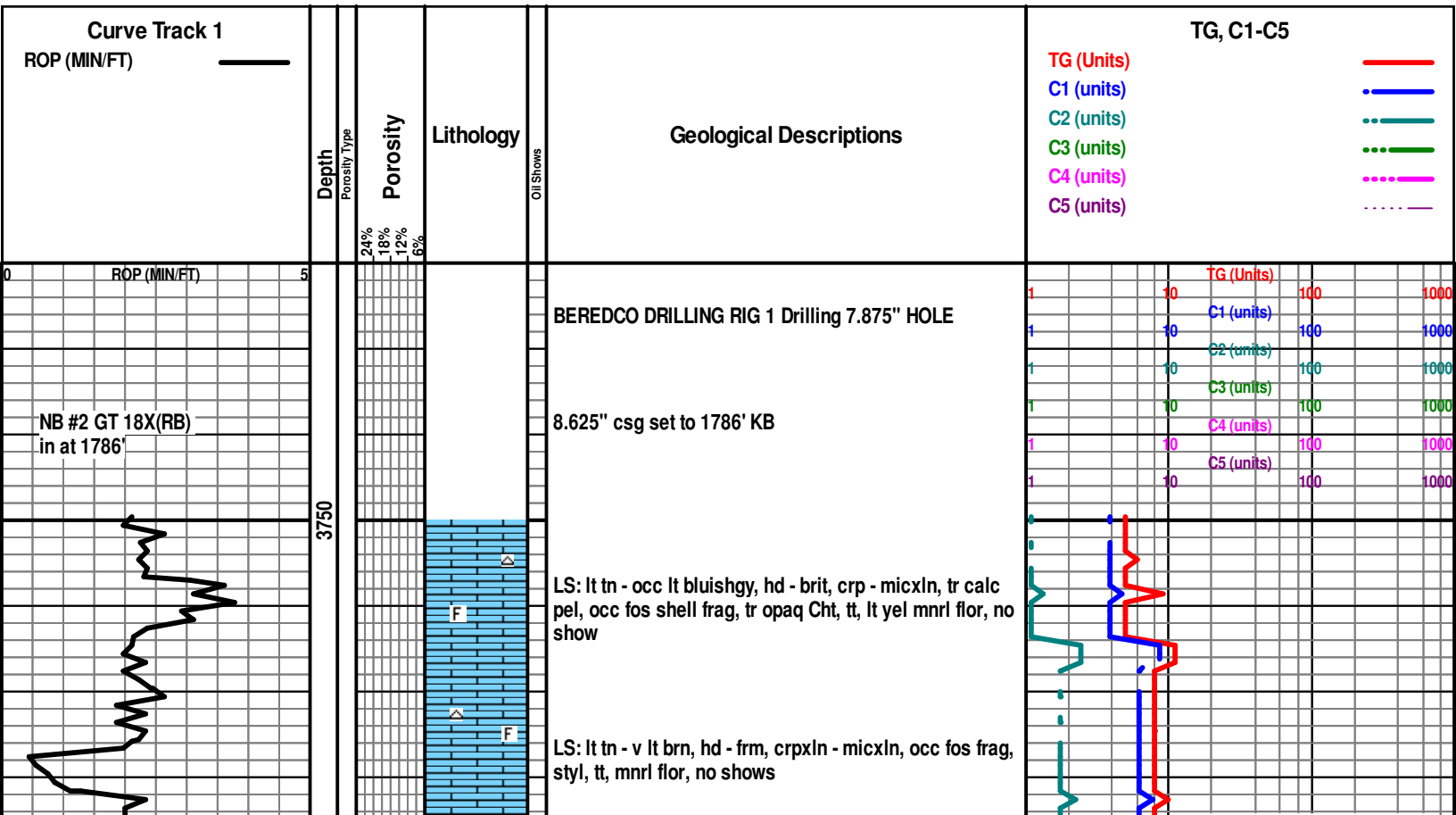
SORTING
- Well
- Moderate
- Poor

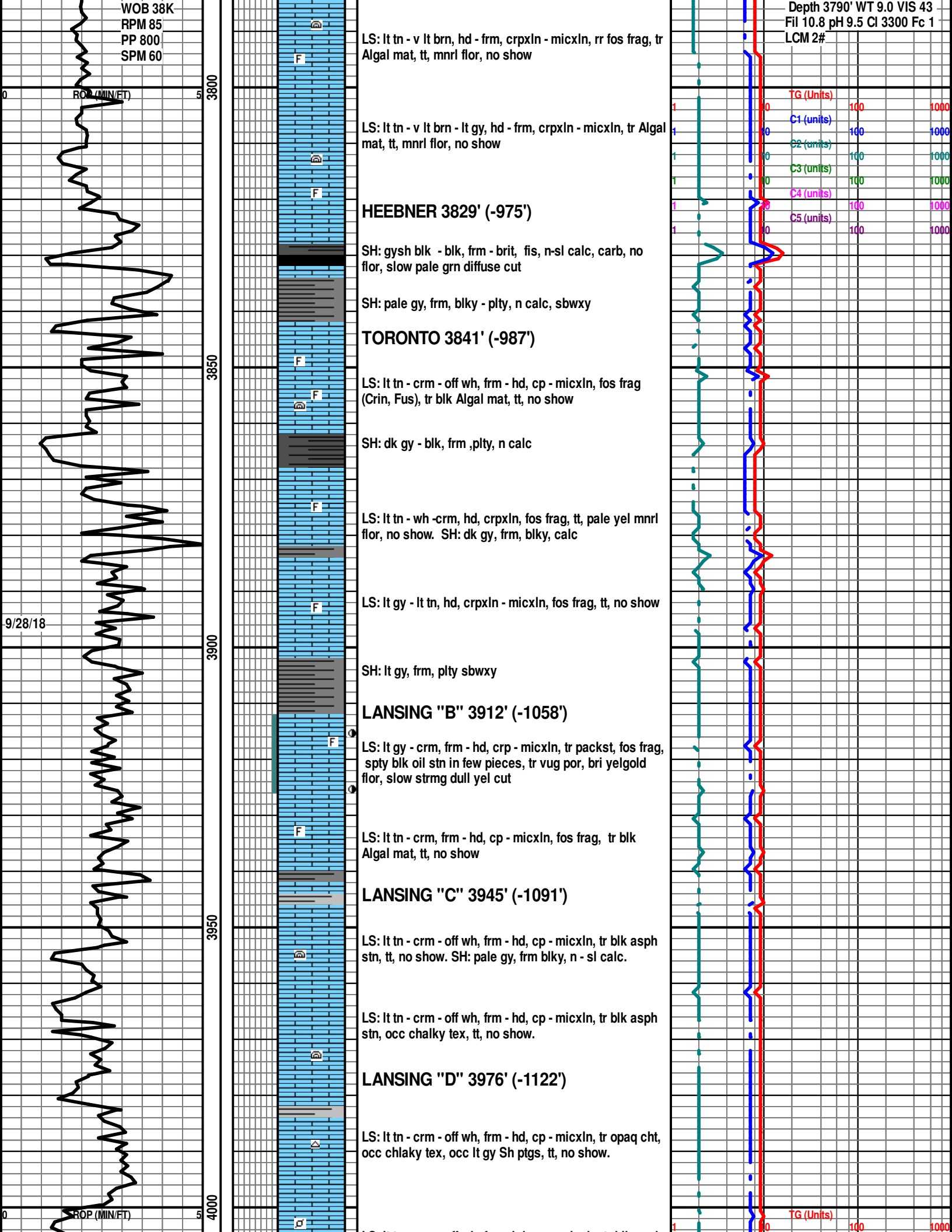
ROUNDING
- Rounded
- Subrnd
- Subang
- Angular

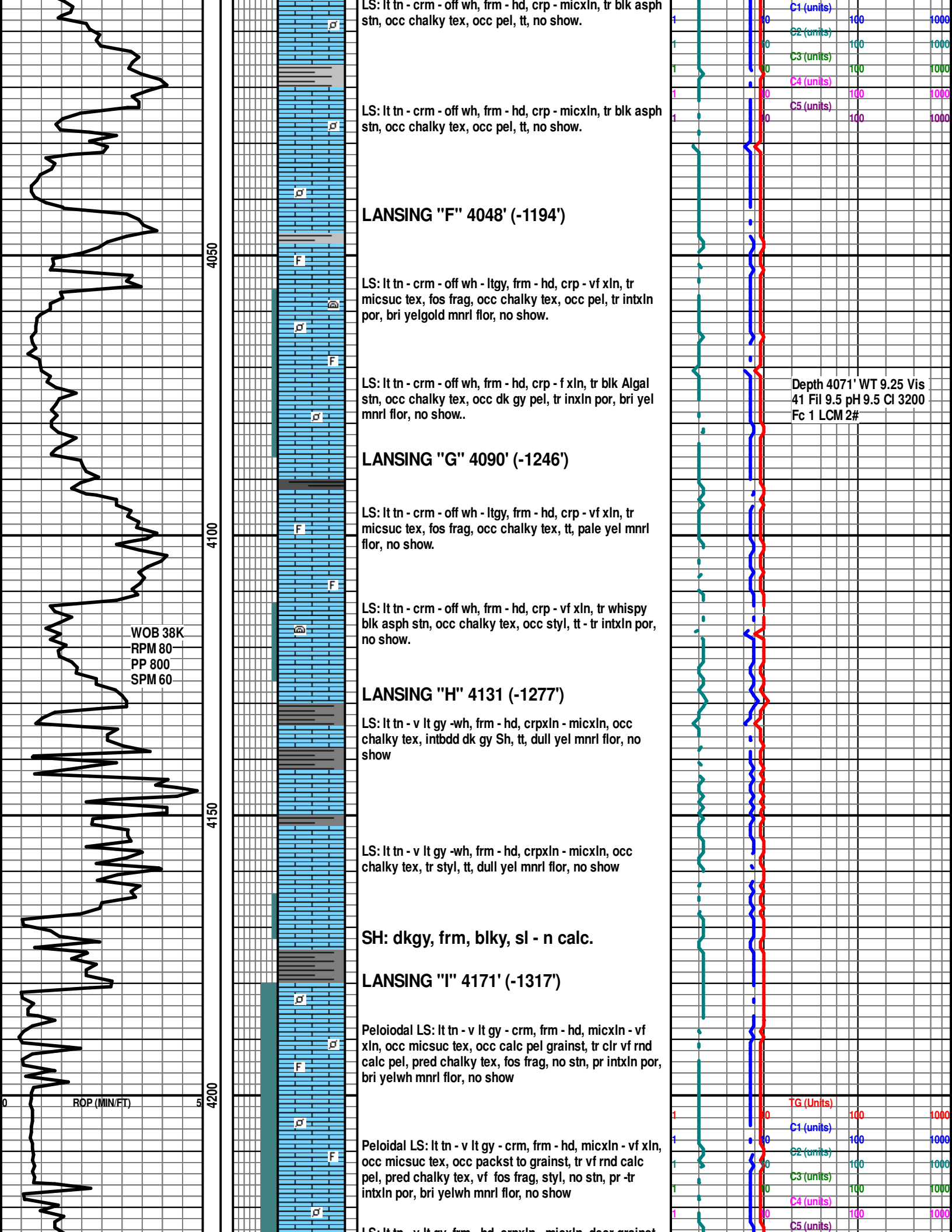
OIL SHOW
- Even
- Spotted
- Ques
- Dead

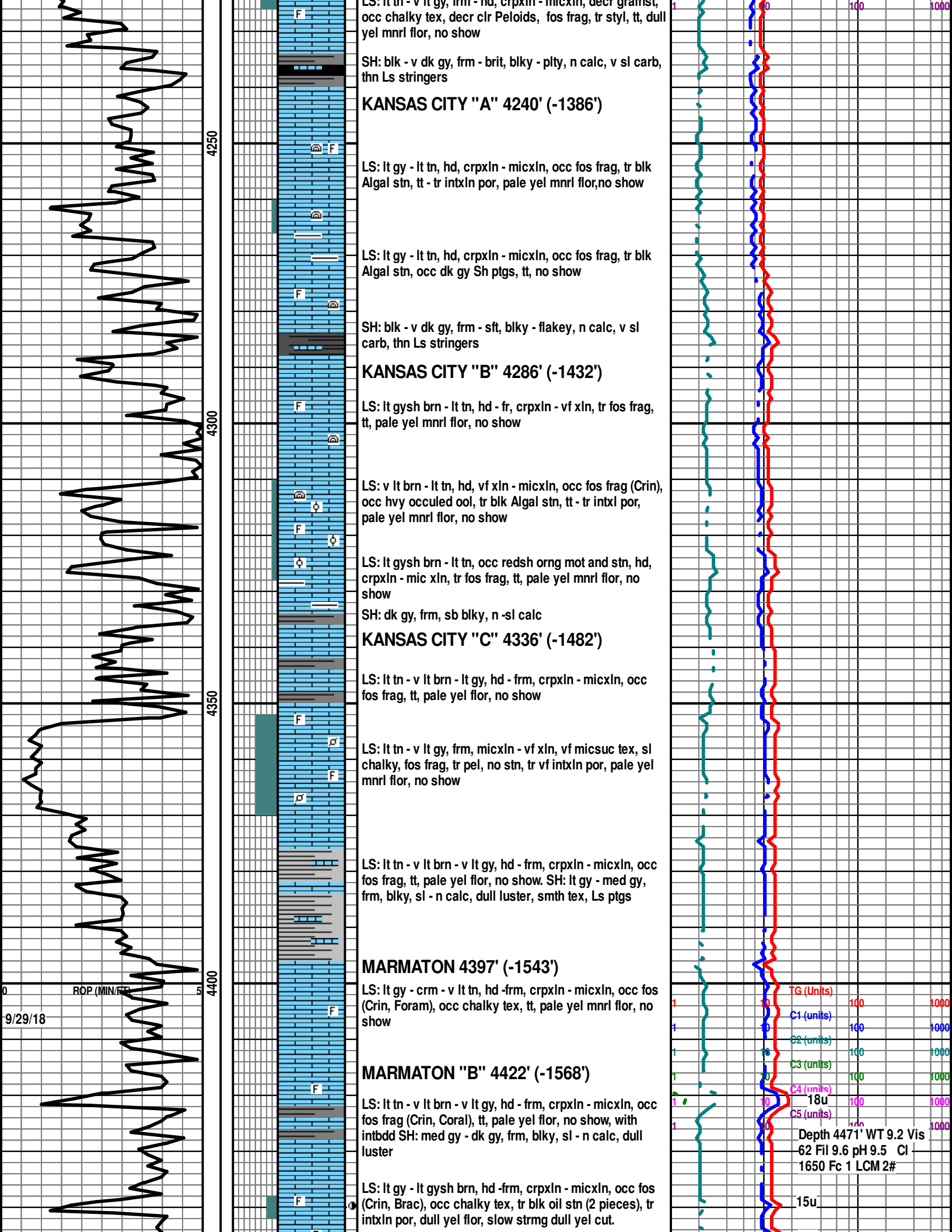
INTERVAL
- Dst
- Dst

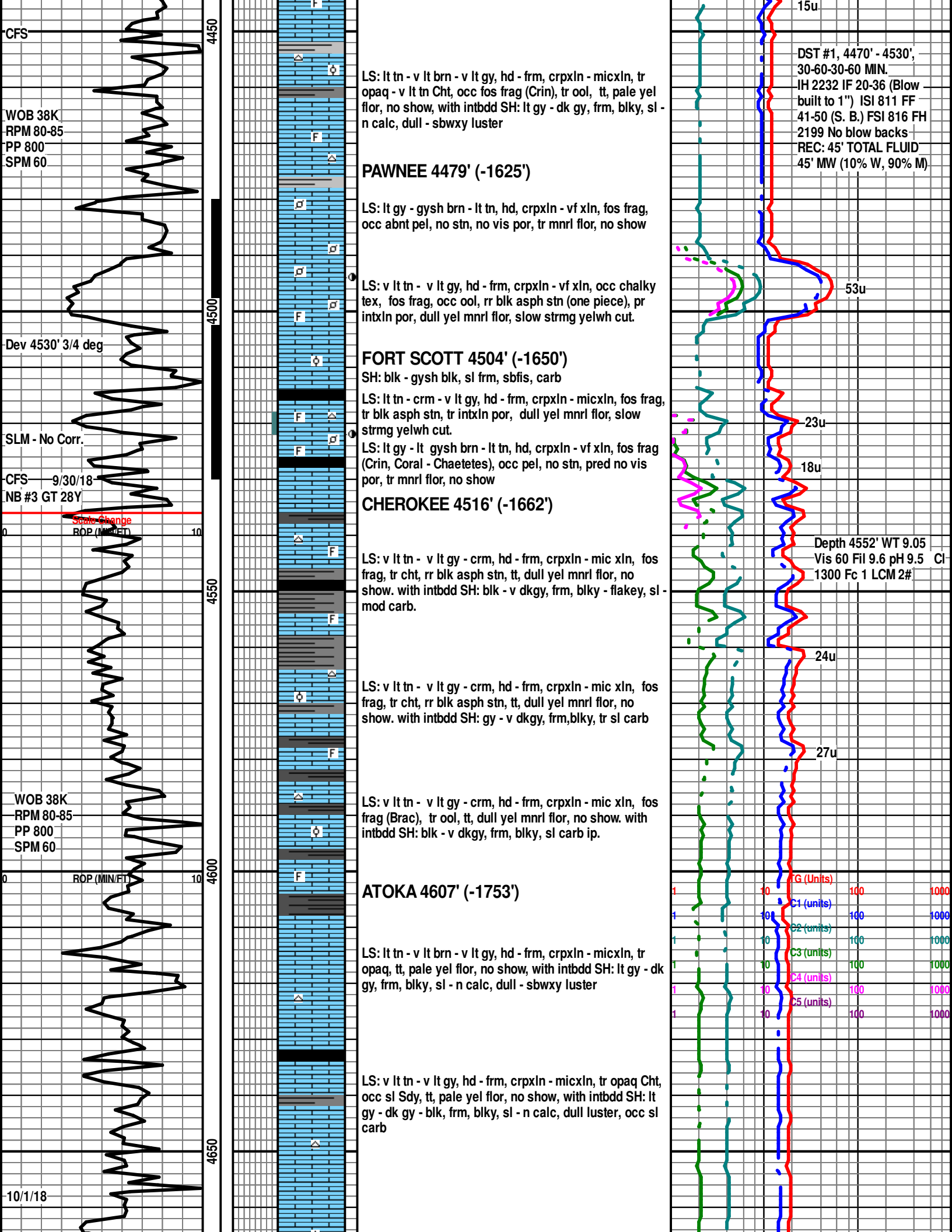
EVENT
- Rft
- Sidewall

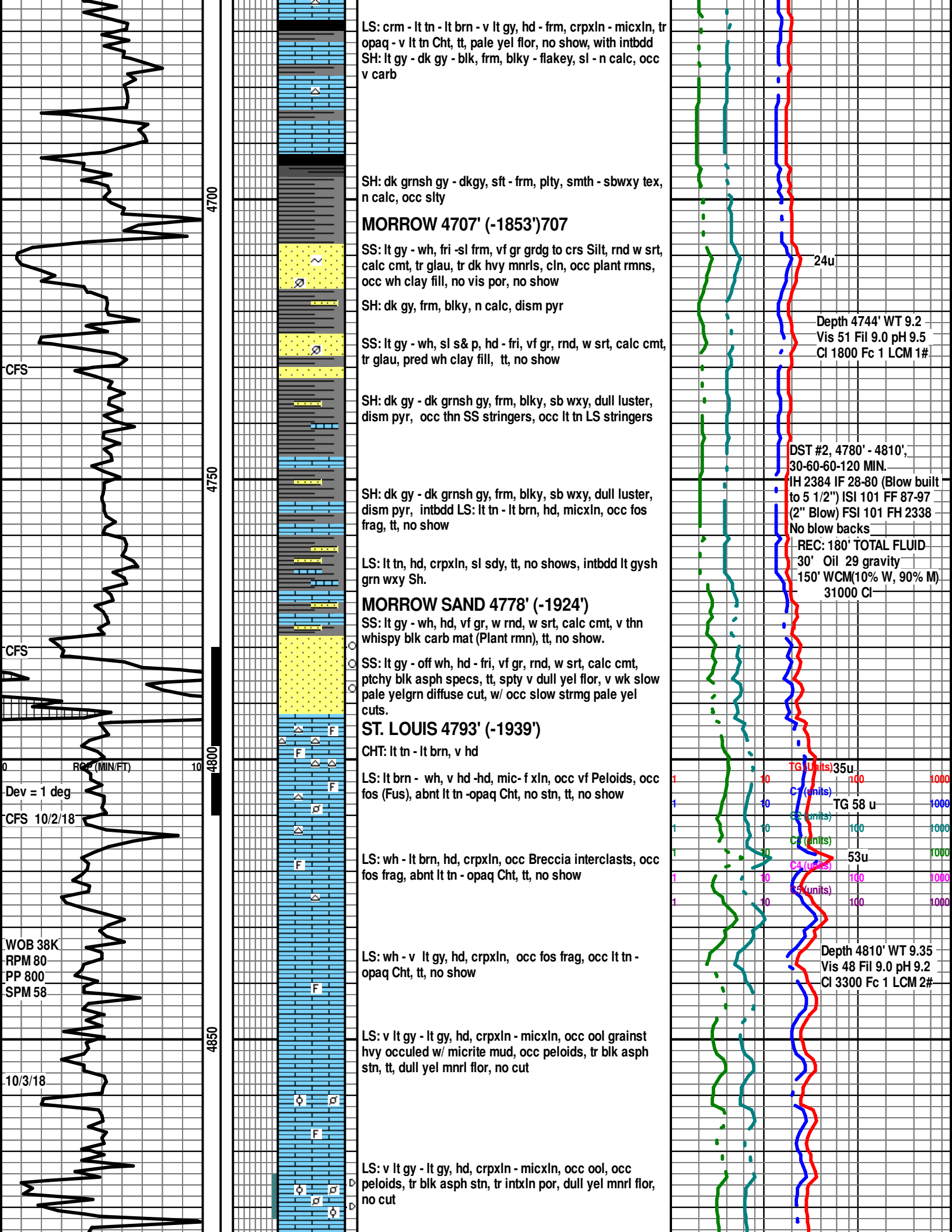


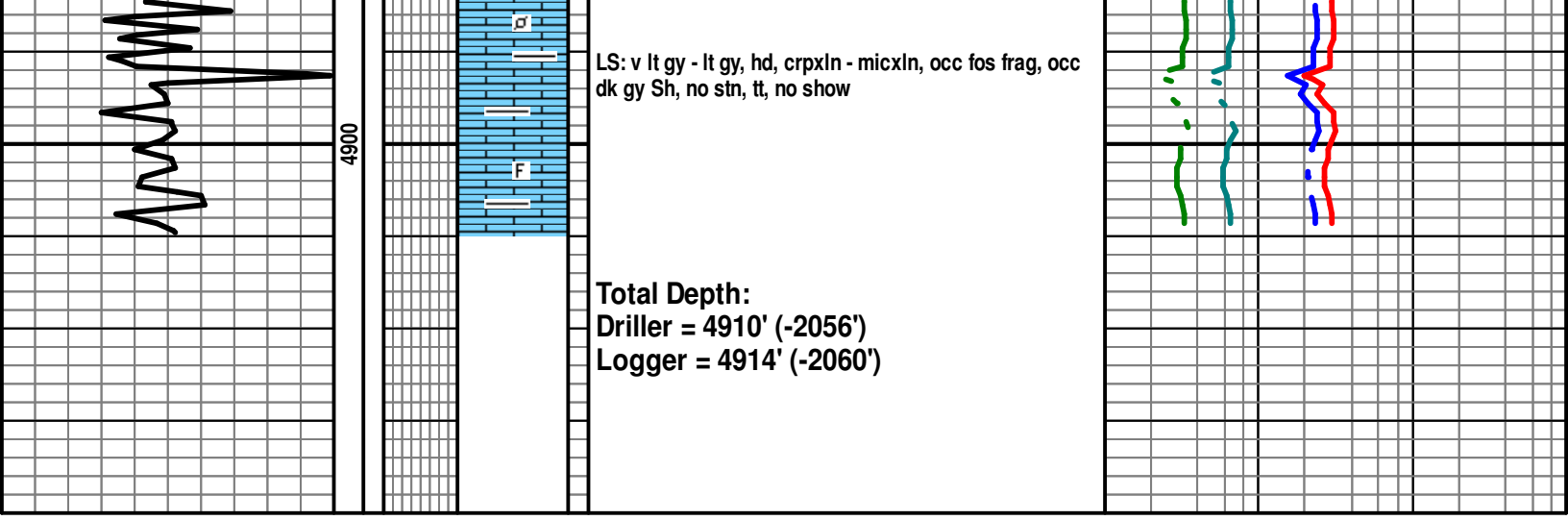

WOB 38K
RPM 85
PP 800
SPM 60
0
ROP (MIN/FT)
5
3800
3850
3900
3950
4000
9/28/18
Depth 3790' WT 9.0 VIS 43
Fil 10.8 pH 9.5 Cl 3300 Fc 1
LCM 2#
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
C5 (units)
1
10
100
1000
LS: lt tn - v lt brn, hd - frm, crpxln - micxln, rr fos frag, tr Algal mat, tt, mnrl flor, no show
LS: lt tn - v lt brn - lt gy, hd - frm, crpxln - micxln, tr Algal mat, tt, mnrl flor, no show
HEEBNER 3829' (-975')
SH: gysh blk - blk, frm - brit, fis, n-sl calc, carb, no flor, slow pale grn diffuse cut
SH: pale gy, frm, blky - plty, n calc, sbwxy
TORONTO 3841' (-987')
LS: lt tn - crm - off wh, frm - hd, cp - micxln, fos frag (Crin, Fus), tr blk Algal mat, tt, no show
SH: dk gy - blk, frm ,plty, n calc
LS: lt tn - wh -crm, hd, crpxln, fos frag, tt, pale yel mnrl flor, no show. SH: dk gy, frm, blky, calc
LS: lt gy - lt tn, hd, crpxln - micxln, fos frag, tt, no show
SH: lt gy, frm, plty sbwxy
LANSING "B" 3912' (-1058')
LS: lt gy - crm, frm - hd, crp - micxln, tr packst, fos frag, spty blk oil stn in few pieces, tr vug por, bri yelgold flor, slow strmg dull yel cut
LS: lt tn - crm, frm - hd, cp - micxln, fos frag, tr blk Algal mat, tt, no show
LANSING "C" 3945' (-1091')
LS: lt tn - crm - off wh, frm - hd, cp - micxln, tr blk asph stn, tt, no show. SH: pale gy, frm blky, n - sl calc.
LS: lt tn - crm - off wh, frm - hd, cp - micxln, tr blk asph stn, occ chalky tex, tt, no show.
LANSING "D" 3976' (-1122')
LS: lt tn - crm - off wh, frm - hd, cp - micxln, tr opaq cht, occ chlaky tex, occ lt gy Sh ptgs, tt, no show.


LS: lt tn - crm - off wh, frm - hd, crp - micxln, tr blk asph stn, occ chalky tex, occ pel, tt, no show.
LS: lt tn - crm - off wh, frm - hd, crp - micxln, tr blk asph stn, occ chalky tex, occ pel, tt, no show.
LANSING "F" 4048' (-1194')
LS: lt tn - crm - off wh - ltgy, frm - hd, crp - vf xln, tr micsuc tex, fos frag, occ chalky tex, occ pel, tr intxln por, bri yelgold mnrl flor, no show.
LS: lt tn - crm - off wh, frm - hd, crp - f xln, tr blk Algal stn, occ chalky tex, occ dk gy pel, tr inxln por, bri yel mnrl flor, no show..
LANSING "G" 4090' (-1246')
LS: lt tn - crm - off wh - ltgy, frm - hd, crp - vf xln, tr micsuc tex, fos frag, occ chalky tex, tt, pale yel mnrl flor, no show.
LS: lt tn - crm - off wh, frm - hd, crp - vf xln, tr whispy blk asph stn, occ chalky tex, occ styl, tt - tr intxln por, no show.
LANSING "H" 4131 (-1277')
LS: lt tn - v lt gy -wh, frm - hd, crpxln - micxln, occ chalky tex, intbdd dk gy Sh, tt, dull yel mnrl flor, no show
LS: lt tn - v lt gy -wh, frm - hd, crpxln - micxln, occ chalky tex, tr styl, tt, dull yel mnrl flor, no show
SH: dkgy, frm, blky, sl - n calc.
LANSING "I" 4171' (-1317')
Peloiodal LS: lt tn - v lt gy - crm, frm - hd, micxln - vf xln, occ micsuc tex, occ calc pel grainst, tr clr vf rnd calc pel, pred chalky tex, fos frag, no stn, pr intxln por, bri yelwh mnrl flor, no show
Peloidal LS: lt tn - v lt gy - crm, frm - hd, micxln - vf xln, occ micsuc tex, occ packst to grainst, tr vf rnd calc pel, pred chalky tex, vf fos frag, styl, no stn, pr -tr intxln por, bri yelwh mnrl flor, no show
WOB 38K
RPM 80
PP 800
SPM 60
Depth 4071' WT 9.25 Vis 41 Fil 9.5 pH 9.5 Cl 3200 Fc 1 LCM 2#
4050
4100
4150
4200
ROP (MIN/FT)
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
C5 (units)


LS: lt tn - v lt gy, frm - hd, crpxln - micxln, decr grainst, occ chalky tex, decr clr Peloids, fos frag, tr styl, tt, dull yel mnrl flor, no show
SH: blk - v dk gy, frm - brit, blky - plty, n calc, v sl carb, thn Ls stringers
KANSAS CITY "A" 4240' (-1386')
LS: lt gy - lt tn, hd, crpxln - micxln, occ fos frag, tr blk Algal stn, tt - tr intxln por, pale yel mnrl flor,no show
LS: lt gy - lt tn, hd, crpxln - micxln, occ fos frag, tr blk Algal stn, occ dk gy Sh ptgs, tt, no show
SH: blk - v dk gy, frm - sft, blky - flakey, n calc, v sl carb, thn Ls stringers
KANSAS CITY "B" 4286' (-1432')
LS: lt gysh brn - lt tn, hd - fr, crpxln - vf xln, tr fos frag, tt, pale yel mnrl flor, no show
LS: v lt brn - lt tn, hd, vf xln - micxln, occ fos frag (Crin), occ hvy occuled ool, tr blk Algal stn, tt - tr intxl por, pale yel mnrl flor, no show
LS: lt gysh brn - lt tn, occ redsh orng mot and stn, hd, crpxln - mic xln, tr fos frag, tt, pale yel mnrl flor, no show
SH: dk gy, frm, sb blky, n -sl calc
KANSAS CITY "C" 4336' (-1482')
LS: lt tn - v lt brn - lt gy, hd - frm, crpxln - micxln, occ fos frag, tt, pale yel flor, no show
LS: lt tn - v lt gy, frm, micxln - vf xln, vf micsuc tex, sl chalky, fos frag, tr pel, no stn, tr vf intxln por, pale yel mnrl flor, no show
LS: lt tn - v lt brn - v lt gy, hd - frm, crpxln - micxln, occ fos frag, tt, pale yel flor, no show. SH: lt gy - med gy, frm, blky, sl - n calc, dull luster, smth tex, Ls ptgs
MARMATON 4397' (-1543')
LS: lt gy - crm - v lt tn, hd -frm, crpxln - micxln, occ fos (Crin, Foram), occ chalky tex, tt, pale yel mnrl flor, no show
MARMATON "B" 4422' (-1568')
LS: lt tn - v lt brn - v lt gy, hd - frm, crpxln - micxln, occ fos frag (Crin, Coral), tt, pale yel flor, no show, with intbdd SH: med gy - dk gy, frm, blky, sl - n calc, dull luster
LS: lt gy - lt gysh brn, hd -frm, crpxln - micxln, occ fos (Crin, Brac), occ chalky tex, tr blk oil stn (2 pieces), tr intxln por, dull yel flor, slow strmg dull yel cut.
4250
4300
4350
4400
0
ROP (MIN/FT)
5
9/29/18
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
C5 (units)
18u
15u
Depth 4471' WT 9.2 Vis 62 Fil 9.6 pH 9.5 Cl 1650 Fc 1 LCM 2#


CFS
WOB 38K
RPM 80-85
PP 800
SPM 60
Dev 4530' 3/4 deg
SLM - No Corr.
CFS 9/30/18
NB #3 GT 28Y
Scale Change
0 ROP (MIN/FT) 10
WOB 38K
RPM 80-85
PP 800
SPM 60
0 ROP (MIN/FT) 10
10/1/18
4450
4500
4550
4600
4650
LS: lt tn - v lt brn - v lt gy, hd - frm, crpxln - micxln, tr opaq - v lt tn Cht, occ fos frag (Crin), tr ool, tt, pale yel flor, no show, with intbdd SH: lt gy - dk gy, frm, blky, sl - n calc, dull - sbwxy luster
PAWNEE 4479' (-1625')
LS: lt gy - gysh brn - lt tn, hd, crpxln - vf xln, fos frag, occ abnt pel, no stn, no vis por, tr mnrl flor, no show
LS: v lt tn - v lt gy, hd - frm, crpxln - vf xln, occ chalky tex, fos frag, occ ool, rr blk asph stn (one piece), pr intxln por, dull yel mnrl flor, slow strmg yelwh cut.
FORT SCOTT 4504' (-1650')
SH: blk - gysh blk, sl frm, sbfis, carb
LS: lt tn - crm - v lt gy, hd - frm, crpxln - micxln, fos frag, tr blk asph stn, tr intxln por, dull yel mnrl flor, slow strmg yelwh cut.
LS: lt gy - lt gysh brn - lt tn, hd, crpxln - vf xln, fos frag (Crin, Coral - Chaetetes), occ pel, no stn, pred no vis por, tr mnrl flor, no show
CHEROKEE 4516' (-1662')
LS: v lt tn - v lt gy - crm, hd - frm, crpxln - mic xln, fos frag, tr cht, rr blk asph stn, tt, dull yel mnrl flor, no show. with intbdd SH: blk - v dkgy, frm, blky - flakey, sl - mod carb.
LS: v lt tn - v lt gy - crm, hd - frm, crpxln - mic xln, fos frag, tr cht, rr blk asph stn, tt, dull yel mnrl flor, no show. with intbdd SH: gy - v dkgy, frm,blky, tr sl carb
LS: v lt tn - v lt gy - crm, hd - frm, crpxln - mic xln, fos frag (Brac), tr ool, tt, dull yel mnrl flor, no show. with intbdd SH: blk - v dkgy, frm, blky, sl carb ip.
ATOKA 4607' (-1753')
LS: lt tn - v lt brn - v lt gy, hd - frm, crpxln - micxln, tr opaq, tt, pale yel flor, no show, with intbdd SH: lt gy - dk gy, frm, blky, sl - n calc, dull - sbwxy luster
LS: v lt tn - v lt gy, hd - frm, crpxln - micxln, tr opaq Cht, occ sl Sdy, tt, pale yel flor, no show, with intbdd SH: lt gy - dk gy - blk, frm, blky, sl - n calc, dull luster, occ sl carb
15u
DST #1, 4470' - 4530', 30-60-30-60 MIN. IH 2232 IF 20-36 (Blow built to 1") ISI 811 FF 41-50 (S. B.) FSI 816 FH 2199 No blow backs REC: 45' TOTAL FLUID 45' MW (10% W, 90% M)
53u
23u
18u
Depth 4552' WT 9.05 Vis 60 Fil 9.6 pH 9.5 Cl 1300 Fc 1 LCM 2#
24u
27u
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
C5 (units)
1
10
100
1000


4700
4750
4800
4850
CFS
CFS
0
ROP (MIN/FT)
10
Dev = 1 deg
CFS 10/2/18
WOB 38K
RPM 80
PP 800
SPM 58
10/3/18
LS: crm - lt tn - lt brn - v lt gy, hd - frm, crpxln - micxln, tr opaq - v lt tn Cht, tt, pale yel flor, no show, with intbdd
SH: lt gy - dk gy - blk, frm, blky - flakey, sl - n calc, occ v carb
SH: dk grnsh gy - dkgy, sft - frm, plty, smth - sbwxy tex, n calc, occ slty
MORROW 4707' (-1853')707
SS: lt gy - wh, fri -sl frm, vf gr grdg to crs Silt, rnd w srt, calc cmt, tr glau, tr dk hvy mnrls, cln, occ plant rmns, occ wh clay fill, no vis por, no show
SH: dk gy, frm, blky, n calc, dism pyr
SS: lt gy - wh, sl s& p, hd - fri, vf gr, rnd, w srt, calc cmt, tr glau, pred wh clay fill, tt, no show
SH: dk gy - dk grnsh gy, frm, blky, sb wxy, dull luster, dism pyr, occ thn SS stringers, occ lt tn LS stringers
SH: dk gy - dk grnsh gy, frm, blky, sb wxy, dull luster, dism pyr, intbdd LS: lt tn - lt brn, hd, micxln, occ fos frag, tt, no show
LS: lt tn, hd, crpxln, sl sdy, tt, no shows, intbdd lt gysh grn wxy Sh.
MORROW SAND 4778' (-1924')
SS: lt gy - wh, hd, vf gr, w rnd, w srt, calc cmt, v thn whispy blk carb mat (Plant rmn), tt, no show.
SS: lt gy - off wh, hd - fri, vf gr, rnd, w srt, calc cmt, ptchy blk asph specs, tt, spty v dull yel flor, v wk slow pale yelgrn diffuse cut, w/ occ slow strmg pale yel cuts.
ST. LOUIS 4793' (-1939')
CHT: lt tn - lt brn, v hd
LS: lt brn - wh, v hd -hd, mic- f xln, occ vf Peloids, occ fos (Fus), abnt lt tn -opaq Cht, no stn, tt, no show
LS: wh - lt brn, hd, crpxln, occ Breccia interclasts, occ fos frag, abnt lt tn - opaq Cht, tt, no show
LS: wh - v lt gy, hd, crpxln, occ fos frag, occ lt tn - opaq Cht, tt, no show
LS: v lt gy - lt gy, hd, crpxln - micxln, occ ool grainst hvy occuled w/ micrite mud, occ peloids, tr blk asph stn, tt, dull yel mnrl flor, no cut
LS: v lt gy - lt gy, hd, crpxln - micxln, occ ool, occ peloids, tr blk asph stn, tr intxln por, dull yel mnrl flor, no cut
24u
Depth 4744' WT 9.2
Vis 51 Fil 9.0 pH 9.5
Cl 1800 Fc 1 LCM 1#
DST #2, 4780' - 4810',
30-60-60-120 MIN.
IH 2384 IF 28-80 (Blow built to 5 1/2") ISI 101 FF 87-97 (2" Blow) FSI 101 FH 2338
No blow backs
REC: 180' TOTAL FLUID
30' Oil 29 gravity
150' WCM(10% W, 90% M)
31000 Cl
TG (units)
35u
C1 (units)
TG 58 u
C2 (units)
C3 (units)
53u
C4 (units)
C5 (units)
1
10
100
1000
Depth 4810' WT 9.35
Vis 48 Fil 9.0 pH 9.2
Cl 3300 Fc 1 LCM 2#


4900
LS: v lt gy - lt gy, hd, crpxln - micxln, occ fos frag, occ dk gy Sh, no stn, tt, no show
Total Depth:
Driller = 4910' (-2056')
Logger = 4914' (-2060')

HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON
MICROLOG

COMPANY BEREXCO LLC
WELL LENA MAI 5-29
FIELD/BLOCK CONGDON NORTH
COUNTY FINNEY
STATE KANSAS

COMPANY **BEREXCO LLC**

WELL **LENA MAI 5-29**

FIELD/BLOCK **CONGDON NORTH**

COUNTY **FINNEY** STATE **KANSAS**

API No. 15-055-22503-00-00

Location
(SHL) NE SW SW NE
2295' FNL & 2225' FEL

Sect. 29 Twp. 23S Rge. 32W

Other Services:
ACRT
SDL-DSN
MICLOG
BSAT

Permanent Datum	GL	Elev. 2842.0 ft	Elev.: K.B. 2854.0 ft
Log measured from	KB	, 12.0 ft above perm. Datum	D.F. 2852.0 ft
Drilling measured from	KB		G.L. 2842.0 ft

Date		03-Oct-18					
Run No.		1					
Depth - Driller		4910.0 ft					
Depth - Logger		4914.0 ft					
Bottom - Logged Interval		4904					
Top - Logged Interval		3350					
Casing - Driller		8.625 in	@ 1786.0 ft	@		@	
Casing - Logger		1782.0 ft					
Bit Size		7.875 in		@		@	
Type Fluid in Hole		Water Based Mud					
Density	Viscosity	9.1 ppg	51.00 s/qt				
PH	Fluid Loss	10.00 pH	9.6 cptm				
Source of Sample		FLOWLINE					
Rm @ Meas. Temperature		0.76 ohmm	@ 88.00 degF	@		@	
Rmf @ Meas. Temperature		0.62 ohmm	@ 86.00 degF	@		@	
Rmc @ Meas. Temperature		0.93 ohmm	@ 86.00 degF	@		@	
Source Rmf	Rmc	MEAS	MEAS				
Rm @ BHT		0.53 ohmm	@ 128.0 degF	@		@	
Time Since Circulation		12:00 hr					
Time on Bottom		03-Oct-18 14:08					
Max. Rec. Temperature		128.00 degF	@ 4914.0 ft	@		@	
Equipment	Location	12156883	EL RENO, OK				
Recorded By		WHITLOCK					
Witnessed By		BRETT BLAZER		PETER VOLLMER			

Fold here

Service Ticket No.: 905174527

API No.: 15-055-22503-00-00

PGM Version: WL INSITE R5.8.9 (Build 6)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

	Date	Sample No.	Depth-Driller	Type Fluid in Hole	Density	Viscosity	Ph	Fluid Loss	Source of Sample	Rm @ Meas. Temp	Rmf @ Meas. Temp.	Rmc @ Meas. Temp.	Source Rmf	Rmc	Rm @ BHT	Rmf @ BHT	Rmc @ BHT
										@	@	@			@	@	@
										@	@	@			@	@	@

RESISTIVITY SCALE CHANGES

	Type Log	Depth	Scale Up Hole	Scale Down Hole

RESISTIVITY EQUIPMENT DATA

	Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
	@				
	@				
	@				
	@				
	@				
	@				

EQUIPMENT DATA

	GAMMA	ACOUSTIC	DENSITY	NEUTRON
Run No.				
Serial No.				
Model No.				
Diameter				
Detector Model No.				
Type				
Length				
Distance to Source				

LOGGING DATA

	GENERAL				GAMMA		ACOUSTIC		DENSITY		NEUTRON	
	Run No.	Depth From	Depth To	Speed ft/min	Scale L	Scale R	Scale L	Scale R	Scale L	Scale R	Scale L	Scale R
Matrix												
Run No.												
Serial No.												
Model No.												
Diameter												
No. of Cent.												
Spacing												
Log Type												
Source Type												
LSA [Y/N]												
FWDA [Y/N]												

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

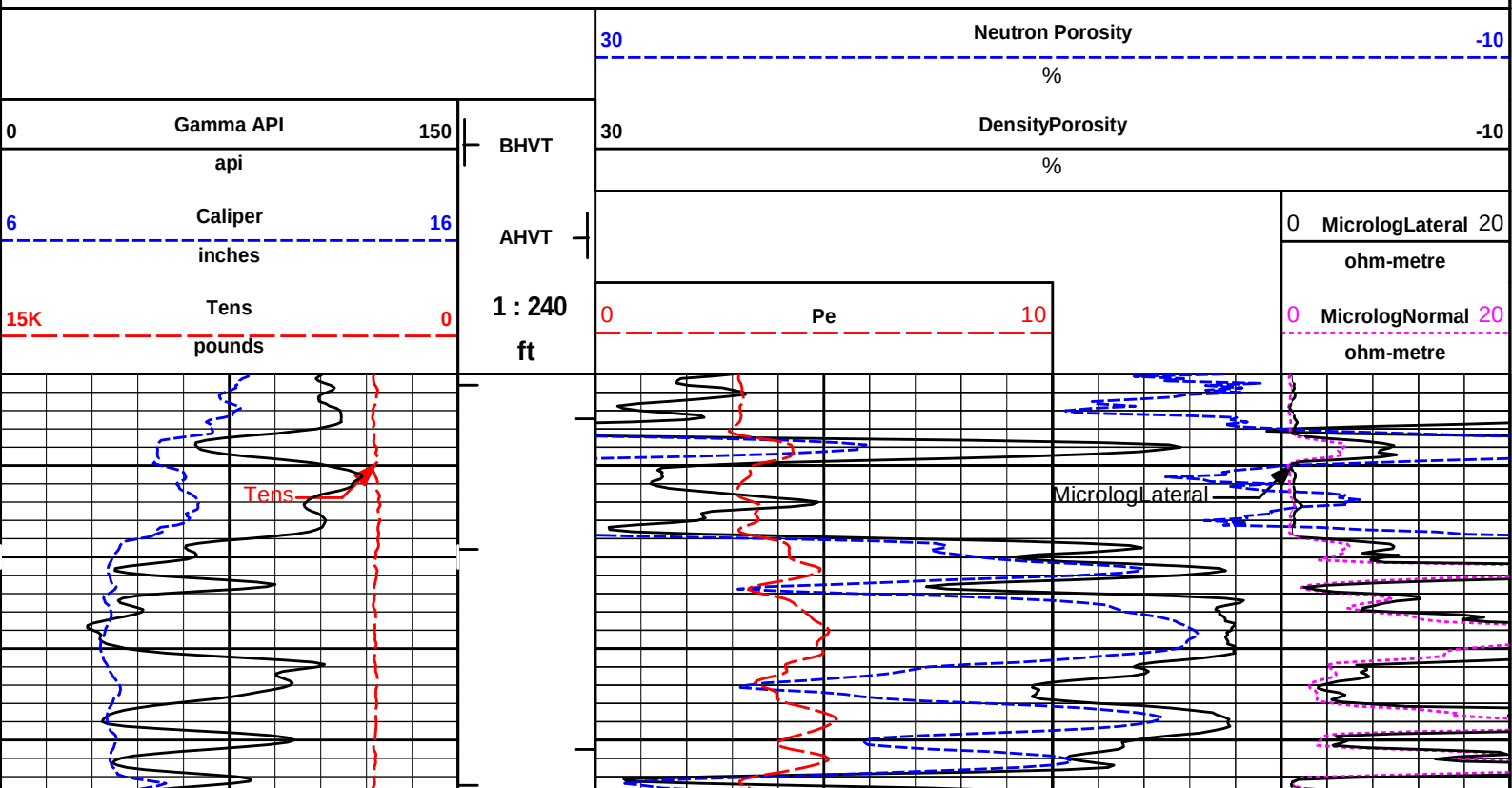
Remarks: 5 1/2" CASING USED FOR ANNULAR HOLE VOLUME

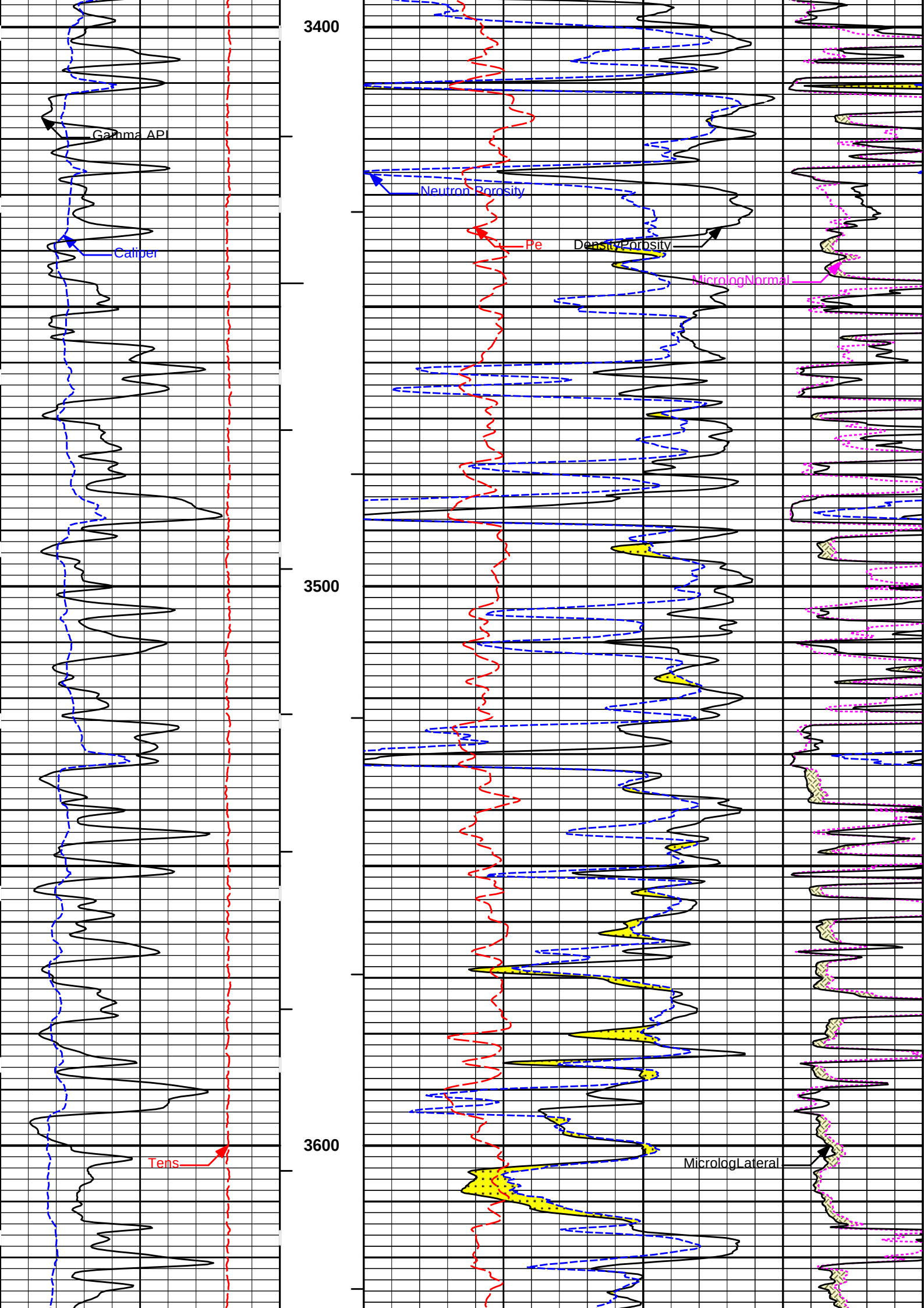
HALLIBURTON

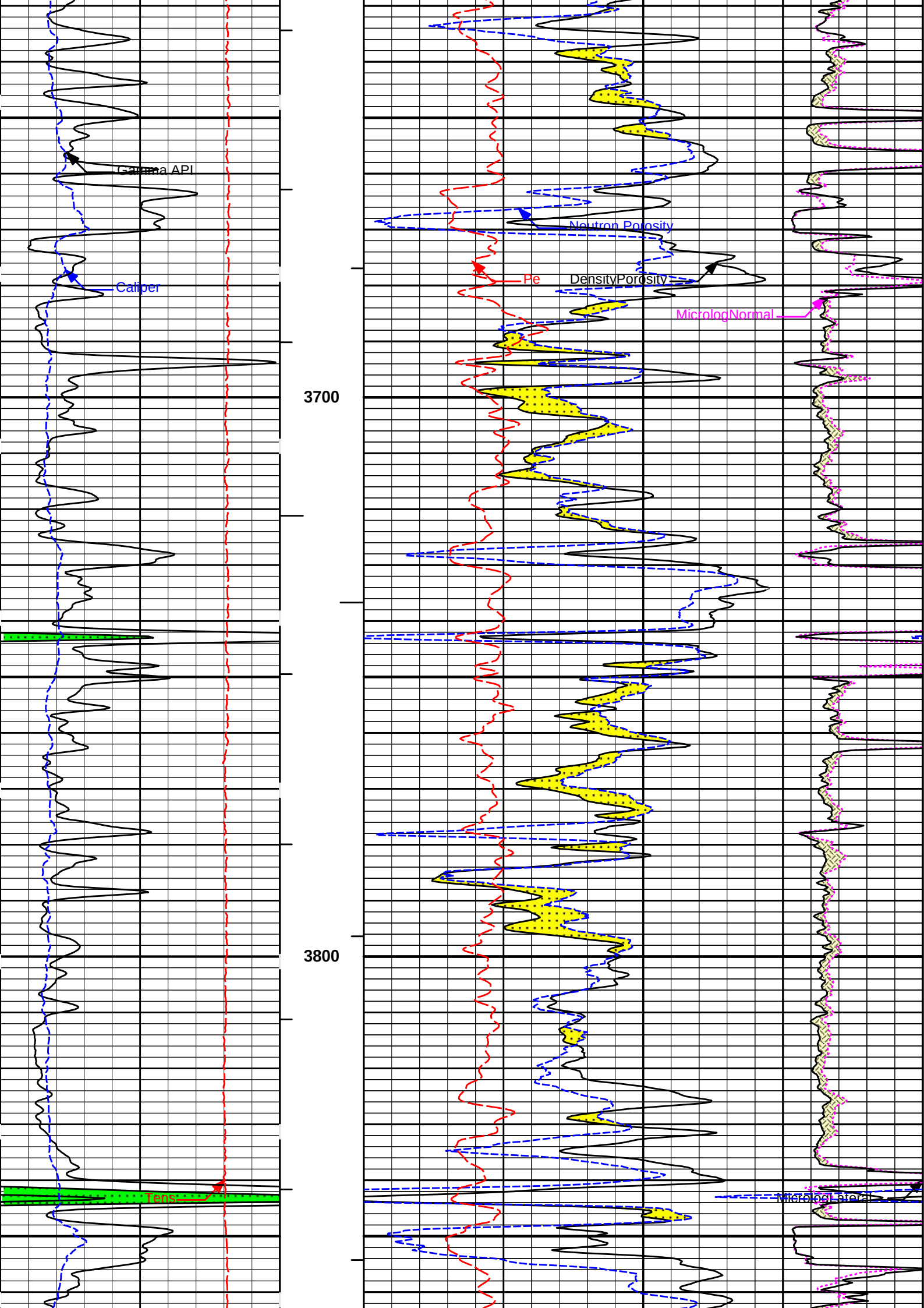
Plot Time: 03-Oct-18 18:01:02
Plot Range: 3350 ft to 4915.67 ft
Data: BEREX_LENA_MAI\Well Based\DAQ-0001-002
Plot File: \\SDL-DSN-ML\PoroML_5_main_IQ

5 INCH MAIN LOG

MAIN SECTION 5" PER 100'




3400
3500
3600
Gamma API
Caliper
Tens
Neutron Porosity
Pe
DensityPorosity
MicrologNormal
MicrologLateral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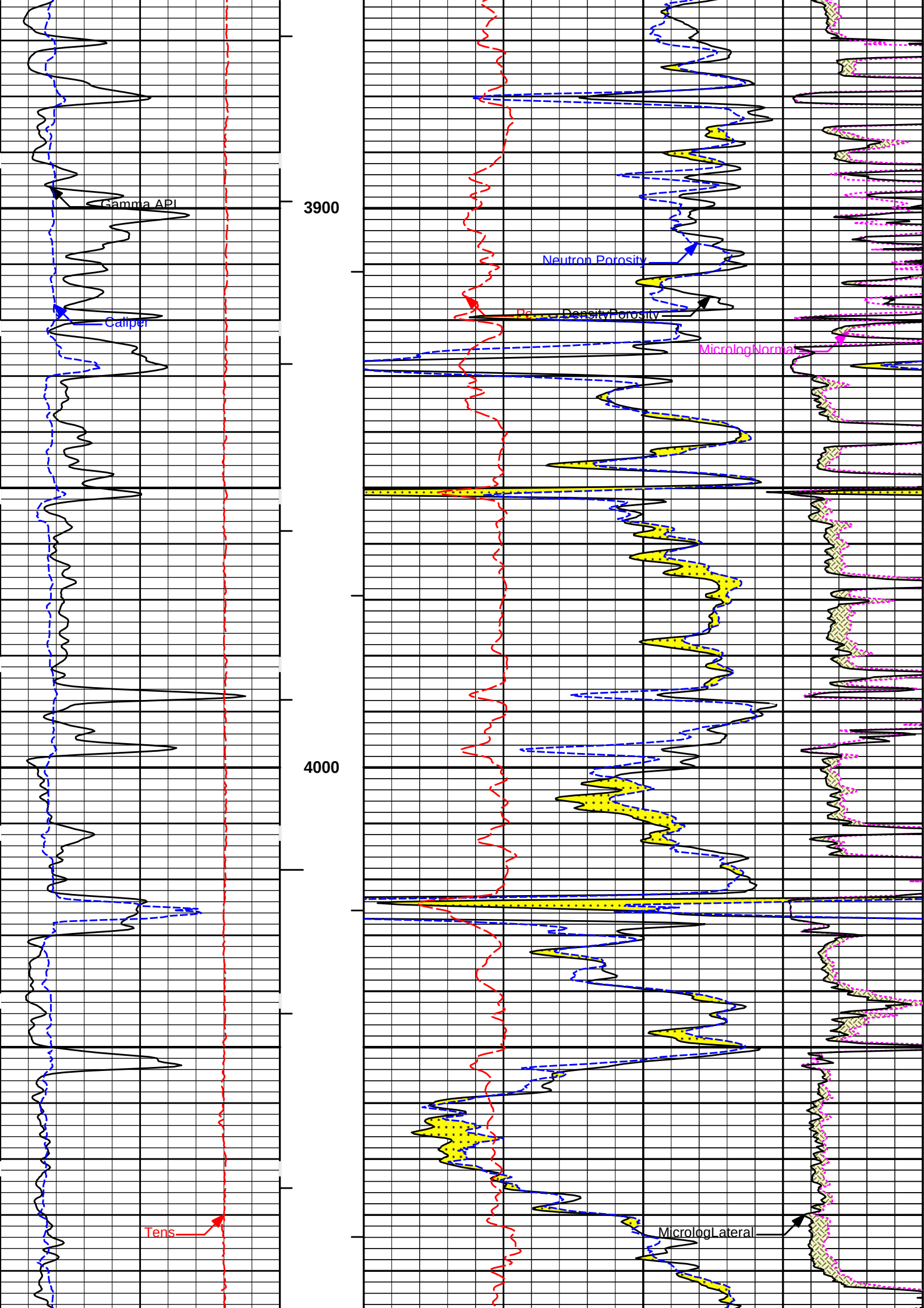
Neutron Porosity
Pe
DensityPorosity
MicrologNormal
3700
3800
Tens
MicrologLateral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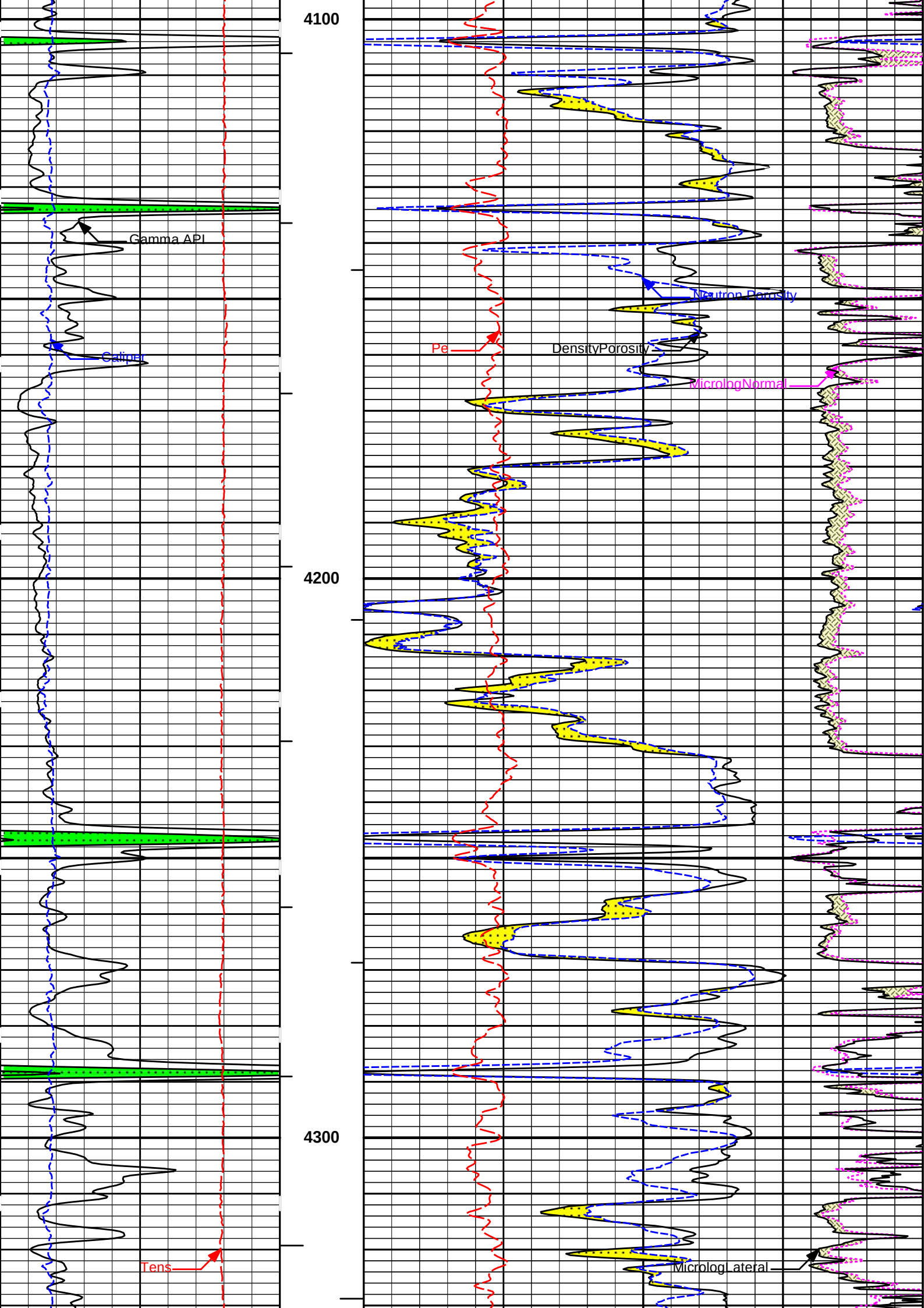
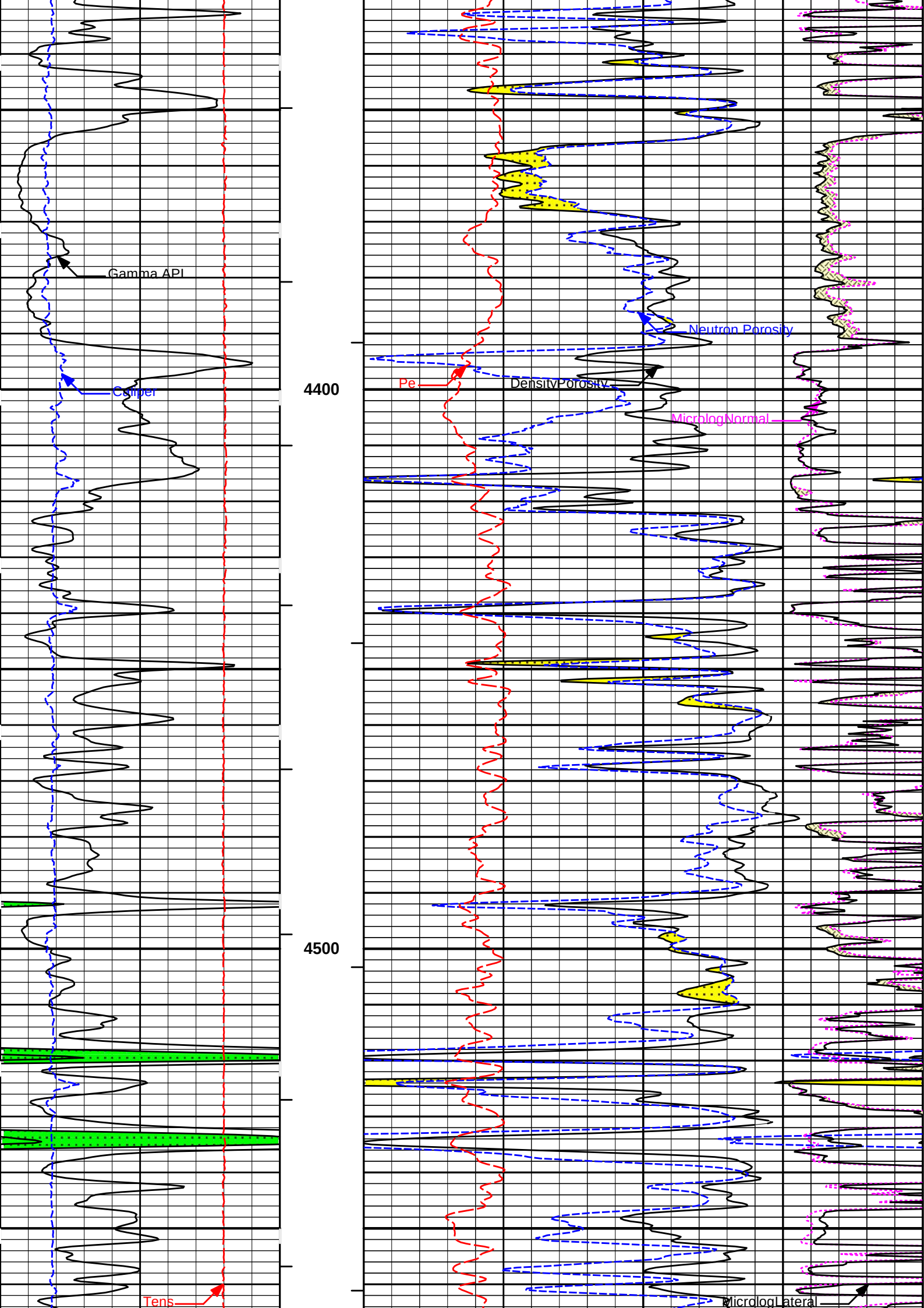
Caliper
Tens
3900
4000
Neutron Porosity
DensityPorosity
MicrologNormal
MicrologLateral


4100
4200
4300
Gamma API
Caliper
Tens
Pe
DensityPorosity
Neutron Porosity
MicrologNormal
Micrologl ateral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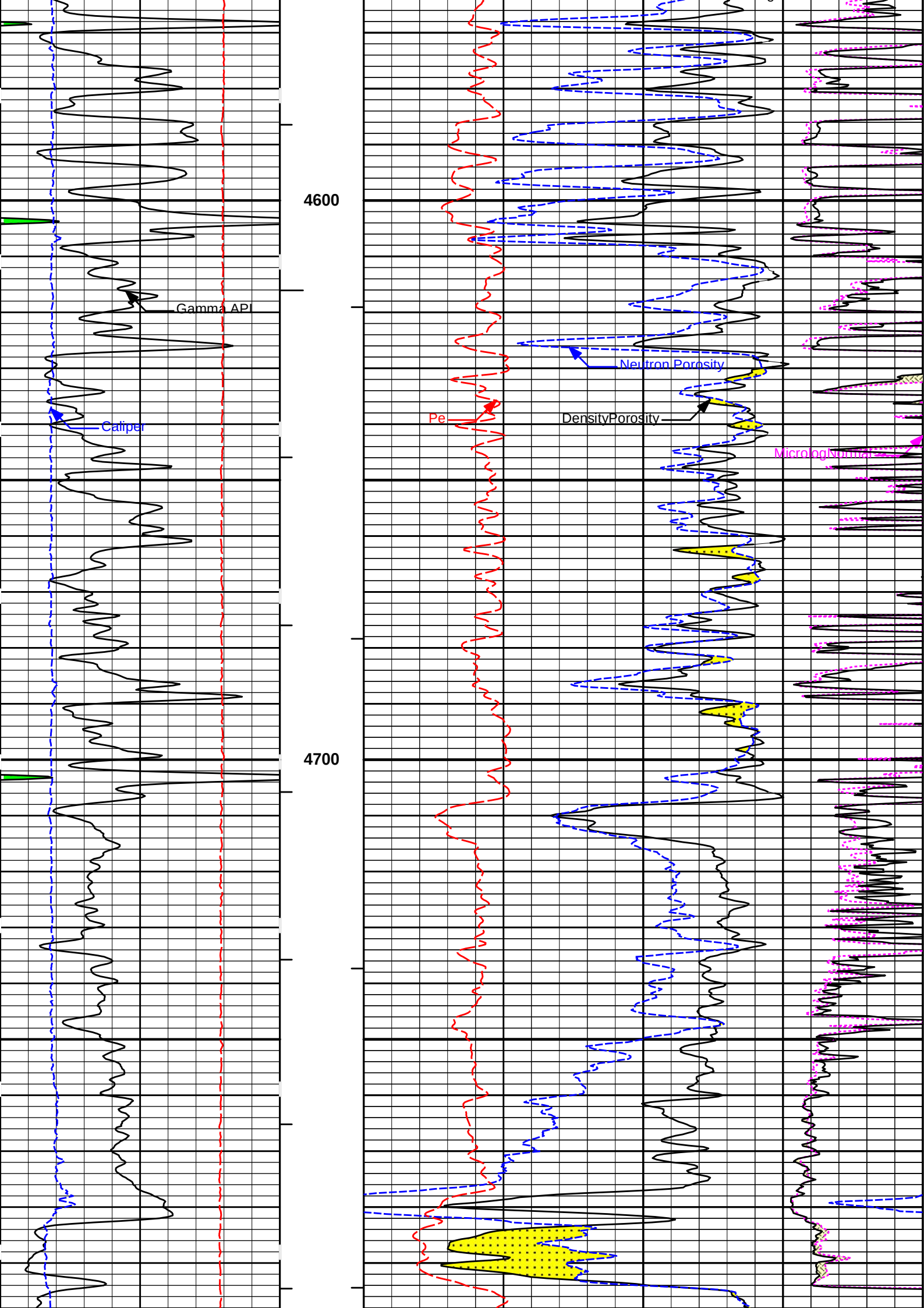
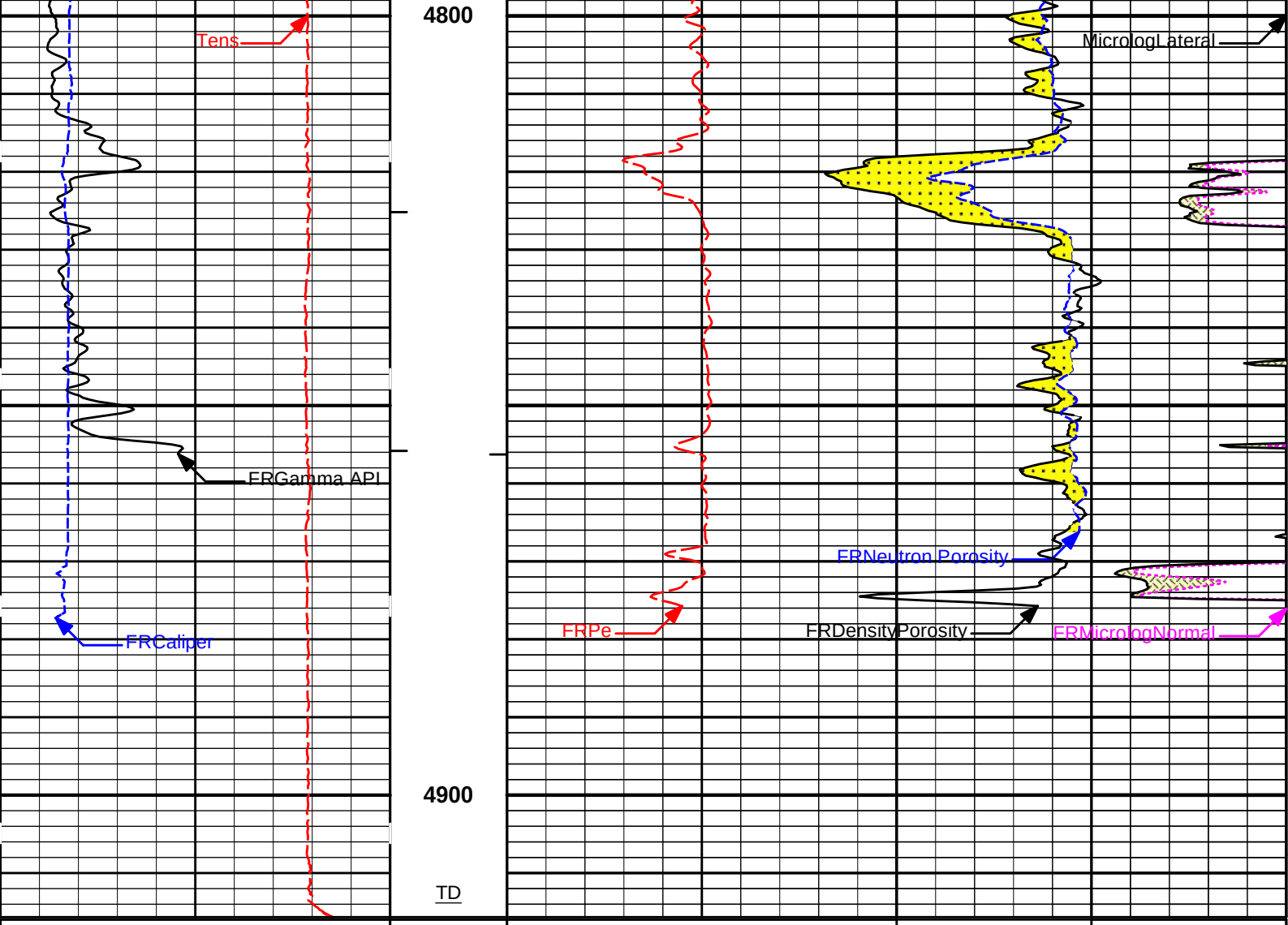
Caliper
Tens
4400
4500
Pe
DensityPorosity
Neutron Porosity
MicrologNormal
MicrologLateral


4600
4700
Gamma API
Caliper
Neutron Porosity
Pe
DensityPorosity



15K Tens 0
pounds

6 Caliper 16
inches

0 Gamma API 150
api

1 : 240
ft

AHVT

BHVT

0 Pe 10

0 MicrologNormal 20
ohm-metre

0 MicrologLateral 20
ohm-metre

30 DensityPorosity -10
%

30 Neutron Porosity -10
%

HALLIBURTON

Plot Time: 03-Oct-18 18:01:05
Plot Range: 3350 ft to 4915.67 ft
Data: BEREX_LENA_MAI\Well Based\DAQ-0001-002\
Plot File: \\SDL-DSN-ML\PoroML_5_main_IQ

5 INCH MAIN LOG

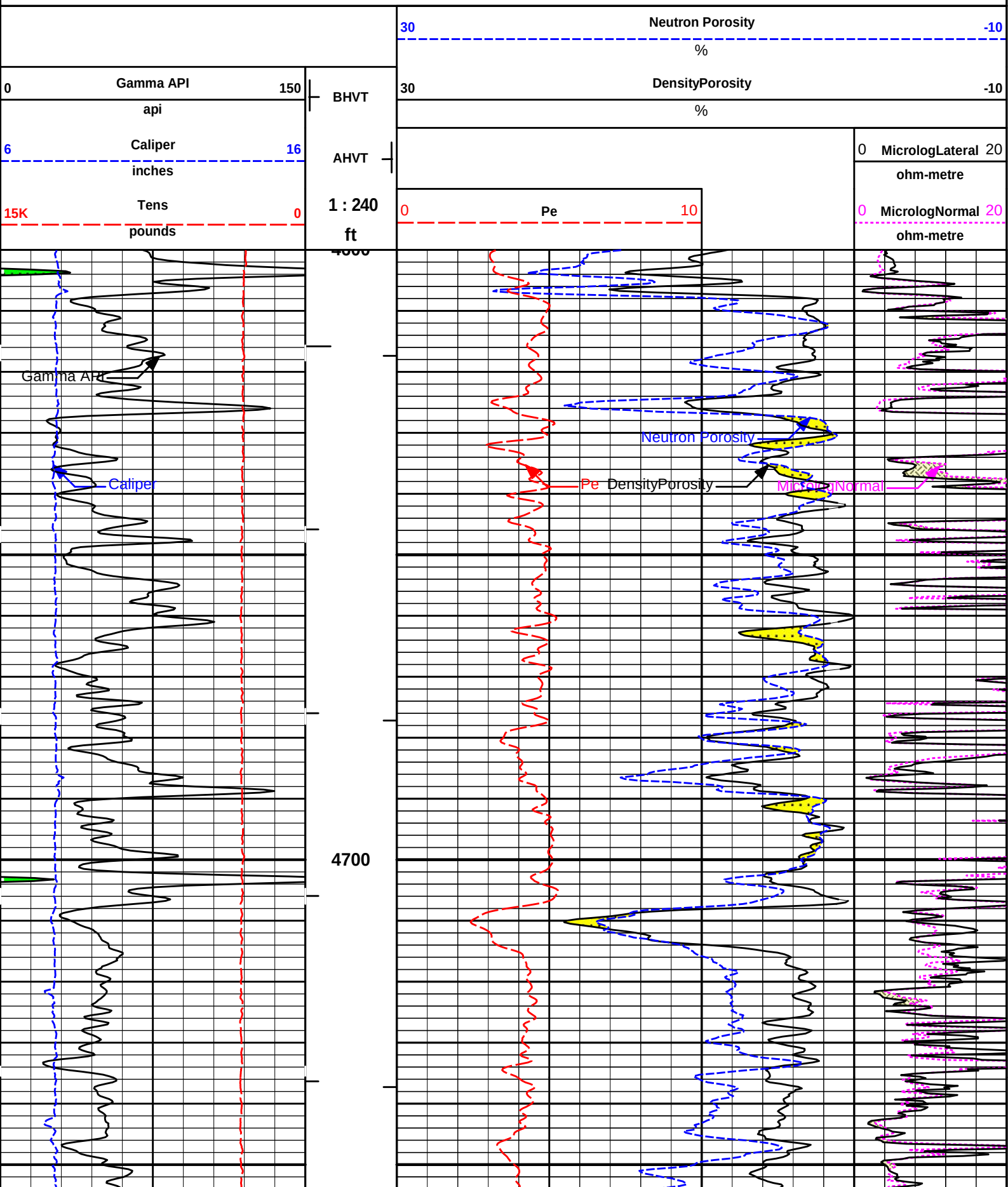
MAIN SECTION 5" PER 100'

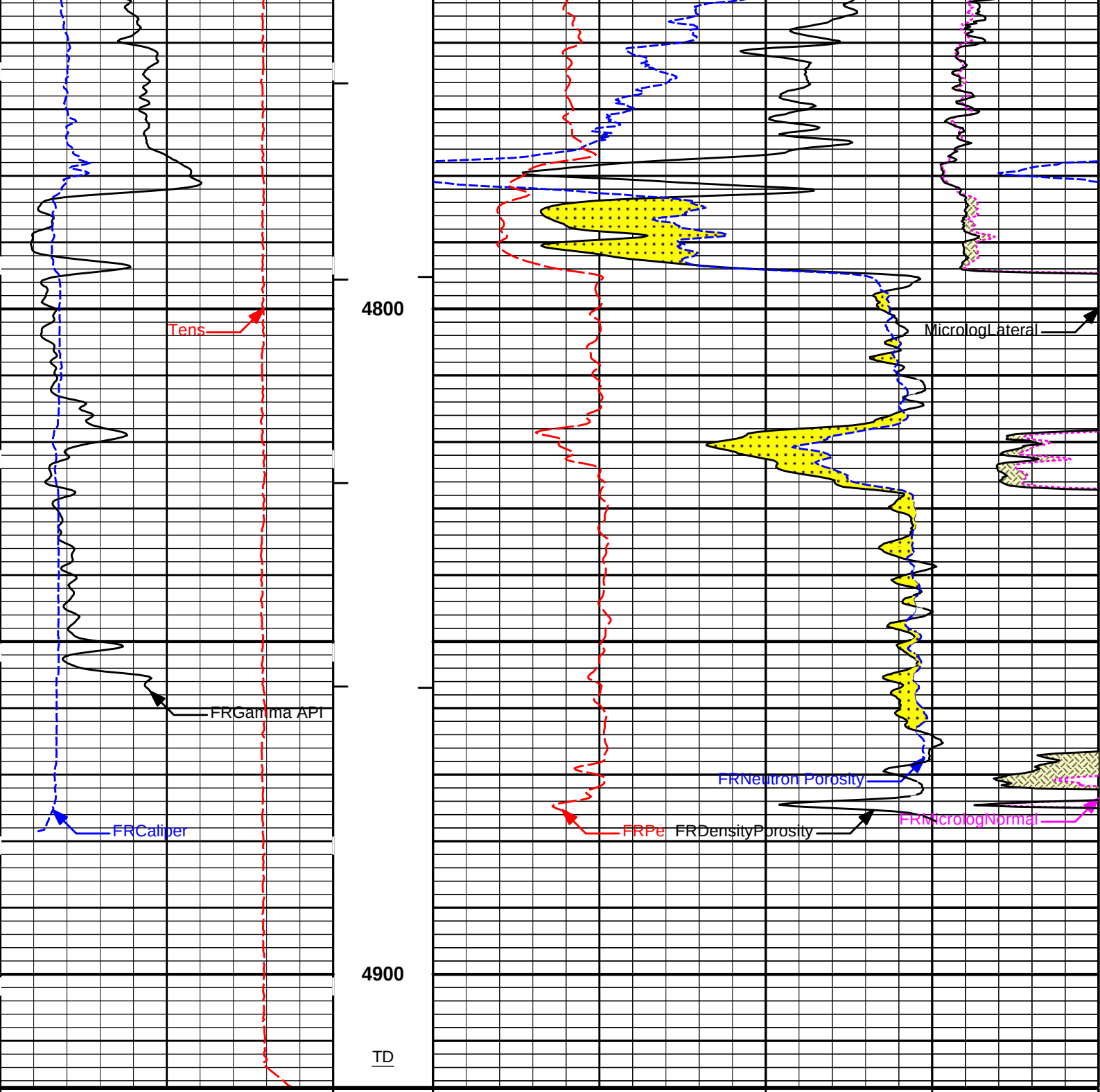
HALLIBURTON

Plot Time: 03-Oct-18 18:01:05
Plot Range: 4600 ft to 4916.92 ft
Data: BEREX_LENA_MAI\Well Based\REPEAT\
Plot File: \\SDL-DSN-ML\PoroML_5_main_IQ

REPEAT SECTION

REPEAT SECTION





15K Tens 0	1 : 240	0 Pe 10
pounds	ft	
6 Caliper 16	AHVT	0 MicrologNormal 20
inches		ohm-metre
0 Gamma API 150	BHVT	0 MicrologLateral 20
api		ohm-metre
		30 DensityPorosity -10
		%
		30 Neutron Porosity -10
		%

HALLIBURTON

Plot Time: 03-Oct-18 18:01:07
Plot Range: 4600 ft to 4916.92 ft
Data: BEREX_LENA_MAI\Well Based\REPEAT\
Plot File: \\SDL-DSN-ML\PoroML_5_main_IQ

REPEAT SECTION

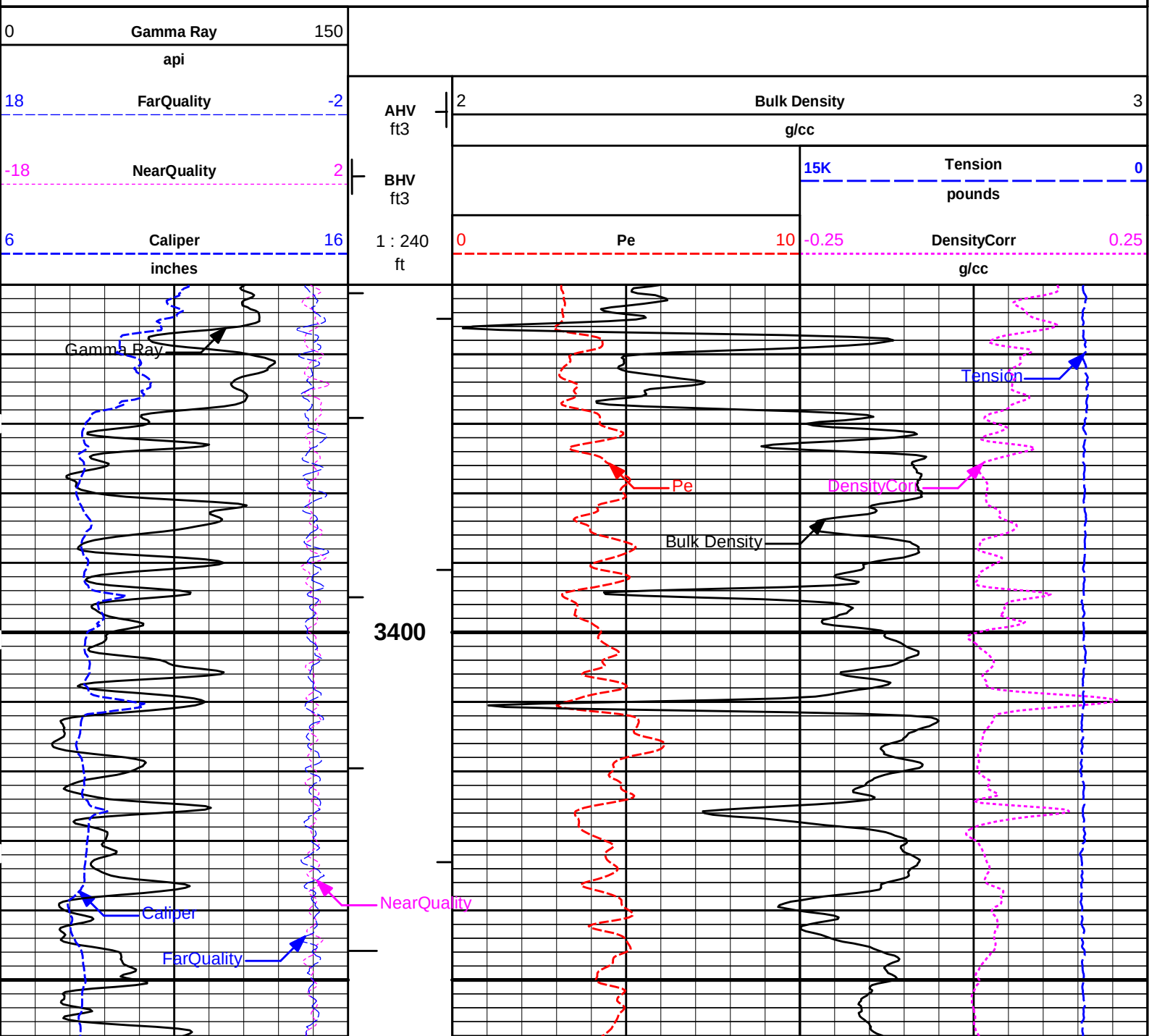
REPEAT SECTION

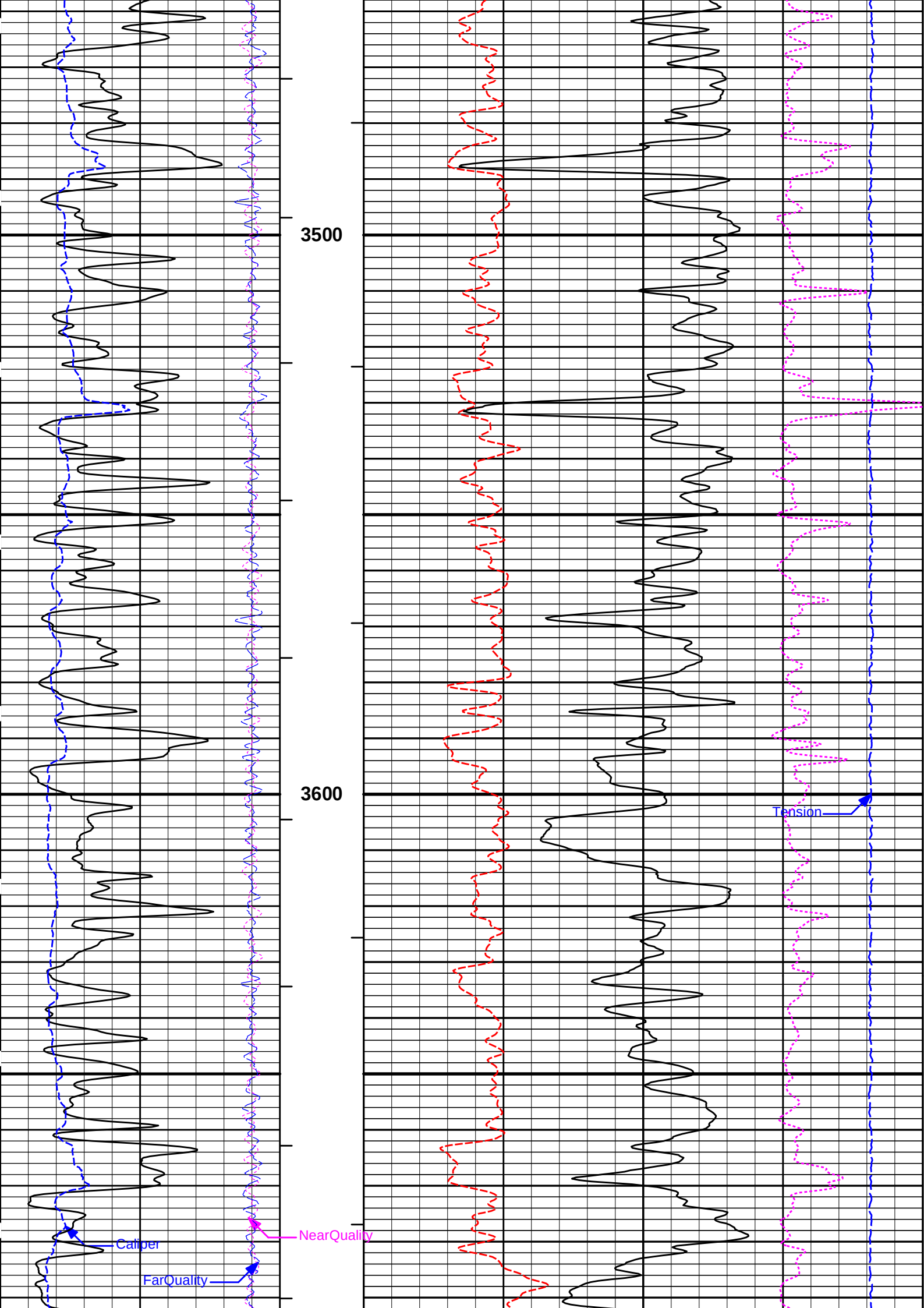
HALLIBURTON

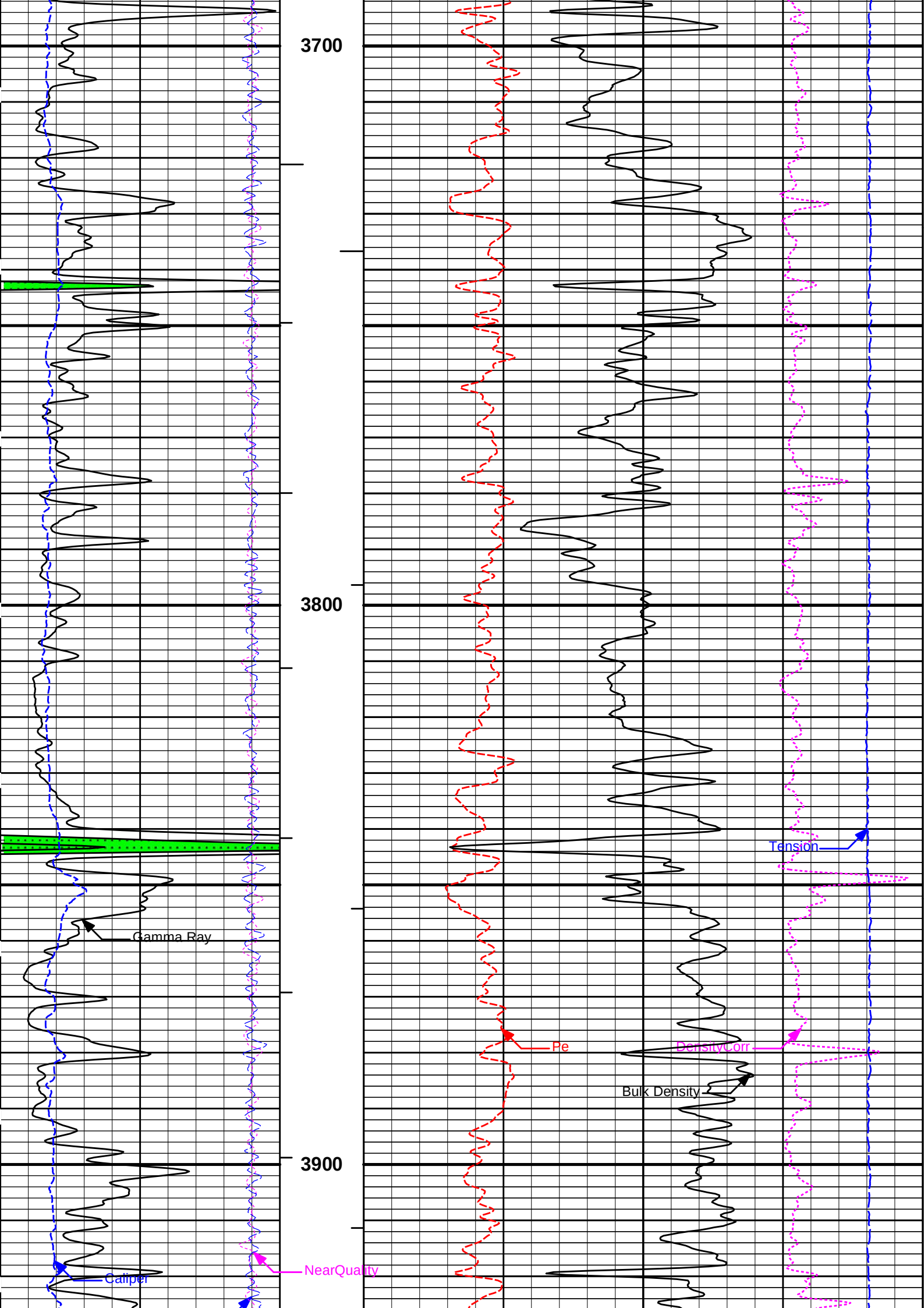
Plot Time: 03-Oct-18 18:01:07
Plot Range: 3350 ft to 4915.67 ft
Data: BEREX_LENA_MAI\Well Based\DAQ-0001-002\
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\SDL-DSN-ML\BULKD_5_MAIN_IQ

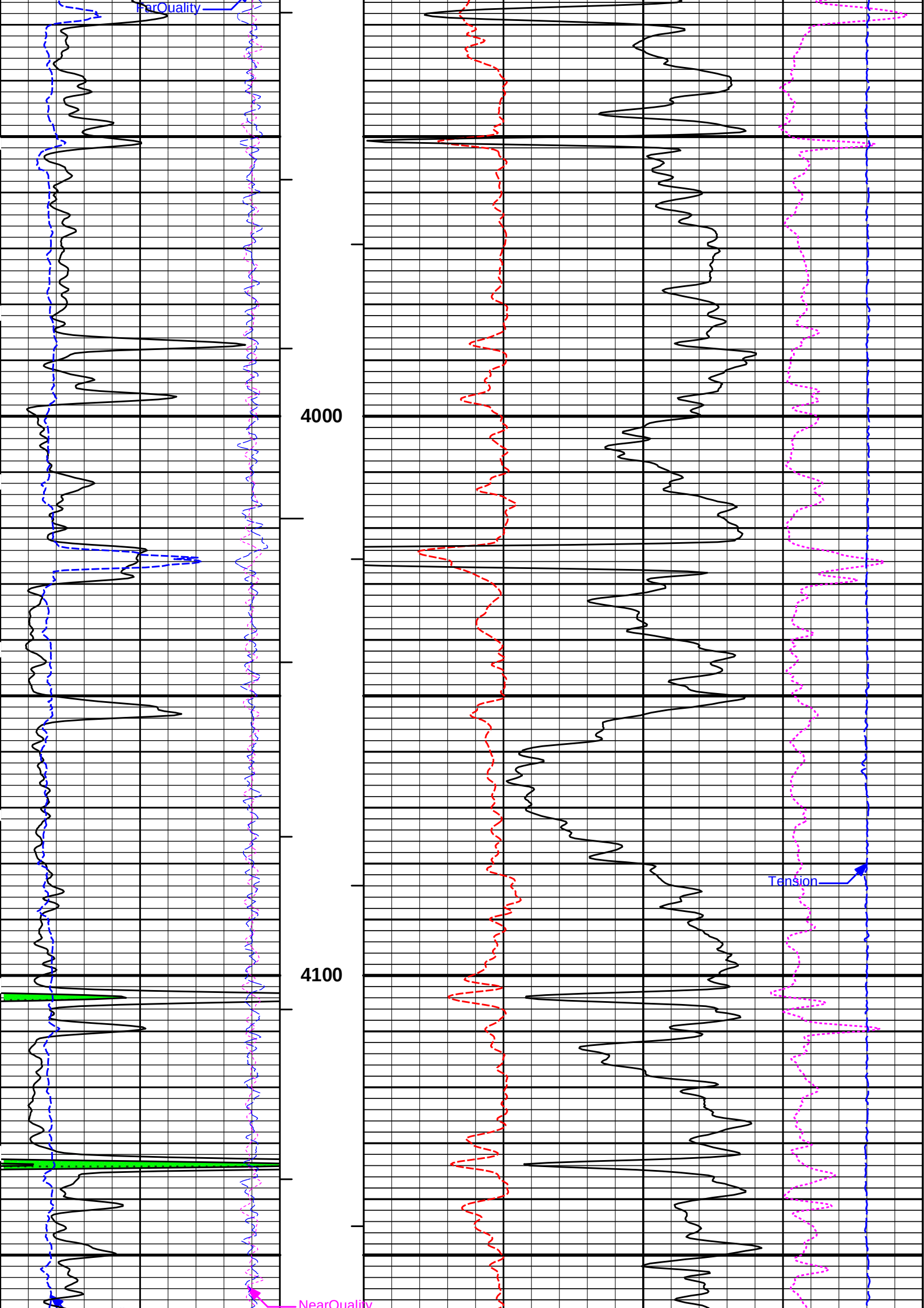
5 INCH MAIN LOG

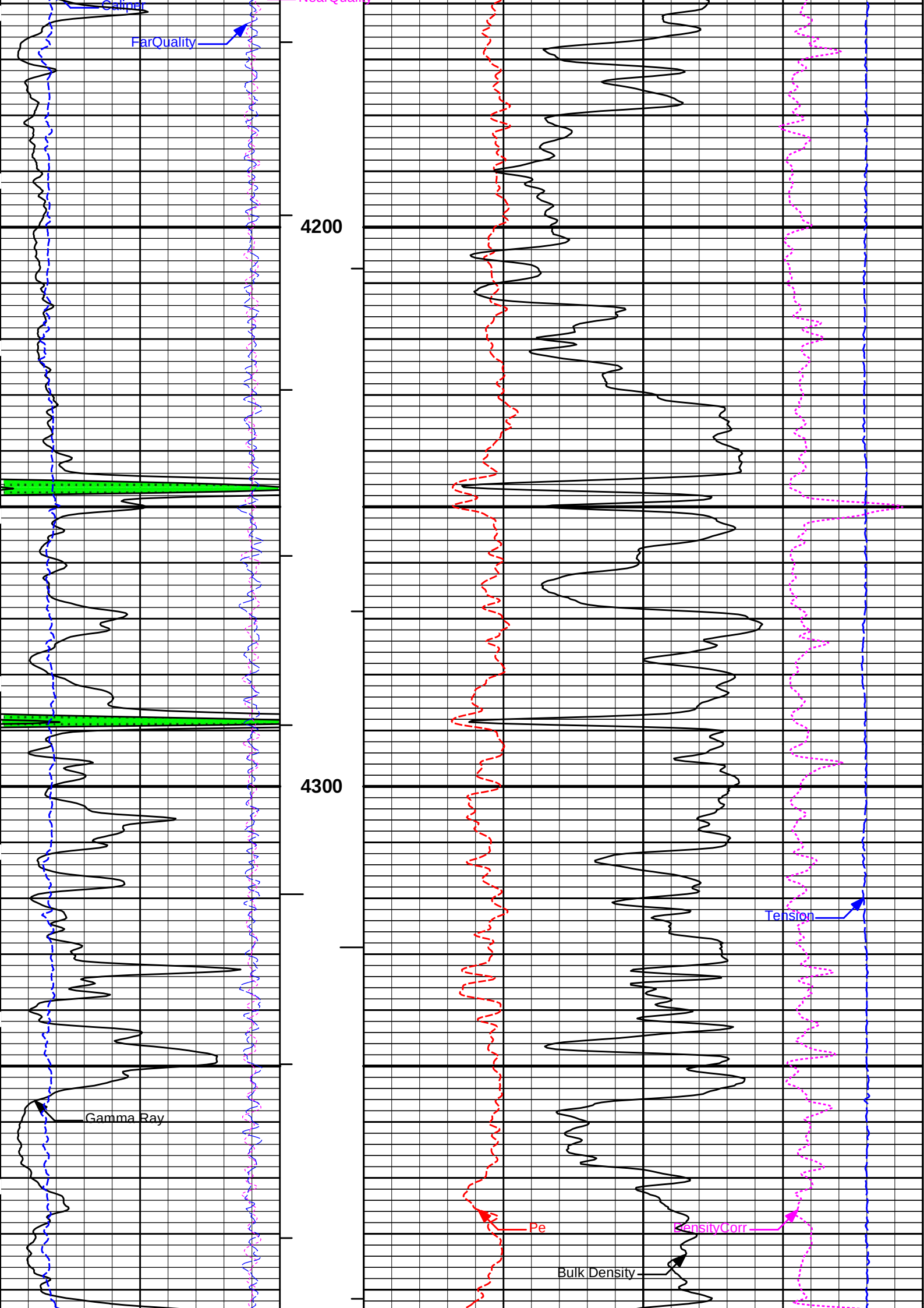
MAIN SECTION 5" PER 100'

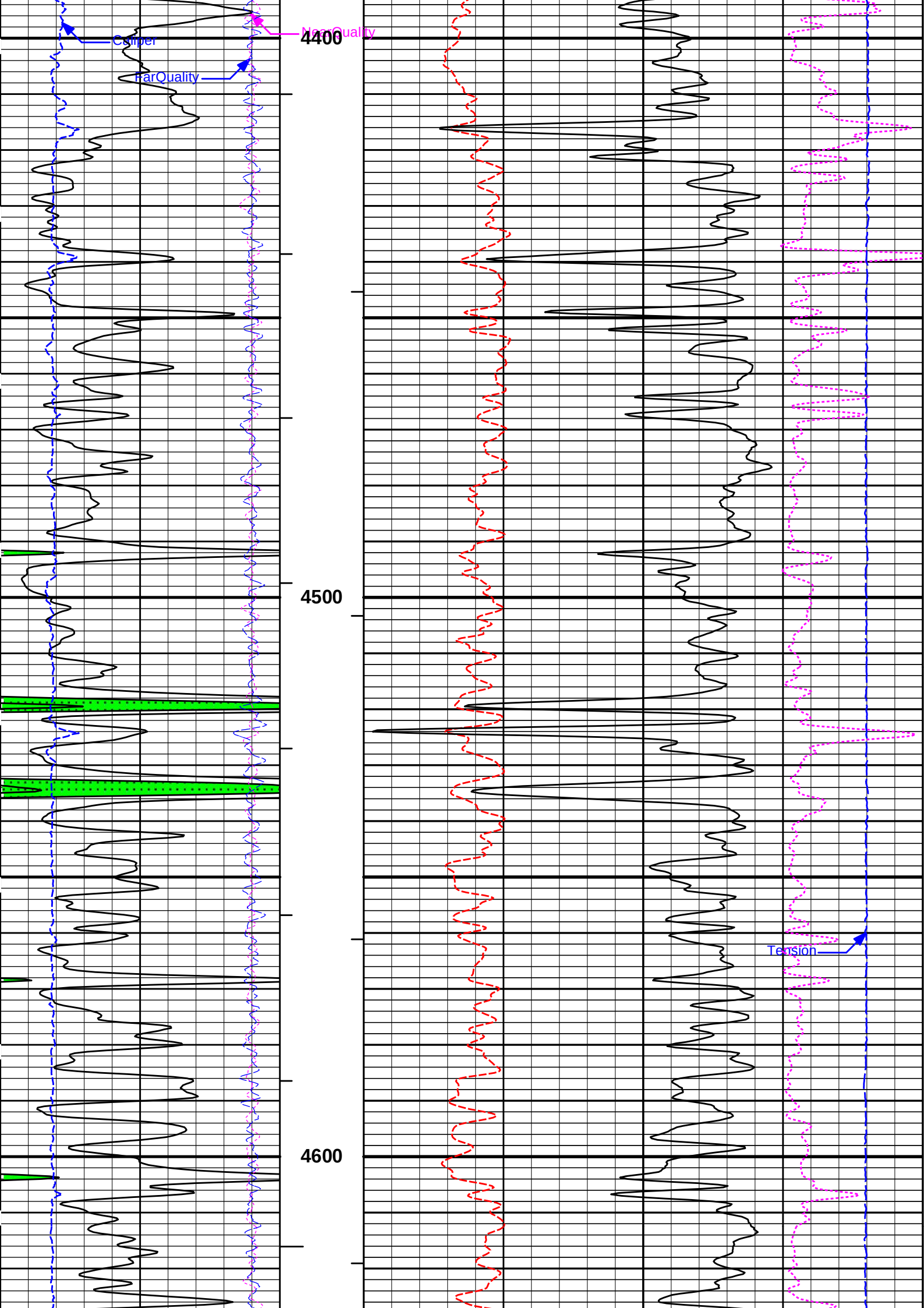


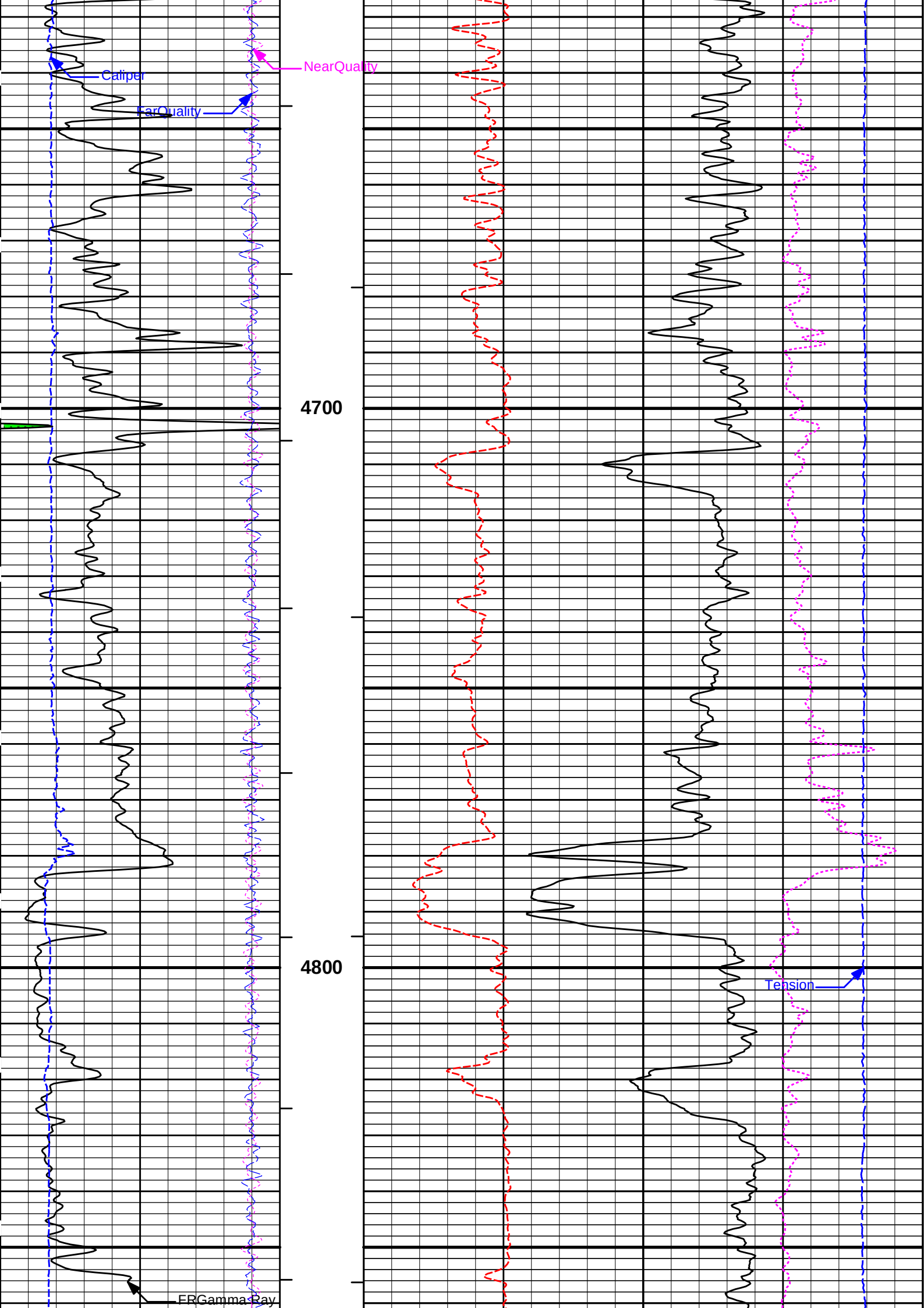

3500
3600
Tension
Caliper
NearQuality
FarQuality

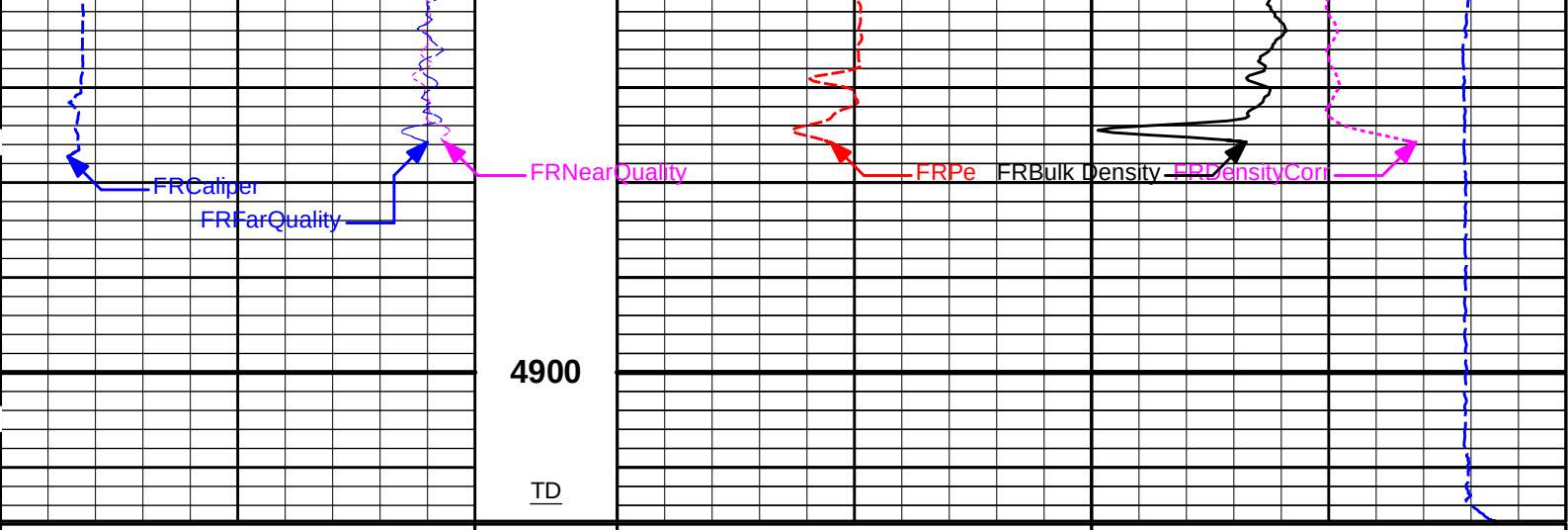

3700
3800
3900
Gamma Ray
Caliper
NearQuality
Pe
Bulk Density
DensityCorr
Tension


FarQuality
4000
4100
Tension
NearQuality


Caliper
FarQuality
4200
4300
Gamma Ray
Pe
Bulk Density
DensityCorr
Tension


Caliper
NearQuality
FarQuality
4400
4500
4600
Tension


Caliper
NearQuality
FarQuality
4700
4800
Tension
ERGamma Ray



6 Caliper 16	1 : 240 ft	0 Pe 10
inches		
-18 NearQuality 2	BHV ft3	-0.25 DensityCorr 0.25
		g/cc
		15K Tension 0
		pounds
18 FarQuality -2	AHV ft3	2 Bulk Density 3
		g/cc
0 Gamma Ray 150		
api		

HALLIBURTON

Plot Time: 03-Oct-18 18:01:09
Plot Range: 3350 ft to 4915.67 ft
Data: BEREX_LENA_MAI\Well Based\DAQ-0001-002\
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\SDL-DSN-ML\BULKD_5_MAIN_IQ

5 INCH MAIN LOG

MAIN SECTION 5" PER 100'

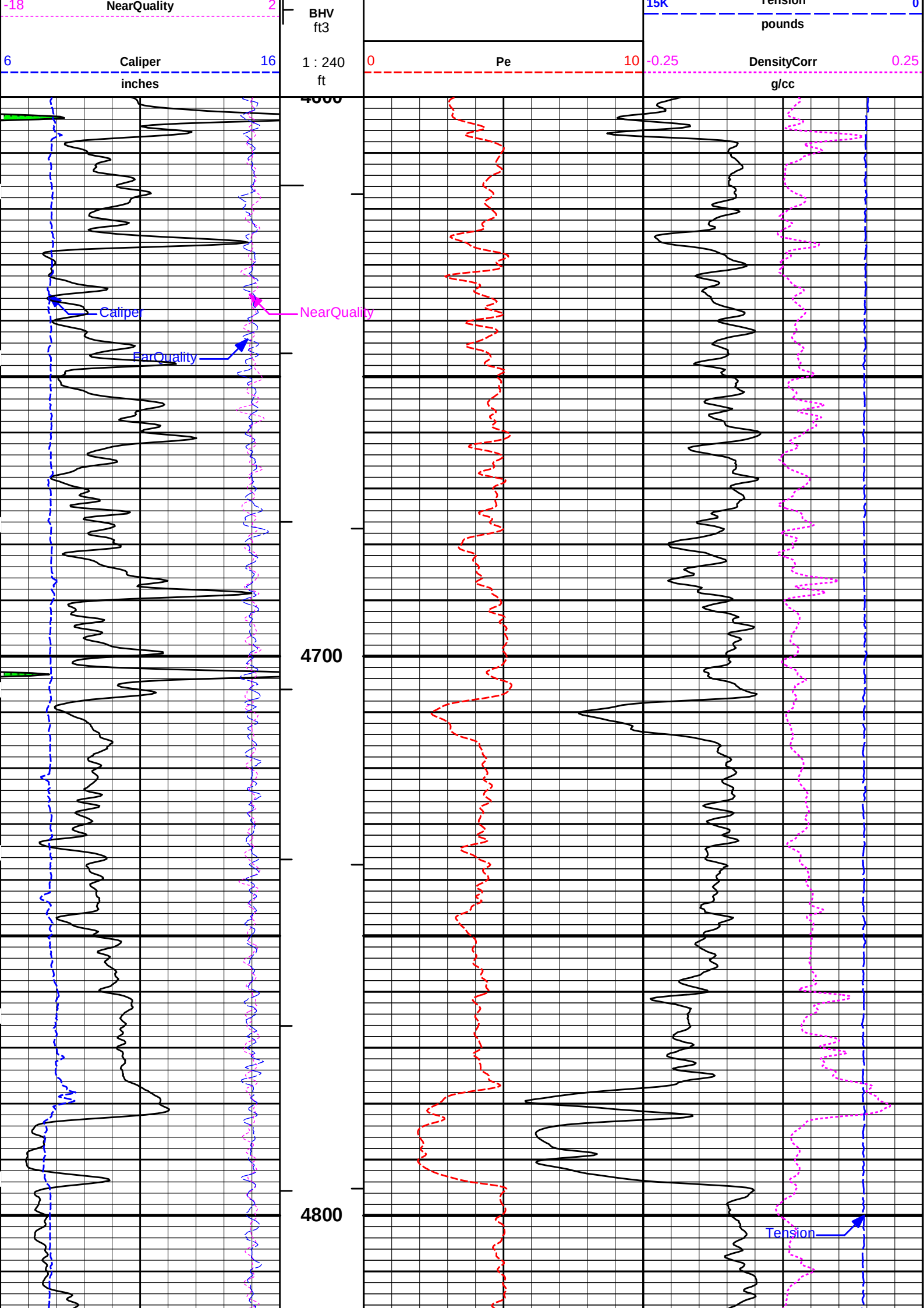
HALLIBURTON

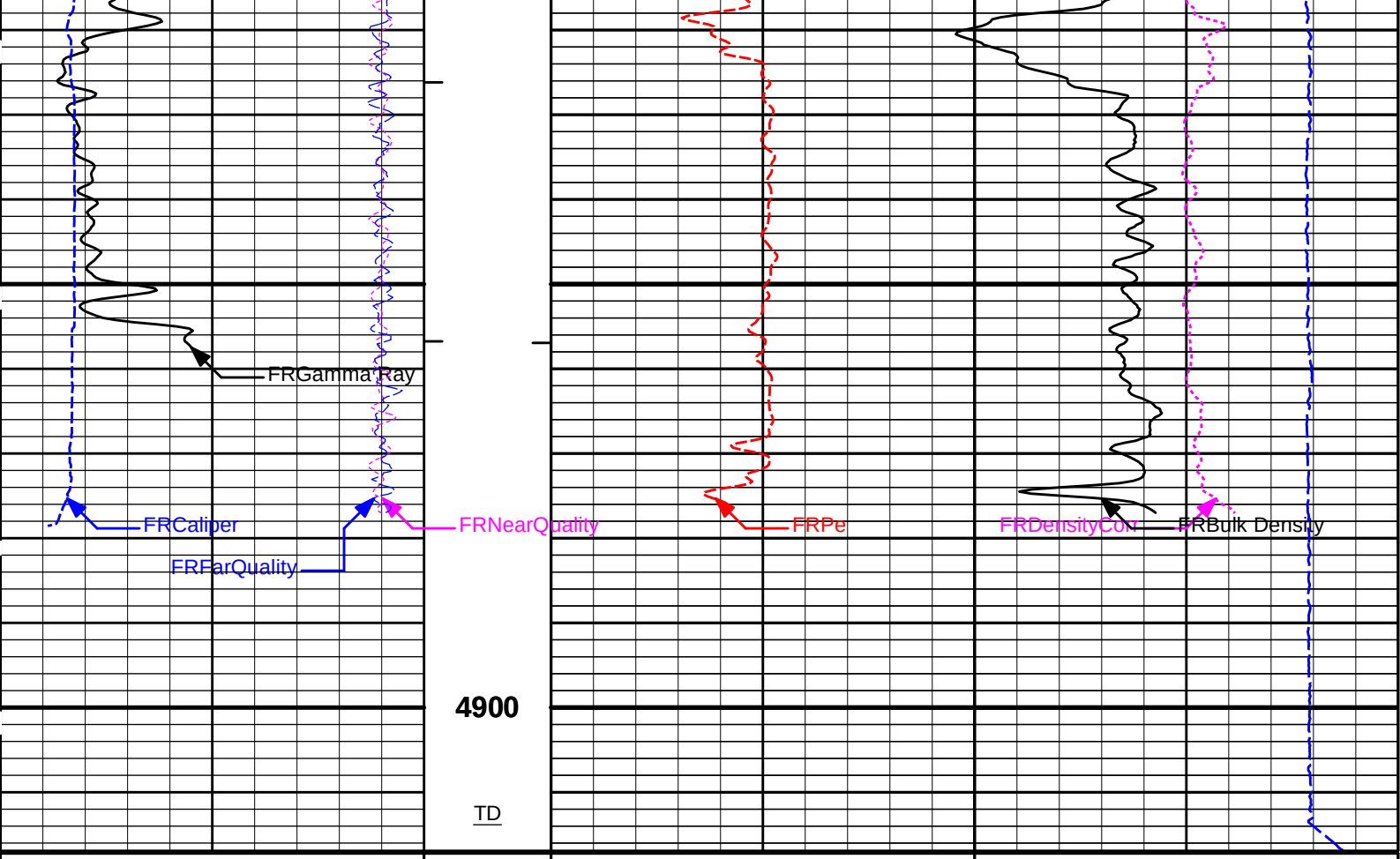
Plot Time: 03-Oct-18 18:01:10
Plot Range: 4600 ft to 4916.92 ft
Data: BEREX_LENA_MAI\Well Based\REPEAT\
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\SDL-DSN-ML\BULKD_5_MAIN_IQ

REPEAT SECTION

REPEAT SECTION

0 Gamma Ray 150		
api		
18 FarQuality -2	AHV ft3	2 Bulk Density 3
		g/cc
		15K Tension 0


-18
NearQuality
2
6
Caliper
16
inches
BHV
ft3
1 : 240
ft
0
Pe
10
15K
Tension
0
pounds
-0.25
DensityCorr
0.25
g/cc
Caliper
NearQuality
FarQuality
4700
4800
Tension



6 Caliper 16 (inches)	1 : 240 ft	0 Pe 10
-18 NearQuality 2	BHV ft3	-0.25 DensityCorr 0.25 (g/cc)
18 FarQuality -2	AHV ft3	15K Tension 0 (pounds)
0 Gamma Ray 150 (api)		2 Bulk Density 3 (g/cc)

HALLIBURTON

Plot Time: 03-Oct-18 18:01:11
Plot Range: 4600 ft to 4916.92 ft
Data: BEREX_LENA_MAI\Well Based\REPEAT\
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\SDL-DSN-ML\BULKD_5_MAIN_IQ

REPEAT SECTION

REPEAT SECTION

HALLIBURTON

CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name:	Depth Panel - 12345678	Reference Calibration Date:	27-Sep-18 12:42:20
Engineer:	SEAN WOLTEMATH	Calibration Date:	28-Sep-18 12:48:18
Software Version:	WL INSITE R5.8.9 (Build 6)	Calibration Version:	1

SURFACE TENSION LOAD CELL				
Measurement	Load Cell Value	Measurement	Calibrated	Units
Low	10173.27	12.23	0.00	lbs
High	17562.87	7941.31	7830.00	lbs

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name: RWCH - 12345678 **Reference Calibration Date:** 28-Sep-18 12:50:19

Engineer: WHITLOCK **Calibration Date:** 02-Oct-18 05:08:35

Software Version: WL INSITE R5.8.9 (Build 6) **Calibration Version:** 1

DOWNHOLE LOAD CELL				
Measurement	Tool Value	Measurement	Calibrated	Units
Low	-336.49	-3.58	0.00	lbs
High	10973.20	1278.61	1500.00	lbs

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11013113 **Reference Calibration Date:** 02-May-18 11:20:36

Engineer: WHITLOCK **Calibration Date:** 05-Aug-18 09:58:00

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Calibrator Source S/N: TB-79

Calibrator API Reference:222.00 api

Equivalent Calibrator API Reference:225.9 api

Measurement	Measured	Calibrated	Units
Background	26.4	26.2	api
Background + Calibrator	253.6	252.1	api
Calibrator	227.2	225.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11013113 **Reference Calibration Date:** 05-Aug-18 09:58:00

Engineer: WHITLOCK **Calibration Date:** 30-Sep-18 10:17:04

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Calibrator Source S/N: TB-79

Calibrator API Reference:222.00 api

Equivalent Calibrator API Reference:225.9 api

Field Verification	Shop	Field	Units
Background	26.2	13.5	api
Background + Calibrator	252.1	246.2	api
Calibrator	225.9	232.7	api

Shop	Field	Difference	Tolerance
225.9	232.7	-6.8	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11019641 **Reference Calibration Date:** 04-Aug-18 12:03:14

Engineer: SCHLIEM **Calibration Date:** 04-Aug-18 12:26:27

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Logging Source S/N: DSN-436

Tank Serial Number: EL RENO HWT

Reference value assigned to Tank: 56.100

Snow Block S/N: 12156883

Calibration Tank Water Temperature: 89 degF

Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value

Gain:	0.97922	0.97742	0.900 - 1.100

WATER TANK SUMMARY (Horizontal Water Tank)

Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decp):	0.2364	0.2358	0.0006	+/- 0.0020
Calibrated Ratio:	10.5794	10.5599	0.019	+/- 0.050

VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0667	0.02000 - 0.09000

PASS/FAIL SUMMARY

Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name: DSNT - 11019641 **Reference Calibration Date:** 04-Aug-18 12:26:27

Engineer: WHITLOCK **Calibration Date:** 30-Sep-18 09:21:36

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Logging Source S/N: DSN-436

Snow Block S/N: 12156883

NEUTRON FIELD-CHECK SUMMARY

	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0667	0.0665	-0.0002	+/- 0.0150

PASS/FAIL SUMMARY

Block Change Check:	Passed
Snow Block Stat Check:	Passed
Temperature Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name: SDLT - 10960494 **Reference Calibration Date:** 01-Jan-70 00:00:00

Engineer: WHITLOCK **Calibration Date:** 08-Jun-18 16:19:27

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Host Tool Name: DSNT - 11019641

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-3977.11	-3977.11	-7000.00 - -1000.00
Pad Gain	0.0003897	0.0003897	0.0002000 - 0.0006000
Arm Offset	-3073.13	-3073.13	-5000.00 - 3000.00
Arm Gain	0.0005210	0.0005210	0.000300 - 0.000700
Arm Power	-0.000005094	-0.000005094	-0.000010000 - 0.000010000

The ring diameter is computed from: DIAMETER = PAD EXTENSION + ARM EXTENSION + TOOL DIAMETER

Tool Diameter: 4.50 in

CALIBRATION RINGS

Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	Control Limit On New Value
PAD EXTENSION:				
Small Ring (in)	2.00	2.00	0.00	+/- 0.20
Medium Ring (in)	3.75	3.75	0.00	+/- 0.20
RING DIAMETER:				

Small Ring (in)	6.50	6.50	0.00	+/- 0.20
Medium Ring (in)	8.25	8.25	0.00	+/- 0.20
Large Ring (in)	15.00	15.00	0.00	+/- 0.20

PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed
Ring-Measurement Check:	Passed

PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed

SDLT CALIPER FIELD CALIBRATION

Tool Name: SDLT - 10960494 **Reference Calibration Date:** 08-Jun-18 16:19:27

Engineer: WHITLOCK **Calibration Date:** 30-Sep-18 09:40:30

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.79	0.04	+/- 0.10
Ring Diameter	8.25	8.25	-0.00	+/- 0.15

PASS/FAIL SUMMARY	
Pad Extension Check:	Passed
Diameter Check:	Passed

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name: ACRt Sonde - 11830728 **Reference Calibration Date:** 23-Feb-18 10:15:37

Engineer: WHITLOCK **Calibration Date:** 06-Jun-18 13:24:46

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Host Tool Name: ACRt Instrument - 11830684

TYPICAL GAIN RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0279	1.05	0.95	1.0076	1.05	0.95	0.9997	1.05
A2 (50")	0.95	1.0334	1.05	0.95	1.0139	1.05	0.95	1.0097	1.05
A3 (29")	0.95	1.0346	1.05	0.95	1.0146	1.05	0.95	1.0081	1.05
A4 (17")	0.95	1.0279	1.05	0.95	1.0063	1.05	0.95	1.0018	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0001	1.05	0.95	0.9950	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9869	1.05	0.95	0.9818	1.05

SONDE OFFSET

Subarray	R12KHz	R36KHz	R72KHz
	(mmho/m)	(mmho/m)	(mmho/m)
A1 (80")	0.315	-4.964	-5.711
A2 (50")	0.409	-3.450	-5.485
A3 (29")	-11.648	-3.720	-3.783
A4 (17")	-90.980	-28.724	-23.707
A5 (10")	N/A	-76.200	-37.537
A6 (6")	N/A	280.488	149.005

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.82	1.3
36K	1.0	1.80	2.0
72K	1.0	1.05	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	0.99	1.05

PASS/FAIL SUMMARY	
GAIN RANGE CHK	PASS
SONDE OFFSET CHK	PASS

TOOL OK TO LOG

QUALITY CHECK SHOP CALIBRATION

Tool Name:	**ACRt Sonde - 11830728**	**Reference Calibration Date:**	**23-Feb-18 10:21:17**
Engineer:	**WHITLOCK**	**Calibration Date:**	**06-Jun-18 14:01:20**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**Calibration Version:**	**1**
Host Tool Name:	**ACRt Instrument - 11830684**		

STANDARD DEVIATIONS

	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A2 (50")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A3 (29")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A4 (17")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A5 (10")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A6 (6")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass

AVERAGES

	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.006	> -0.500	Pass
A2 (50")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.005	> -0.500	Pass
A3 (29")	-0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.003	> -0.500	Pass
A4 (17")	-0.002	> -0.500	Pass	-0.006	> -0.500	Pass	-0.022	> -0.500	Pass
A5 (10")	-0.010	> -0.500	Pass	-0.017	> -0.500	Pass	-0.036	> -0.500	Pass
A6 (6")	0.014	< 0.500	Pass	0.063	< 0.500	Pass	0.138	< 0.500	Pass

GAIN TOLERANCE

R12KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-213173456.000	-213653808.000	480352.000	10682690.400	Pass
A2 (50")	-205651744.000	-206143280.000	491536.000	10307164.000	Pass
A3 (29")	-200817664.000	-201197776.000	380112.000	10059888.800	Pass
A4 (17")	-200193568.000	-200629872.000	436304.000	10031493.600	Pass
A5 (10")	-200252336.000	-200678960.000	426624.000	10033948.000	Pass
A6 (6")	-199820688.000	-200219344.000	398656.000	10010967.200	Pass

R36KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	48114080.000	48477272.000	363192.000	2423863.600	Pass
A2 (50")	33966292.000	34324412.000	358120.000	1716220.600	Pass
A3 (29")	28032378.000	28346680.000	314302.000	1417334.000	Pass
A4 (17")	27853682.000	28207516.000	353834.000	1410375.800	Pass
A5 (10")	27373208.000	27716930.000	343722.000	1385846.500	Pass
A6 (6")	26035236.000	26360300.000	325064.000	1318015.000	Pass

R72KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail

A1 (80")	-92927656.000	-93022904.000	95248.000	4651145.200	Pass
A2 (50")	-90501024.000	-90617752.000	116728.000	4530887.600	Pass
A3 (29")	-88192472.000	-88292832.000	100360.000	4414641.600	Pass
A4 (17")	-88397088.000	-88515880.000	118792.000	4425794.000	Pass
A5 (10")	-86957704.000	-87076952.000	119248.000	4353847.600	Pass
A6 (6")	-87976216.000	-88080696.000	104480.000	4404034.800	Pass

PASS/FAIL SUMMARY	
Std Deviation Verification	Pass
Average Verification	Pass
Gain Tolerance Verification	Pass

MICRO LOG SHOP CALIBRATION

Tool Name: Microlog Pad - 10960494
Reference Calibration Date: 08-Jun-18 16:08:54
Engineer: WHITLOCK
Calibration Date: 30-Sep-18 13:47:51
Software Version: WL INSITE R5.8.9 (Build 6)
Calibration Version: 1
Host Tool Name: DSNT - 11019641

CALIBRATION COEFFICIENT SUMMARY

Measurement	Micro Log Normal		Micro Log Lateral		
	Measured	Calibrated	Measured	Calibrated	Units
Tool Zero	-0.07	-0.14	-0.00	-0.01	ohmm
Calibration Point #1	0.07	0.00	0.00	0.00	ohmm
Calibration Point #2	20.01	20.00	19.95	20.00	ohmm
Internal Reference	19.84	19.83	19.92	19.97	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	-0.08	0.35	V
Calibration Point #1	37.72	2.09	V
Calibration Point #2	5356.95	6956.77	V
Internal Reference	5312.51	6945.81	V

MICRO LOG FIELD CHECK

Tool Name: Microlog Pad - 10960494
Reference Calibration Date: 30-Sep-18 13:47:51
Engineer: WHITLOCK
Calibration Date: 30-Sep-18 13:49:10
Software Version: WL INSITE R5.8.9 (Build 6)
Calibration Version: 1

Measurement	Micro Log Normal		Micro Log Lateral		
	Shop	Field	Shop	Field	Units
Tool Zero	-0.14	-0.14	-0.01	-0.01	ohmm
Internal Reference	19.83	19.86	19.97	19.99	ohmm

Summary

Signal	Shop	Field	Difference	Tolerence
Microlog Normal	19.83	19.86	-0.03	+/- 0.80
Microlog Lateral	19.97	19.99	-0.02	+/- 0.80

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 11213308
Reference Calibration Date: 17-Sep-18 12:07:25
Engineer: WHITLOCK
Calibration Date: 17-Sep-18 12:30:06
Software Version: WL INSITE R5.6.3 (Build 4)
Calibration Version: 1

Logging Source S/N: 5475GW
Aluminum Block S/N: EL RENO — Density: 2.581g/cc — Pe: 3.170
Magnesium Block S/N: EL RENO — Density: 1.687g/cc — Pe: 2.594

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0089	1.0095	0.90 - 1.10
Near Dens Gain	0.9949	0.9972	0.90 - 1.10
Near Peak Gain	1.0098	1.0259	0.90 - 1.10
Near Lith Gain	1.0052	1.0142	0.90 - 1.10
Far Bar Gain	1.0078	1.0061	0.90 - 1.10
Far Dens Gain	0.9950	0.9953	0.90 - 1.10
Far Peak Gain	0.9901	0.9911	0.90 - 1.10
Far Lith Gain	0.9745	0.9764	0.90 - 1.10
Near Bar Offset	0.0471	0.0438	NONE
Near Dens Offset	0.1758	0.1544	NONE
Near Peak Offset	0.0270	-0.1077	NONE
Near Lith Offset	0.0345	-0.0412	NONE
Far Bar Offset	-0.0195	-0.0036	NONE
Far Dens Offset	0.1103	0.1086	NONE
Far Peak Offset	0.1339	0.1248	NONE
Far Lith Offset	0.2115	0.1964	NONE
Near Bar Background	945.62	947.60	700 - 1450
Near Dens Background	315.82	314.50	230 - 480
Near Peak Background	136.57	137.87	100 - 210
Near Lith Background	168.89	168.30	125 - 260
Far Bar Background	482.51	480.15	450 - 900
Far Dens Background	193.40	193.79	175 - 345
Far Peak Background	78.35	78.65	70 - 140
Far Lith Background	80.88	79.56	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.685	1.687	0.002	+/- 0.015
Pe	2.557	2.563	0.006	+/- 0.150
ALUMINUM				
Density (g/cc)	2.580	2.580	-0.000	+/- 0.01500
Pe	3.115	3.136	0.021	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0003	+/- 0.0110	0.0015	+/- 0.0140
Magnesium Block	0.0001	+/- 0.0110	-0.0007	+/- 0.0140
Aluminum Block	-0.0000	+/- 0.0110	-0.0006	+/- 0.0140
Resolution	9.24	6.00 - 11.50	9.28	6.00 - 11.50
Internal Verifier(B+D+P+L)	1568	1200 - 2700	832	800 - 1700

PASS/FAIL SUMMARY

Background Quality Check:	Passed
Background Range Check:	Passed
Background Resolution Check:	Passed
Background Verification Check:	Passed
Magnesium Quality Check:	Passed
Aluminum Quality Check:	Passed
Gains Check:	Passed

Changes in Calibration Blocks:	Passed

SPECTRAL DENSITY FIELD CHECK

Tool Name:	**SDLT Pad - 11213308**	**Reference Calibration Date:**	**17-Sep-18 12:30:06**
Engineer:	**WHITLOCK**	**Calibration Date:**	**30-Sep-18 13:46:13**
Software Version:	**WL INSITE R5.8.9 (Build 6)**	**Calibration Version:**	**1**

Pad Temperature: 75.2 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1568.269	1573.398	5.129	15.935
Far (B+D+P+L) cps	832.156	833.273	1.117	15.879
Near Resolution	9.24	9.43	0.190	0.50
Far Resolution	9.28	9.96	0.680	1.00

PASS/FAIL SUMMARY

Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
Depth Panel-12345678						
Tension Zero	0.00	----------	----------	0.00	----------	lbs
Tension Cal	7830.00	----------	----------	0.00	----------	lbs
RWCH-12345678						
DH Tension Zero	0.00	----------	----------	0.00	----------	lbs
DH Tension Cal	1500.00	----------	----------	0.00	----------	lbs
GTET-11013113						
Gamma Ray Calibrator	225.9	232.7	----------	-6.8	+/- 9.00	api
DSNT-11019641						
Snow-Block Porosity	0.0667	0.0665	----------	0.0002	+/- 0.0150	decp
SDLT-10960494						
Pad Extension	3.75	3.79	----------	-0.04	+/-0.10	in
Ring Diameter	8.25	8.25	----------	0.00	+/-0.15	in
ACRt Sonde-11830728						
Mud Cell	0.99	----------	----------	0	----------	ohm-m
Microlog Pad-10960494						
MicroLog Normal	19.83	19.86	----------	-0.03	+/-0.80	ohmm
MicroLog Lateral	19.97	19.99	----------	-0.02	+/-0.80	ohmm
SDLT Pad-11213308						
Near(B+D+P+L)	1568.269	1573.398	----------	-5.129	+/-15.935	cps
Far(B+D+P+L)	832.156	833.273	----------	-1.117	+/-15.879	cps

Data: BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\IDLE **Date: 03-Oct-18 10:30:28**

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PARAMETERS REPORT

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	

SHARED	MDBS	Mud Base	Water	
SHARED	MDWT	Borehole Fluid Weight	9.100	ppg
SHARED	WAGT	Weighting Agent	Natural	
SHARED	BSAL	Borehole salinity	0.00	ppm
SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
SHARED	RMUD	Mud Resistivity	0.700	ohmm
SHARED	TRM	Temperature of Mud	75.0	degF
SHARED	CSD	Logging Interval is Cased?	No	
SHARED	ICOD	AHV Casing OD	5.500	in
SHARED	CSTR	Compressive Strength	1000.00	psia
SHARED	ST	Surface Temperature	75.0	degF
SHARED	TD	Total Well Depth	4911.00	ft
SHARED	BHT	Bottom Hole Temperature	125.0	degF
SHARED	SVTM	Navigation and Survey Master Tool	NONE	
SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
SHARED	TEMM	CBM Temperature Master Tool	GTET	
SHARED	SOCI	Source of Casing Information	Parameters	
SHARED	MSAL	Water-base mud filtrate salinity	0.00	ppm
Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
Rwa / CrossPlot	AFAC	Archie A factor	0.6200	
Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
Rwa / CrossPlot	BHSM	Borehole Size Source Tool	SDLT	
Rwa / CrossPlot	ROIN	Input for RO Calculation	Rwa	
GTET	GROK	Process Gamma Ray?	Yes	
GTET	GEOK	Process Gamma Ray EVR?	No	
GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
GTET	BHSM	Borehole Size Source Tool	SDLT	
DSNT	DNOK	Process DSN?	Yes	
DSNT	DEOK	Process DSN EVR?	No	
DSNT	NLIT	Neutron Lithology	Limestone	
DSNT	DNSO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
DSNT	DNTT	Temperature Correction Type	None	
DSNT	DPRS	DSN Pressure Correction Type	None	
DSNT	SHCO	View More Correction Options	No	
DSNT	UTVD	Use TVD for Gradient Corrections?	No	
DSNT	LHWT	Logging Horizontal Water Tank?	No	
DSNT	UCLA	Classic Neutron Parameter utilized?	No	
DSNT	BHSM	Borehole Size Source Tool	SDLT	
SDLT	CLOK	Process Caliper Outputs?	Yes	
Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
SDLT Pad	DNOK	Process Density?	Yes	
SDLT Pad	DNOK	Process Density EVR?	No	
SDLT Pad	CB	Logging Calibration Blocks?	No	
SDLT Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT Pad	DTWN	Disable temperature warning	No	
SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
SDLT Pad	BHSM	Borehole Size Source Tool	SDLT	

BSAT	MBOK	Compute BCAS Results?	Yes	
BSAT	FLLO	Frequency Filter Low Pass Value?	5000	Hz
BSAT	FLHI	Frequency Filter High Pass Value?	27000	Hz
BSAT	DTFL	Delta -T Pore Fluid	189.00	uspf
BSAT	DTMT	Delta -T Matrix Type	Limestone 47.6	
BSAT	DTSH	Delta -T Shale	100.00	uspf
BSAT	SPEQ	Acoustic Porosity Equation	Wylie	
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Upr	
ACRt Sonde	TPOS	Tool Position	Free Hanging	
ACRt Sonde	RMOP	Rmud Source	Mud Cell	
ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	RMAX	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm
ACRt Sonde	BHSM	Borehole Size Source Tool	SDLT	
ACRt Sonde	MBFL	Apply Corkscrew Effect?	No	

BOTTOM

Data: BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\IDLE **Date: 03-Oct-18 10:31:38**

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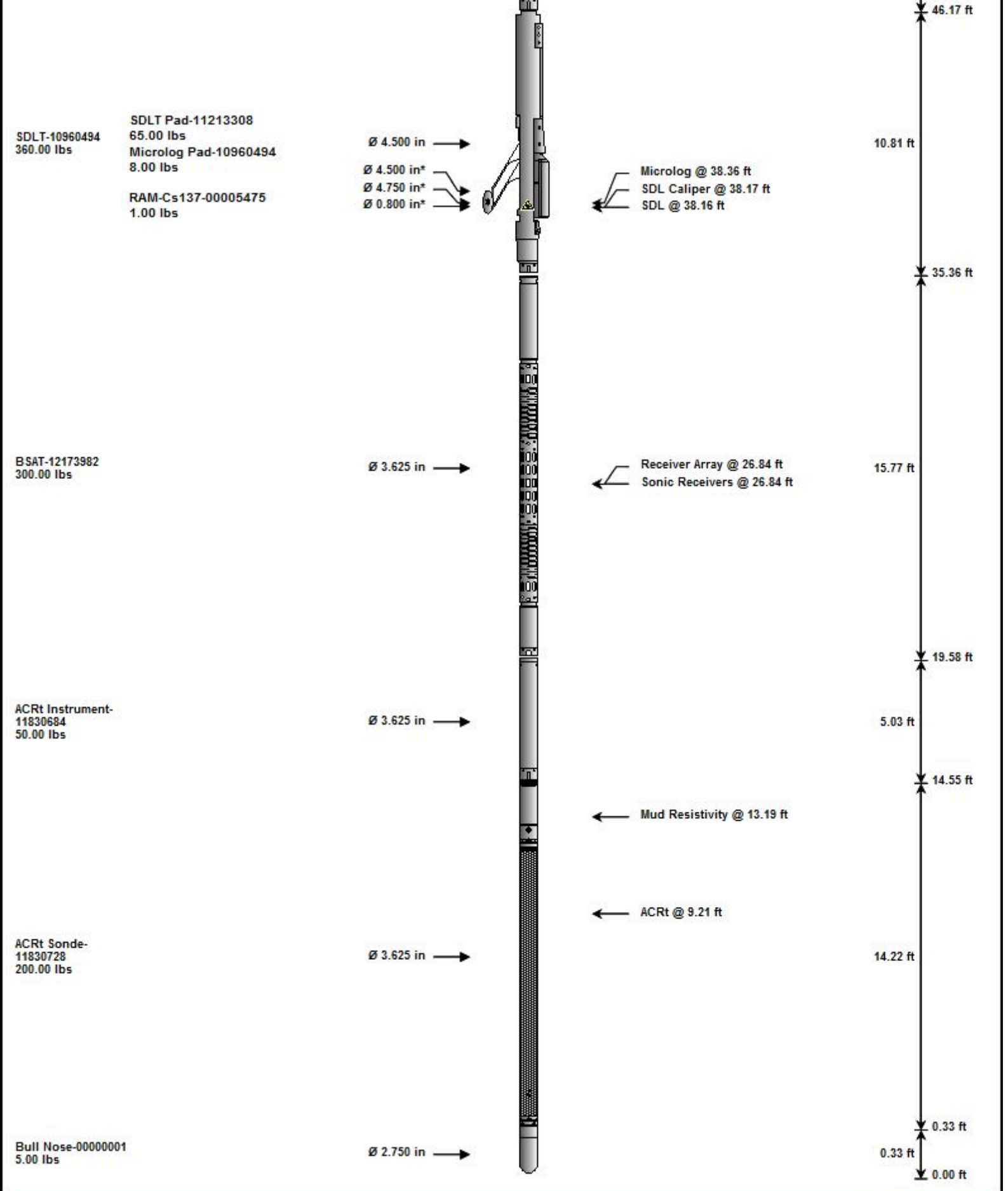
TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
		Ø 2.310 in		Fishing Neck @ 73.49 ft		74.37 ft
RWCH-12345678 135.00 lbs		Ø 3.625 in		Load Cell @ 70.68 ft BH Temperature @ 70.12 ft	6.25 ft	
	Weak Point Solid- 00000025 0.01 lbs	Ø 0.010 in*				68.12 ft
SP Sub-11812437 60.00 lbs		Ø 3.625 in		SP @ 66.34 ft	3.74 ft	
				Z-Accelerometer @ 63.93 ft		64.38 ft
GTET-11013113 165.00 lbs		Ø 3.625 in			8.52 ft	
				GammaRay @ 58.32 ft		
						55.86 ft
	DSN Decentralizer- 11019641 6.60 lbs	Ø 5.000 in*				
DSNT-11019641 174.00 lbs		Ø 3.625 in			9.69 ft	
				DSN Far @ 48.92 ft DSN Near @ 48.17 ft		



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	12345678	135.00	6.25		68.12	300.00
WPSS	Weak Point Solid	00000025	0.01	0.01	*	68.12	300.00
SP	SP Sub	11812437	60.00	3.74		64.38	300.00
GTET	Gamma Telemetry Tool	11013113	165.00	8.52		55.86	60.00
DSNT	Dual Spaced Neutron	11019641	174.00	9.69		46.17	60.00
DCNT	DSN Decentralizer	11019641	6.60	5.13	*	49.50	300.00
SDLT	Spectral Density Tool	10960494	360.00	10.81		35.36	60.00
SDLP	Density Insite Pad	11213308	65.00	2.55	*	37.57	60.00
Cs137	Logging Source, SDLT-L 1.78 Ci - Cs137	00005475	1.00	0.80	*	37.80	300.00

MICP	Microlog Pad	10960494	8.00	1.00	*	37.86	60.00
BSAT	Borehole Sonic Array Tool	12173982	300.00	15.77		19.58	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11830684	50.00	5.03		14.55	120.00
ACRt	Array Compensated True Resistivity Sonde Section	11830728	200.00	14.22		0.33	120.00
BLNS	Bull Nose	00000001	5.00	0.33		0.00	300.00
Total			**1,529.61**	**74.37**			

* Not included in Total Length and Length Accumulation.

Data: BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\IDLE **Date: 03-Oct-18 10:31:55**

HALLIBURTON

MICROLOG

BEREXCO LLC | LENA MAI 5-29 | CONGDON NORTH | FINNEY | KANSAS

COMPANY BEREXCO LLC

WELL LENA MAI 5-29

FIELD/BLOCK CONGDON NORTH

COUNTY FINNEY STATE KANSAS

API No. 15-055-22503-00-00

Location

(SHL) NE SW SW NE
2295' FNL & 2225' FEL

Sect. 29 Twp. 23S Rge. 32W

Other Services:

ACRT
SDL-DSN
MICLOG
BSAT

Permanent Datum	GL	Elev. 2842.0 ft	Elev.: K.B. 2854.0 ft
Log measured from	KB	, 12.0 ft above perm. Datum	D.F. 2852.0 ft
Drilling measured from	KB		G.L. 2842.0 ft

Date		03-Oct-18					
Run No.		1					
Depth - Driller		4910.0 ft					
Depth - Logger		4914.0 ft					
Bottom - Logged Interval		4904					
Top - Logged Interval		3350					
Casing - Driller		8.625 in	@ 1786.0 ft	@		@	
Casing - Logger		1782.0 ft					
Bit Size		7.875 in		@		@	
Type Fluid in Hole		Water Based Mud					
Density	Viscosity	9.1 ppg	51.00 s/qt				
PH	Fluid Loss	10.00 pH	9.6 cptm				
Source of Sample		FLOWLINE					
Rm @ Meas. Temperature		0.76 ohmm	@ 88.00 degF	@		@	
Rmf @ Meas. Temperature		0.62 ohmm	@ 86.00 degF	@		@	
Rmc @ Meas. Temperature		0.93 ohmm	@ 86.00 degF	@		@	
Source Rmf	Rmc	MEAS	MEAS				
Rm @ BHT		0.53 ohmm	@ 128.0 degF	@		@	
Time Since Circulation		12:00 hr					
Time on Bottom		03-Oct-18 14:08					
Max. Rec. Temperature		128.00 degF	@ 4914.0 ft	@		@	
Equipment	Location	12156883	EL RENO, OK				
Recorded By		WHITLOCK					
Witnessed By		BRETT BLAZER		PETER VOLLMER			

Fold here

Service Ticket No.: 905174527

API No.: 15-055-22503-00-00

PGM Version: WL INSITE R5.8.9 (Build 6)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

	Date	Sample No.	Depth-Driller	Type Fluid in Hole	Density	Viscosity	Ph	Fluid Loss	Source of Sample	Rm @ Meas. Temp	Rmf @ Meas. Temp.	Rmc @ Meas. Temp.	Source Rmf	Rmc	Rm @ BHT	Rmf @ BHT	Rmc @ BHT
										@	@	@			@	@	@
										@	@	@			@	@	@

RESISTIVITY SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

RESISTIVITY EQUIPMENT DATA

Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
@				
@				
@				
@				
@				
@				

EQUIPMENT DATA

GAMMA						ACOUSTIC						DENSITY						NEUTRON					
Run No.						Run No.						Run No.						Run No.					
Serial No.						Serial No.						Serial No.						Serial No.					
Model No.						Model No.						Model No.						Model No.					
Diameter						No. of Cent.						Diameter						Diameter					
Detector Model No.						Spacing						Log Type						Log Type					
Type												Source Type						Source Type					
Length						LSA [Y/N]						Serial No.						Serial No.					
Distance to Source						FWDA [Y/N]						Strength						Strength					

LOGGING DATA

GENERAL					GAMMA			ACOUSTIC			DENSITY			NEUTRON		
Run No.	Depth From	Depth To	Speed ft/min		Scale L	Scale R	Matrix	Scale L	Scale R	Matrix	Scale L	Scale R	Matrix	Scale L	Scale R	Matrix

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

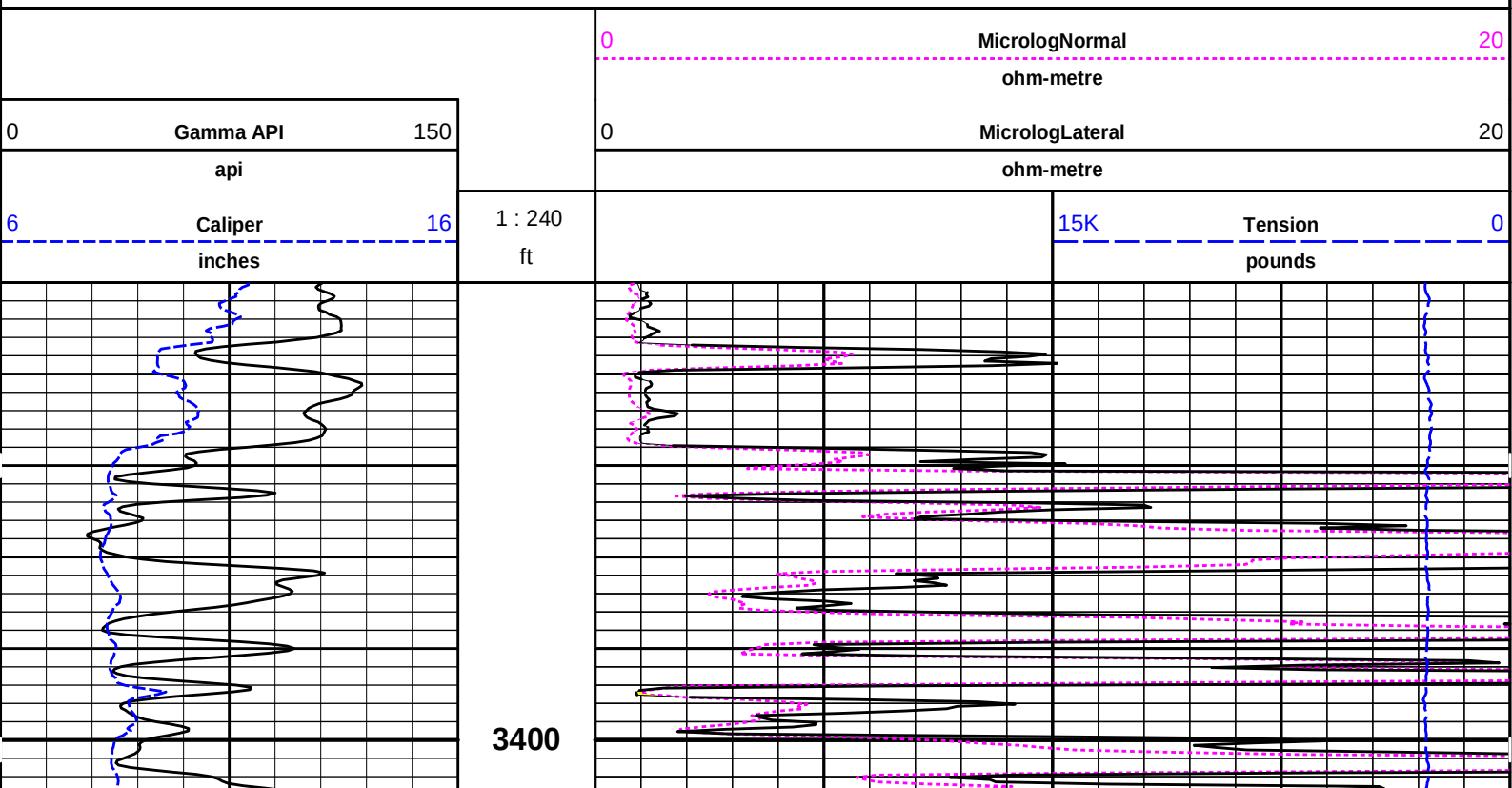
Remarks: 5 1/2" CASING USED FOR ANNULAR HOLE VOLUME

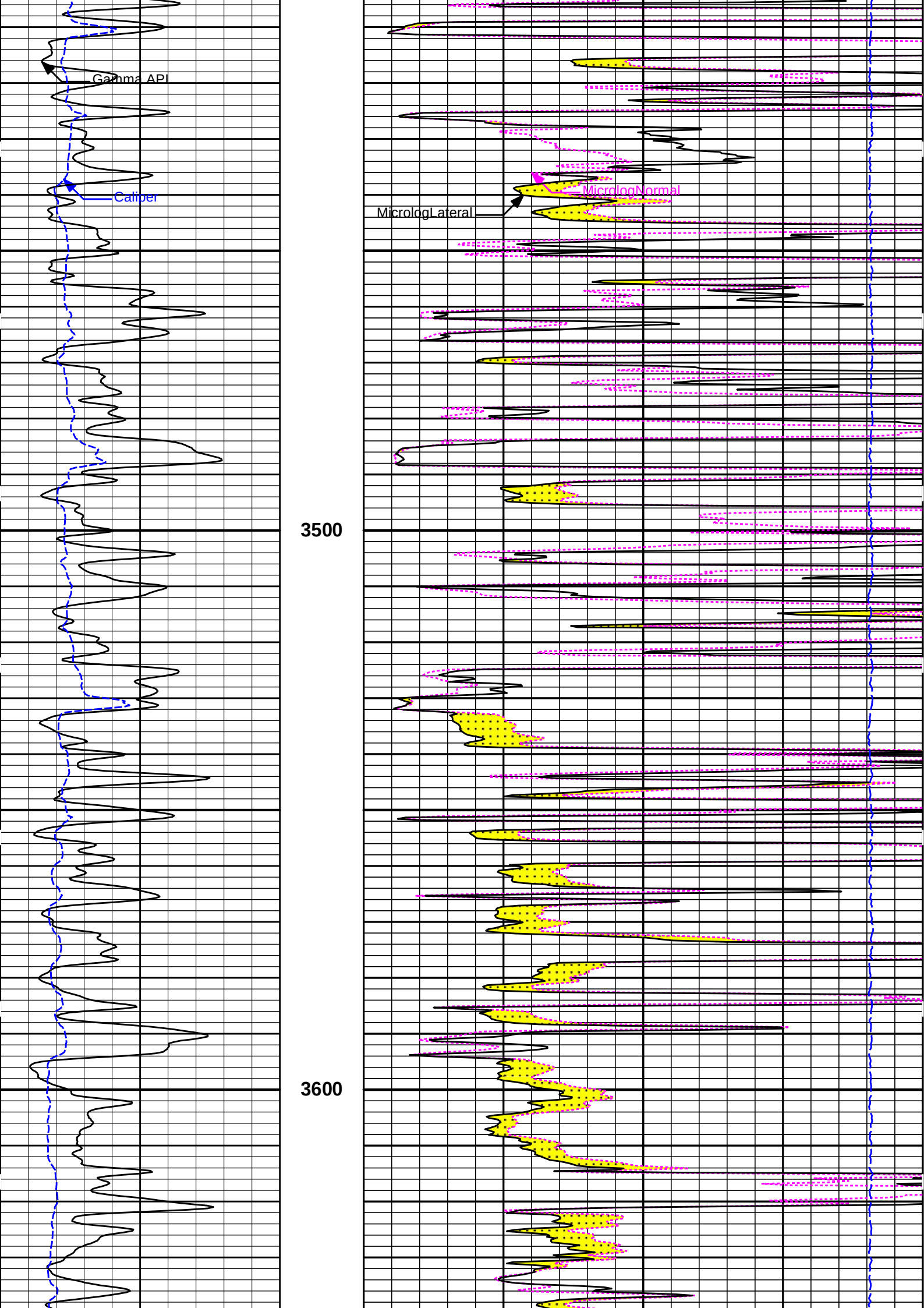
HALLIBURTON

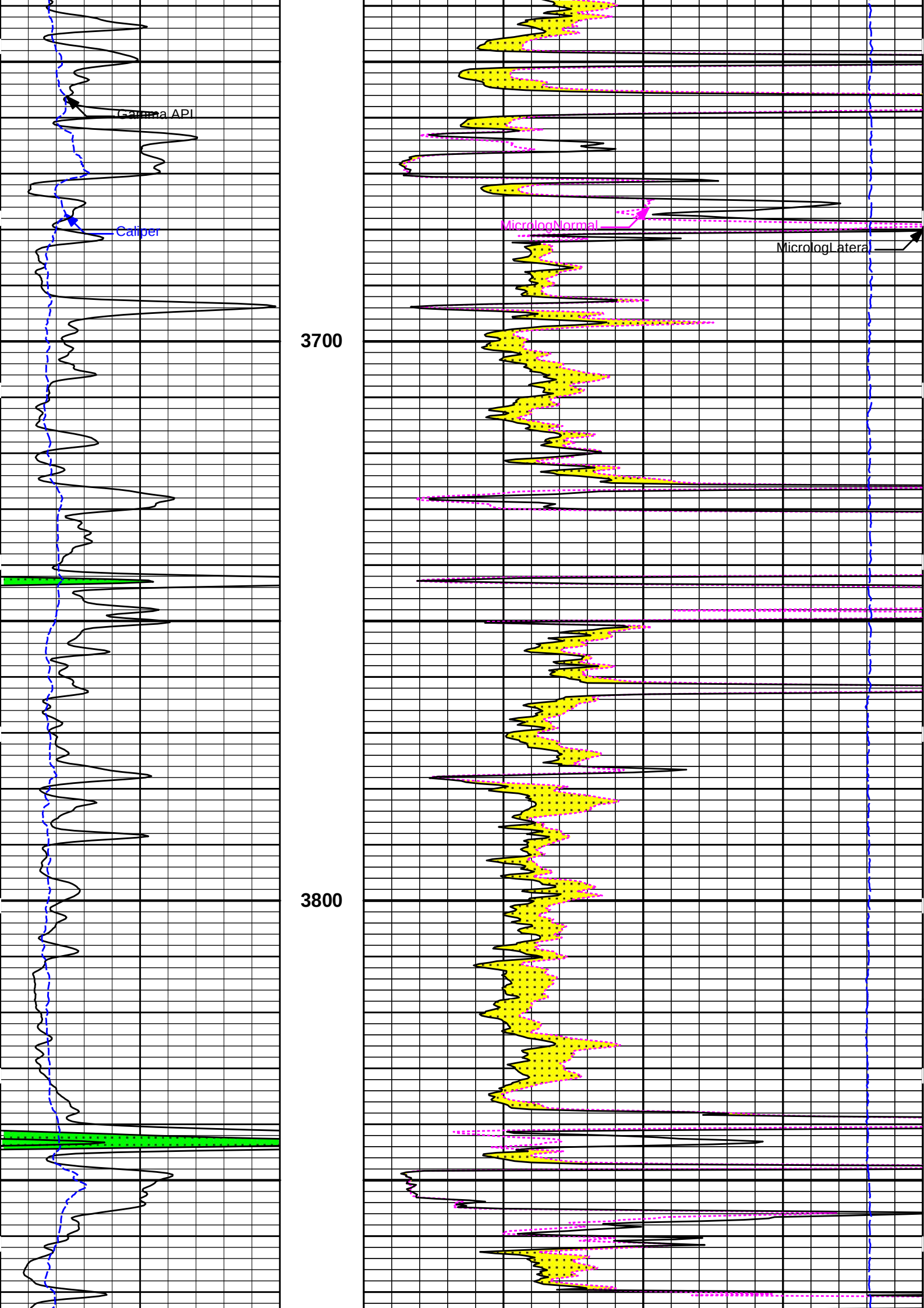
Plot Time: 03-Oct-18 18:08:49
Plot Range: 3350 ft to 4915.67 ft
Data: BEREX_LENA_MAI\Well Based\DAQ-0001-002
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\ML\Microlog_IQ_5_main

5 INCH MAIN LOG

MAIN LOG 5" PER 100'




Gamma API
Caliper
MicrologNormal
MicrologLateral
3500
3600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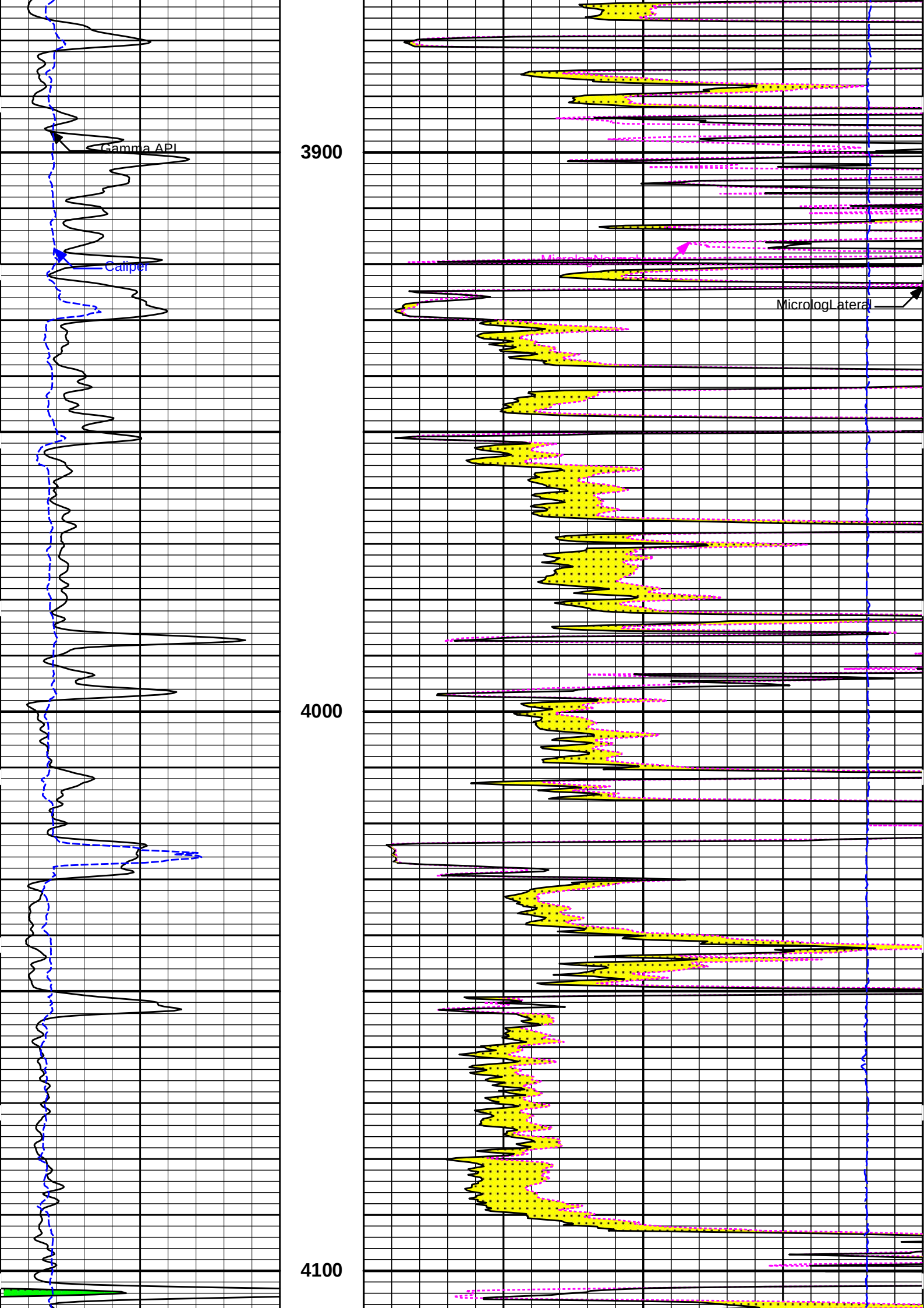
Caliper
MicrologNormal
MicrologLateral
3700
3800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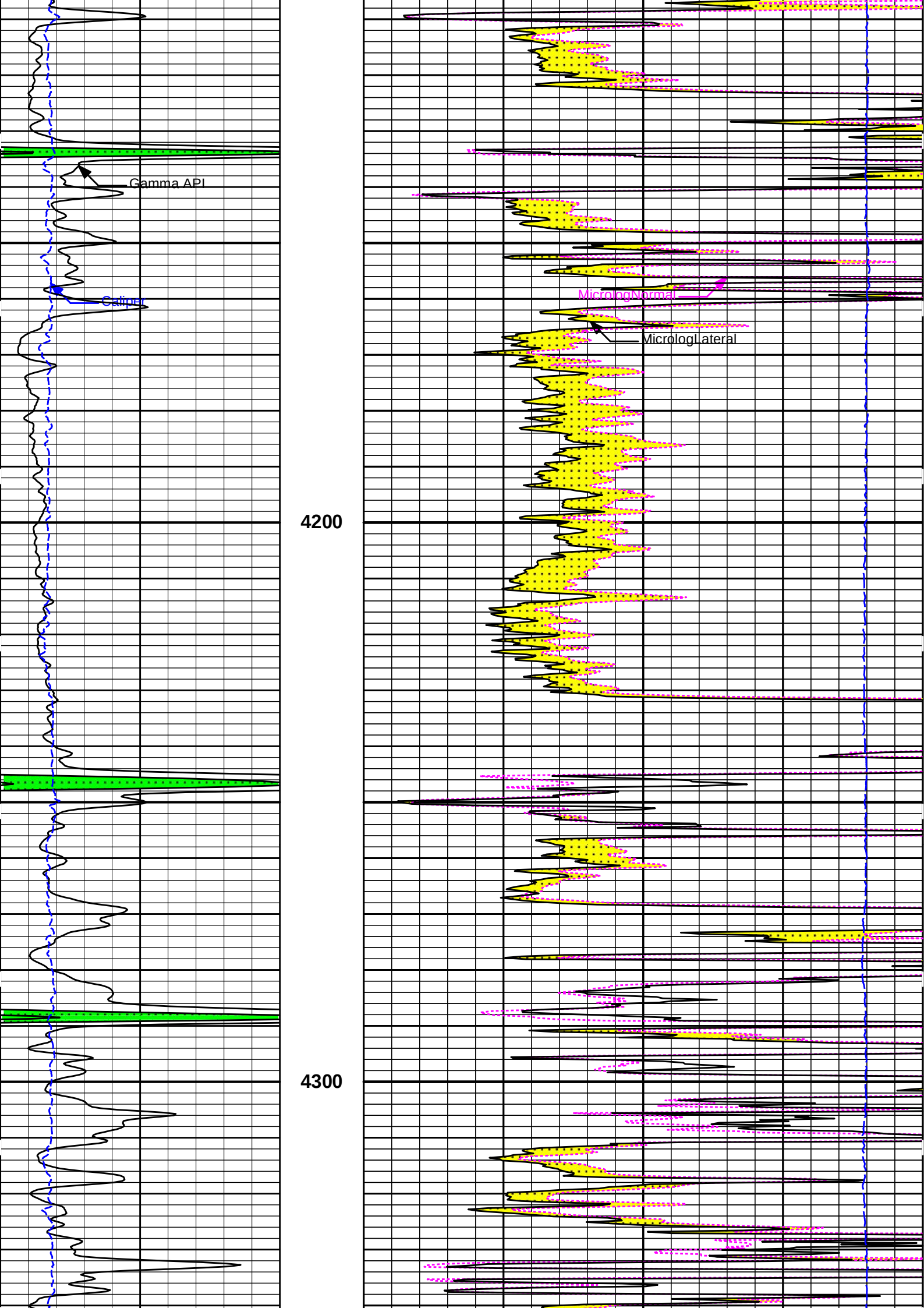
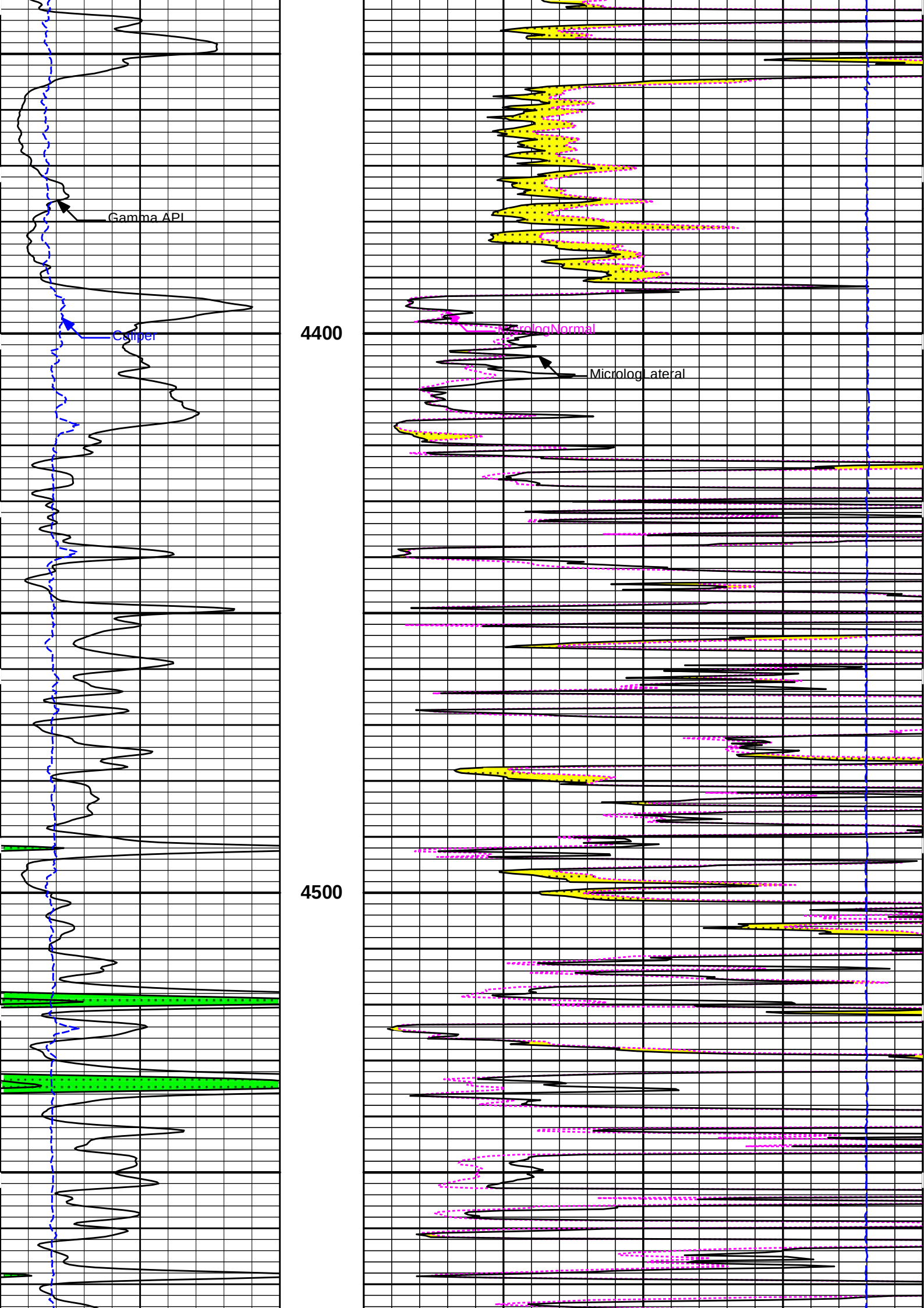
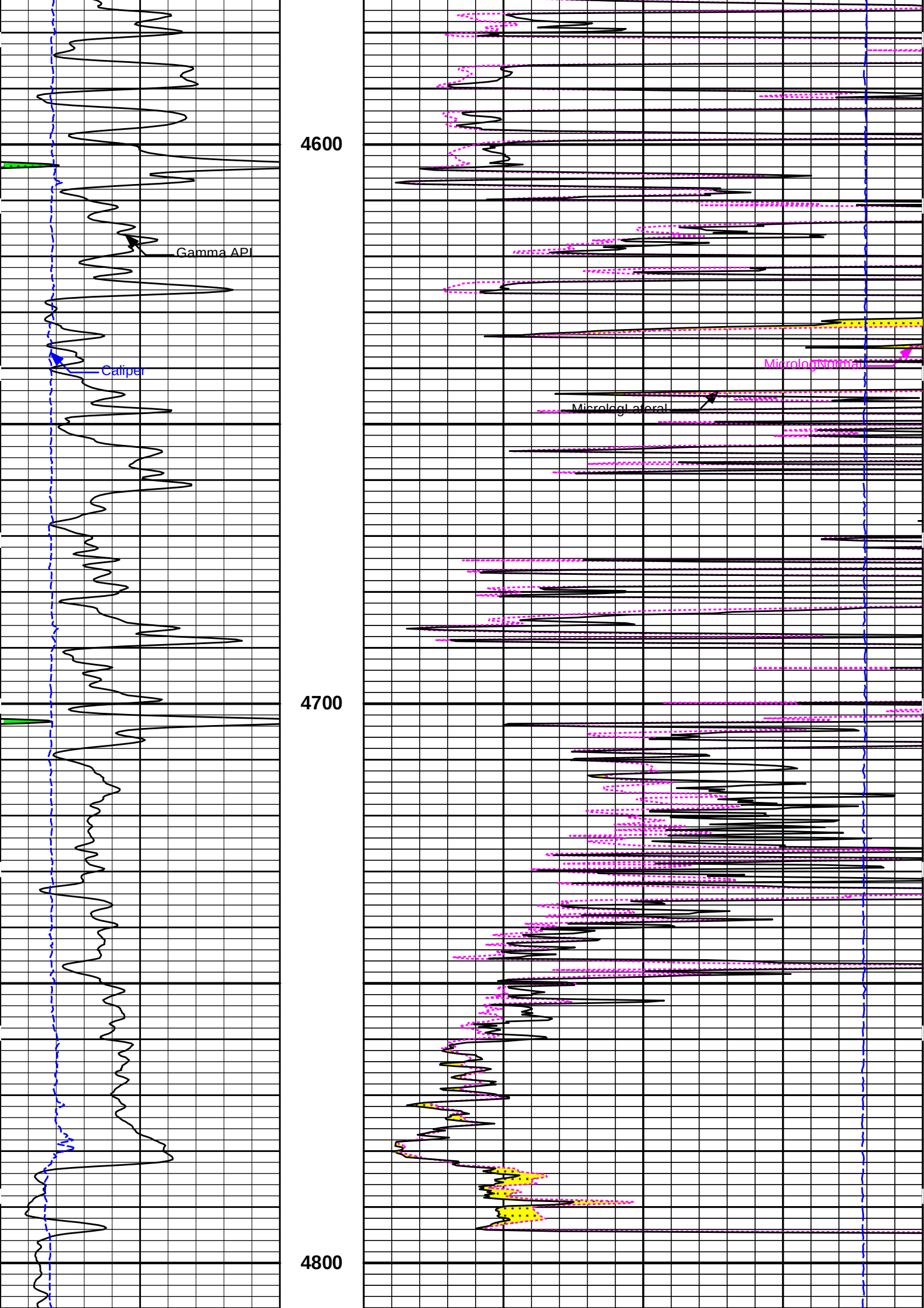
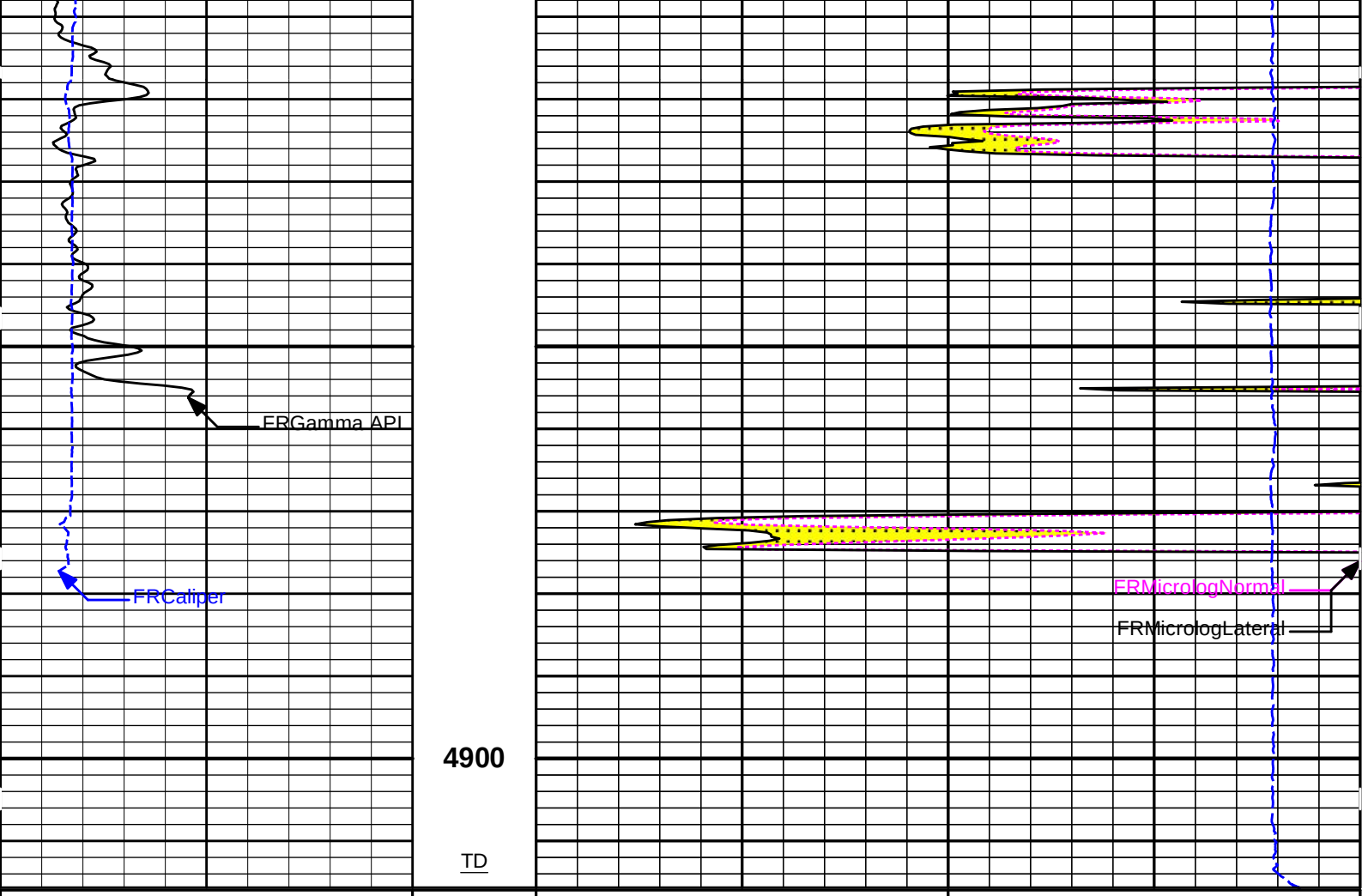
Caliper
3900
4000
4100
MicrologNormal
MicrologLateral


Gamma API
Caliper
MicrologNormal
MicrologLateral
4200
4300


Gamma API
Caliper
4400
MicrologNormal
Micrologl ateral
4500


4600
Gamma API
Caliper
Micrologl Normal
Micrologl Lateral
4700
4800



6 Caliper 16 inches	1 : 240 ft	15K Tension 0 pounds
0 Gamma API 150 api		0 MicrologLateral 20 ohm-metre
		0 MicrologNormal 20 ohm-metre

HALLIBURTON

Plot Time: 03-Oct-18 18:08:52
Plot Range: 3350 ft to 4915.67 ft
Data: BEREX_LENA_MAI\Well Based\DAQ-0001-002\
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\ML\Microlog_IQ_5_main

5 INCH MAIN LOG

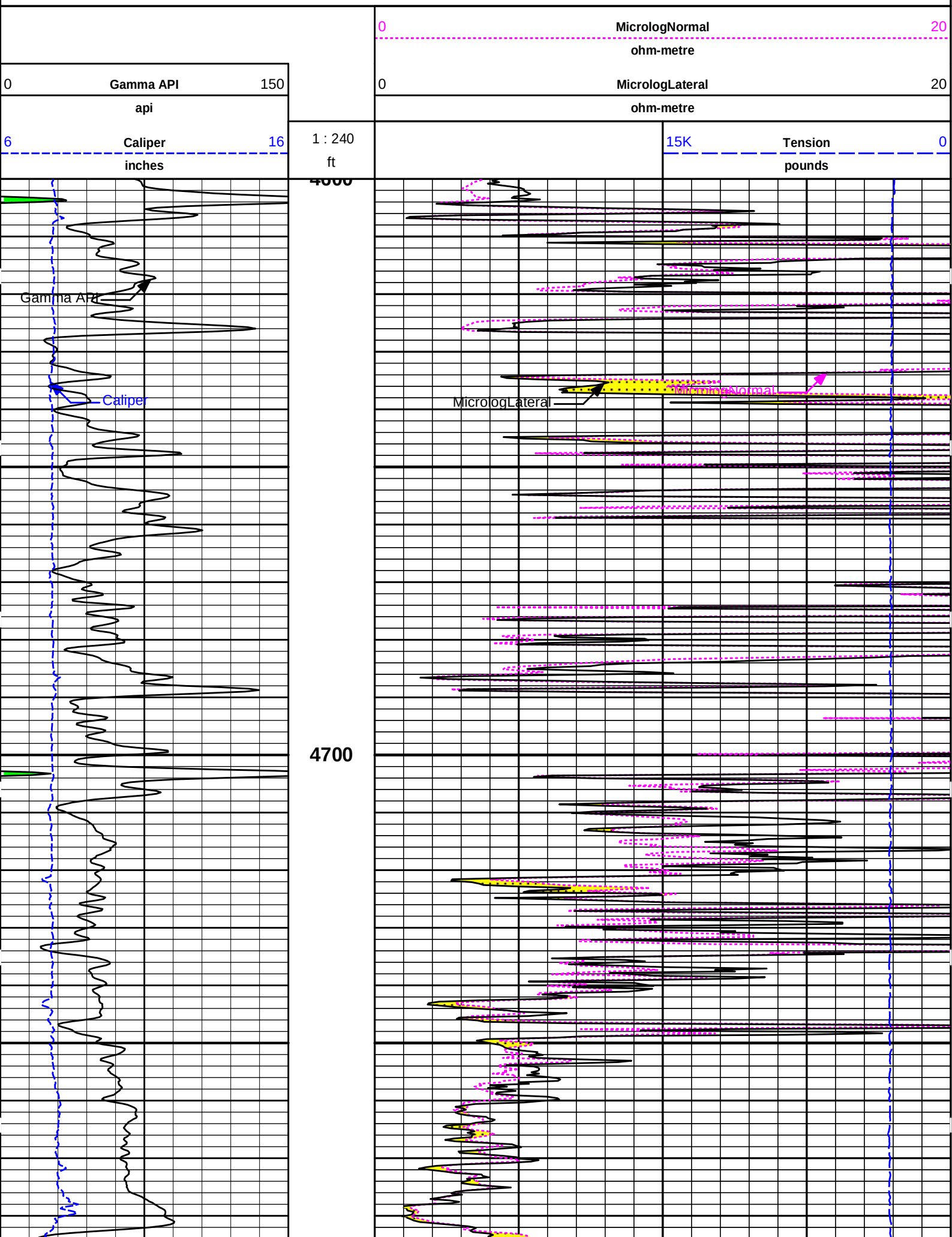
MAIN LOG 5" PER 100'

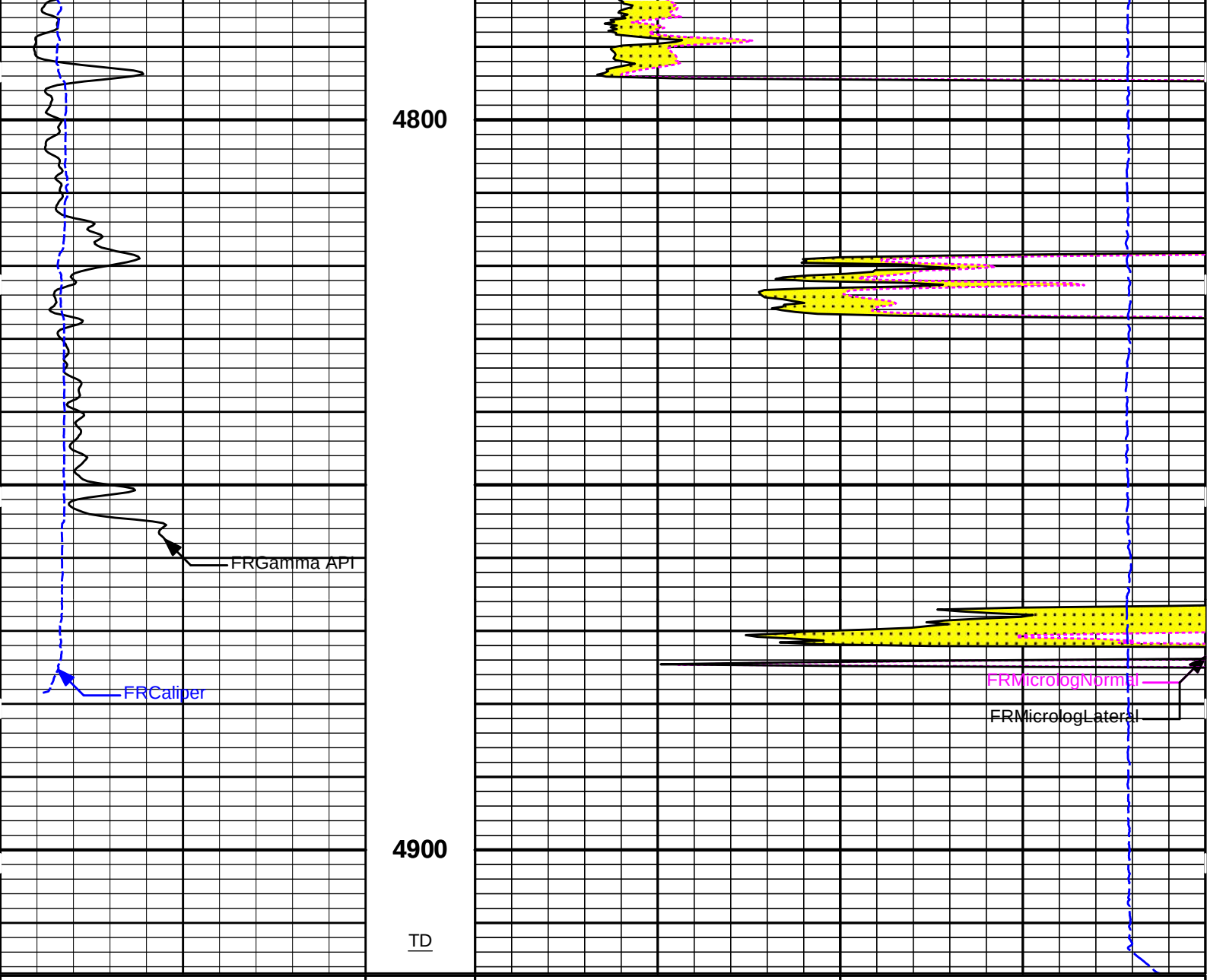
HALLIBURTON

Plot Time: 03-Oct-18 18:08:52
Plot Range: 4600 ft to 4916.92 ft
Data: BEREX_LENA_MAI\Well Based\REPEAT\
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\ML\Microlog_IQ_5_main

REPEAT SECTION

REPEAT SECTION


0
MicrologNormal
20
ohm-metre
0
MicrologLateral
20
ohm-metre
0
Gamma API
150
api
6
Caliper
16
inches
1 : 240
ft
15K
Tension
0
pounds
Gamma API
Caliper
MicrologLateral
MicrologNormal
4700



6 Caliper 16	1 : 240	15K Tension 0
inches	ft	pounds
0 Gamma API 150		0 MicrologLateral 20
api		ohm-metre
		0 MicrologNormal 20
		ohm-metre

HALLIBURTON

Plot Time: 03-Oct-18 18:08:53
Plot Range: 4600 ft to 4916.92 ft
Data: BEREX_LENA_MAI\Well Based\REPEAT\
Plot File: \\-LOCAL-\BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\ML\Microlog_IQ_5_main

REPEAT SECTION

REPEAT SECTION

HALLIBURTON

CALIBRATION REPORT

CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name:	**Depth Panel - 12345678**	**Reference Calibration Date:**	**27-Sep-18 12:42:20**
Engineer:	**SEAN WOLTEMATH**	**Calibration Date:**	**28-Sep-18 12:48:18**
Software Version:	**WL INSITE R5.8.9 (Build 6)**	**Calibration Version:**	**1**

SURFACE TENSION LOAD CELL

Measurement	Load Cell Value	Measurement	Calibrated	Units
Low	10173.27	12.23	0.00	lbs
High	17562.87	7941.31	7830.00	lbs

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name:	**RWCH - 12345678**	**Reference Calibration Date:**	**28-Sep-18 12:50:19**
Engineer:	**WHITLOCK**	**Calibration Date:**	**02-Oct-18 05:08:35**
Software Version:	**WL INSITE R5.8.9 (Build 6)**	**Calibration Version:**	**1**

DOWNHOLE LOAD CELL

Measurement	Tool Value	Measurement	Calibrated	Units
Low	-336.49	-3.58	0.00	lbs
High	10973.20	1278.61	1500.00	lbs

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11013113**	**Reference Calibration Date:**	**02-May-18 11:20:36**
Engineer:	**WHITLOCK**	**Calibration Date:**	**05-Aug-18 09:58:00**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB-79

Calibrator API Reference:222.00 api

Equivalent Calibrator API Reference:225.9 api

Measurement	Measured	Calibrated	Units
Background	26.4	26.2	api
Background + Calibrator	253.6	252.1	api
Calibrator	227.2	225.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11013113**	**Reference Calibration Date:**	**05-Aug-18 09:58:00**
Engineer:	**WHITLOCK**	**Calibration Date:**	**30-Sep-18 10:17:04**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB-79

Calibrator API Reference:222.00 api

Equivalent Calibrator API Reference:225.9 api

Field Verification	Shop	Field	Units
Background	26.2	13.5	api
Background + Calibrator	252.1	246.2	api
Calibrator	225.9	232.7	api

Shop	Field	Difference	Tolerance
225.9	232.7	-6.8	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	**DSNT - 11019641**	**Reference Calibration Date:**	**04-Aug-18 12:03:14**
Engineer:	**SCHLIEM**	**Calibration Date:**	**04-Aug-18 12:26:27**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**Calibration Version:**	**1**

Logging Source S/N: DSN-436

Tank Serial Number: EL RENO HWT

Reference value assigned to Tank: 56.100

Snow Block S/N: 12156883

Calibration Tank Water Temperature: 89 degF

Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	**Prev. Value**	**New Value**	**Control Limit On New Value**
Gain:	0.97922	0.97742	0.900 - 1.100

WATER TANK SUMMARY (Horizontal Water Tank)				
Measurement	**Current Reading (Previous Coef.)**	**Calibrated (New Coef.)**	**Change**	**Control Limit On Change**
Porosity (decp):	0.2364	0.2358	0.0006	+/- 0.0020
Calibrated Ratio:	10.5794	10.5599	0.019	+/- 0.050

VERIFIER		
Measurement	**Value**	**Control Limit**
Snow-Block Porosity (decp):	0.0667	0.02000 - 0.09000

PASS/FAIL SUMMARY	
Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name: DSNT - 11019641 **Reference Calibration Date:** 04-Aug-18 12:26:27

Engineer: WHITLOCK **Calibration Date:** 30-Sep-18 09:21:36

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Logging Source S/N: DSN-436

Snow Block S/N: 12156883

NEUTRON FIELD-CHECK SUMMARY				
	Shop	**Field**	**Difference**	**Control Limit On Change**
Snow-Block Porosity (decp):	0.0667	0.0665	-0.0002	+/- 0.0150

PASS/FAIL SUMMARY	
Block Change Check:	Passed
Snow Block Stat Check:	Passed
Temperature Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name: SDLT - 10960494 **Reference Calibration Date:** 01-Jan-70 00:00:00

Engineer: WHITLOCK **Calibration Date:** 08-Jun-18 16:19:27

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Host Tool Name: DSNT - 11019641

CALIBRATION COEFFICIENTS			
Measurement	**Previous Value**	**New Value**	**Control Limit On New Value**
Pad Offset	-3977.11	-3977.11	-7000.00 - -1000.00
Pad Gain	0.0003897	0.0003897	0.0002000 - 0.0006000
Arm Offset	-3073.13	-3073.13	-5000.00 - 3000.00
Arm Gain	0.0005210	0.0005210	0.000300 - 0.000700
Arm Power	-0.000005094	-0.000005094	-0.000010000 - 0.000010000

The ring diameter is computed from: DIAMETER = PAD EXTENSION + ARM EXTENSION + TOOL DIAMETER

Tool Diameter: 4.50 in

CALIBRATION RINGS			
	Current Reading	**Calibrated**	**Control Limit On**

Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	Control Limit On New Value
PAD EXTENSION:				
Small Ring (in)	2.00	2.00	0.00	+/- 0.20
Medium Ring (in)	3.75	3.75	0.00	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.50	6.50	0.00	+/- 0.20
Medium Ring (in)	8.25	8.25	0.00	+/- 0.20
Large Ring (in)	15.00	15.00	0.00	+/- 0.20

PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed
Ring-Measurement Check:	Passed

PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed

SDLT CALIPER FIELD CALIBRATION

Tool Name: SDLT - 10960494 **Reference Calibration Date:** 08-Jun-18 16:19:27

Engineer: WHITLOCK **Calibration Date:** 30-Sep-18 09:40:30

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.79	0.04	+/- 0.10
Ring Diameter	8.25	8.25	-0.00	+/- 0.15

PASS/FAIL SUMMARY	
Pad Extension Check:	Passed
Diameter Check:	Passed

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name: ACRt Sonde - 11830728 **Reference Calibration Date:** 23-Feb-18 10:15:37

Engineer: WHITLOCK **Calibration Date:** 06-Jun-18 13:24:46

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Host Tool Name: ACRt Instrument - 11830684

TYPICAL GAIN RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0279	1.05	0.95	1.0076	1.05	0.95	0.9997	1.05
A2 (50")	0.95	1.0334	1.05	0.95	1.0139	1.05	0.95	1.0097	1.05
A3 (29")	0.95	1.0346	1.05	0.95	1.0146	1.05	0.95	1.0081	1.05
A4 (17")	0.95	1.0279	1.05	0.95	1.0063	1.05	0.95	1.0018	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0001	1.05	0.95	0.9950	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9869	1.05	0.95	0.9818	1.05

SONDE OFFSET

Subarray	R12KHz	R36KHz	R72KHz
	(mmho/m)	(mmho/m)	(mmho/m)
A1 (80")	0.315	-4.964	-5.711
A2 (50")	0.409	-3.450	-5.485
A3 (29")	-11.648	-3.720	-3.783
A4 (17")	-90.980	-28.724	-23.707
A5 (10")	N/A	-76.200	-37.537
A6 (6")	N/A	280.488	149.005

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.82	1.3
36K	1.0	1.80	2.0
72K	1.0	1.05	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	0.99	1.05

PASS/FAIL SUMMARY

GAIN RANGE CHK	PASS
SONDE OFFSET CHK	PASS

TOOL OK TO LOG

QUALITY CHECK SHOP CALIBRATION

Tool Name: ACRt Sonde - 11830728
Reference Calibration Date: 23-Feb-18 10:21:17
Engineer: WHITLOCK
Calibration Date: 06-Jun-18 14:01:20
Software Version: WL INSITE R5.6.3 (Build 4)
Calibration Version: 1
Host Tool Name: ACRt Instrument - 11830684

STANDARD DEVIATIONS

	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A2 (50")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A3 (29")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A4 (17")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A5 (10")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A6 (6")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass

AVERAGES

	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.006	> -0.500	Pass
A2 (50")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.005	> -0.500	Pass
A3 (29")	-0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.003	> -0.500	Pass
A4 (17")	-0.002	> -0.500	Pass	-0.006	> -0.500	Pass	-0.022	> -0.500	Pass
A5 (10")	-0.010	> -0.500	Pass	-0.017	> -0.500	Pass	-0.036	> -0.500	Pass
A6 (6")	0.014	< 0.500	Pass	0.063	< 0.500	Pass	0.138	< 0.500	Pass

GAIN TOLERANCE

R12KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-213173456.000	-213653808.000	480352.000	10682690.400	Pass
A2 (50")	-205651744.000	-206143280.000	491536.000	10307164.000	Pass
A3 (29")	-200817664.000	-201197776.000	380112.000	10059888.800	Pass
A4 (17")	-200193568.000	-200629872.000	436304.000	10031493.600	Pass
A5 (10")	-200252336.000	-200678960.000	426624.000	10033948.000	Pass
A6 (6")	-199820688.000	-200219344.000	398656.000	10010967.200	Pass

R36KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	48114080.000	48477272.000	363192.000	2423863.600	Pass
A2 (50")	33966292.000	34324412.000	358120.000	1716220.600	Pass
A3 (29")	28032378.000	28346680.000	314302.000	1417334.000	Pass

A4 (17")	27853682.000	28207516.000	353834.000	1410375.800	Pass
A5 (10")	27373208.000	27716930.000	343722.000	1385846.500	Pass
A6 (6")	26035236.000	26360300.000	325064.000	1318015.000	Pass

R72KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-92927656.000	-93022904.000	95248.000	4651145.200	Pass
A2 (50")	-90501024.000	-90617752.000	116728.000	4530887.600	Pass
A3 (29")	-88192472.000	-88292832.000	100360.000	4414641.600	Pass
A4 (17")	-88397088.000	-88515880.000	118792.000	4425794.000	Pass
A5 (10")	-86957704.000	-87076952.000	119248.000	4353847.600	Pass
A6 (6")	-87976216.000	-88080696.000	104480.000	4404034.800	Pass

PASS/FAIL SUMMARY

Std Deviation Verification	Pass
Average Verification	Pass
Gain Tolerance Verification	Pass

MICRO LOG SHOP CALIBRATION

Tool Name: Microlog Pad - 10960494
Reference Calibration Date: 08-Jun-18 16:08:54
Engineer: WHITLOCK
Calibration Date: 30-Sep-18 13:47:51
Software Version: WL INSITE R5.8.9 (Build 6)
Calibration Version: 1
Host Tool Name: DSNT - 11019641

CALIBRATION COEFFICIENT SUMMARY

Measurement	Micro Log Normal		Micro Log Lateral		
	Measured	Calibrated	Measured	Calibrated	Units
Tool Zero	-0.07	-0.14	-0.00	-0.01	ohmm
Calibration Point #1	0.07	0.00	0.00	0.00	ohmm
Calibration Point #2	20.01	20.00	19.95	20.00	ohmm
Internal Reference	19.84	19.83	19.92	19.97	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	-0.08	0.35	V
Calibration Point #1	37.72	2.09	V
Calibration Point #2	5356.95	6956.77	V
Internal Reference	5312.51	6945.81	V

MICRO LOG FIELD CHECK

Tool Name: Microlog Pad - 10960494
Reference Calibration Date: 30-Sep-18 13:47:51
Engineer: WHITLOCK
Calibration Date: 30-Sep-18 13:49:10
Software Version: WL INSITE R5.8.9 (Build 6)
Calibration Version: 1

Measurement	Micro Log Normal		Micro Log Lateral		
	Shop	Field	Shop	Field	Units
Tool Zero	-0.14	-0.14	-0.01	-0.01	ohmm
Internal Reference	19.83	19.86	19.97	19.99	ohmm

Summary

Signal	Shop	Field	Difference	Tolerence
Microlog Normal	19.83	19.86	-0.03	+/- 0.80
Microlog Lateral	19.97	19.99	-0.02	+/- 0.80

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 11213308
Reference Calibration Date: 17-Sep-18 12:07:25
Engineer: WHITLOCK
Calibration Date: 17-Sep-18 12:30:06

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Logging Source S/N: 5475GW

Aluminum Block S/N: EL RENO Density: 2.581g/cc Pe: 3.170

Magnesium Block S/N: EL RENO Density: 1.687g/cc Pe: 2.594

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0089	1.0095	0.90 - 1.10
Near Dens Gain	0.9949	0.9972	0.90 - 1.10
Near Peak Gain	1.0098	1.0259	0.90 - 1.10
Near Lith Gain	1.0052	1.0142	0.90 - 1.10
Far Bar Gain	1.0078	1.0061	0.90 - 1.10
Far Dens Gain	0.9950	0.9953	0.90 - 1.10
Far Peak Gain	0.9901	0.9911	0.90 - 1.10
Far Lith Gain	0.9745	0.9764	0.90 - 1.10
Near Bar Offset	0.0471	0.0438	NONE
Near Dens Offset	0.1758	0.1544	NONE
Near Peak Offset	0.0270	-0.1077	NONE
Near Lith Offset	0.0345	-0.0412	NONE
Far Bar Offset	-0.0195	-0.0036	NONE
Far Dens Offset	0.1103	0.1086	NONE
Far Peak Offset	0.1339	0.1248	NONE
Far Lith Offset	0.2115	0.1964	NONE
Near Bar Background	945.62	947.60	700 - 1450
Near Dens Background	315.82	314.50	230 - 480
Near Peak Background	136.57	137.87	100 - 210
Near Lith Background	168.89	168.30	125 - 260
Far Bar Background	482.51	480.15	450 - 900
Far Dens Background	193.40	193.79	175 - 345
Far Peak Background	78.35	78.65	70 - 140
Far Lith Background	80.88	79.56	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.685	1.687	0.002	+/- 0.015
Pe	2.557	2.563	0.006	+/- 0.150
ALUMINUM				
Density (g/cc)	2.580	2.580	-0.000	+/- 0.01500
Pe	3.115	3.136	0.021	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0003	+/- 0.0110	0.0015	+/- 0.0140
Magnesium Block	0.0001	+/- 0.0110	-0.0007	+/- 0.0140
Aluminum Block	-0.0000	+/- 0.0110	-0.0006	+/- 0.0140
Resolution	9.24	6.00 - 11.50	9.28	6.00 - 11.50
Internal Verifier(B+D+P+L)	1568	1200 - 2700	832	800 - 1700

PASS/FAIL SUMMARY

Background Quality Check:	Passed
Background Range Check:	Passed

Background Resolution Check:	Passed
Background Verification Check:	Passed
Magnesium Quality Check:	Passed
Aluminum Quality Check:	Passed
Gains Check:	Passed
Changes in Calibration Blocks:	Passed

SPECTRAL DENSITY FIELD CHECK

Tool Name:	**SDLT Pad - 11213308**	**Reference Calibration Date:**	**17-Sep-18 12:30:06**
Engineer:	**WHITLOCK**	**Calibration Date:**	**30-Sep-18 13:46:13**
Software Version:	**WL INSITE R5.8.9 (Build 6)**	**Calibration Version:**	**1**

Pad Temperature: 75.2 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1568.269	1573.398	5.129	15.935
Far (B+D+P+L) cps	832.156	833.273	1.117	15.879
Near Resolution	9.24	9.43	0.190	0.50
Far Resolution	9.28	9.96	0.680	1.00

PASS/FAIL SUMMARY	
Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
Depth Panel-12345678						
Tension Zero	0.00	----------	----------	0.00	----------	lbs
Tension Cal	7830.00	----------	----------	0.00	----------	lbs
RWCH-12345678						
DH Tension Zero	0.00	----------	----------	0.00	----------	lbs
DH Tension Cal	1500.00	----------	----------	0.00	----------	lbs
GTET-11013113						
Gamma Ray Calibrator	225.9	232.7	----------	-6.8	+/- 9.00	api
DSNT-11019641						
Snow-Block Porosity	0.0667	0.0665	----------	0.0002	+/- 0.0150	decp
SDLT-10960494						
Pad Extension	3.75	3.79	----------	-0.04	+/-0.10	in
Ring Diameter	8.25	8.25	----------	0.00	+/-0.15	in
ACRt Sonde-11830728						
Mud Cell	0.99	----------	----------	0	----------	ohm-m
Microlog Pad-10960494						
MicroLog Normal	19.83	19.86	----------	-0.03	+/-0.80	ohmm
MicroLog Lateral	19.97	19.99	----------	-0.02	+/-0.80	ohmm
SDLT Pad-11213308						
Near(B+D+P+L)	1568.269	1573.398	----------	-5.129	+/-15.935	cps
Far(B+D+P+L)	832.156	833.273	----------	-1.117	+/-15.879	cps

Data: BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\IDLE **Date: 03-Oct-18 10:30:28**

HALLIBURTON

PARAMETERS REPORT

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.100	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	0.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	0.700	ohmm
	SHARED	TRM	Temperature of Mud	75.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	5.500	in
	SHARED	CSTR	Compressive Strength	1000.00	psia
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	4911.00	ft
	SHARED	BHT	Bottom Hole Temperature	125.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	CBM Temperature Master Tool	GTET	
	SHARED	SOCI	Source of Casing Information	Parameters	
	SHARED	MSAL	Water-base mud filtrate salinity	0.00	ppm
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa / CrossPlot	AFAC	Archie A factor	0.6200	
	Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
	Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
	Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
	Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
	Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
	Rwa / CrossPlot	BHSM	Borehole Size Source Tool	SDLT	
	Rwa / CrossPlot	ROIN	Input for RO Calculation	Rwa	
	GTET	GROK	Process Gamma Ray?	Yes	
	GTET	GEOK	Process Gamma Ray EVR?	No	
	GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
	GTET	BHSM	Borehole Size Source Tool	SDLT	
	DSNT	DNOK	Process DSN?	Yes	
	DSNT	DEOK	Process DSN EVR?	No	
	DSNT	NLIT	Neutron Lithology	Limestone	
	DSNT	DNSO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
	DSNT	DNTT	Temperature Correction Type	None	
	DSNT	DPRS	DSN Pressure Correction Type	None	
	DSNT	SHCO	View More Correction Options	No	
	DSNT	UTVD	Use TVD for Gradient Corrections?	No	
	DSNT	LHWT	Logging Horizontal Water Tank?	No	
	DSNT	UCLA	Classic Neutron Parameter utilized?	No	
	DSNT	BHSM	Borehole Size Source Tool	SDLT	
	SDLT	CLOK	Process Caliper Outputs?	Yes	
	Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
	SDLT Pad	DNOK	Process Density?	Yes	
	SDLT Pad	DNOK	Process Density EVR?	No	

SDLT Pad	CB	Logging Calibration Blocks?	No	
SDLT Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT Pad	DTWN	Disable temperature warning	No	
SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
SDLT Pad	BHSM	Borehole Size Source Tool	SDLT	
BSAT	MBOK	Compute BCAS Results?	Yes	
BSAT	FLLO	Frequency Filter Low Pass Value?	5000	Hz
BSAT	FLHI	Frequency Filter High Pass Value?	27000	Hz
BSAT	DTFL	Delta -T Pore Fluid	189.00	uspf
BSAT	DTMT	Delta -T Matrix Type	Limestone 47.6	
BSAT	DTSH	Delta -T Shale	100.00	uspf
BSAT	SPEQ	Acoustic Porosity Equation	Wylie	
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Upr	
ACRt Sonde	TPOS	Tool Position	Free Hanging	
ACRt Sonde	RMOP	Rmud Source	Mud Cell	
ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	RMAX	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm
ACRt Sonde	BHSM	Borehole Size Source Tool	SDLT	
ACRt Sonde	MBFL	Apply Corkscrew Effect?	No	

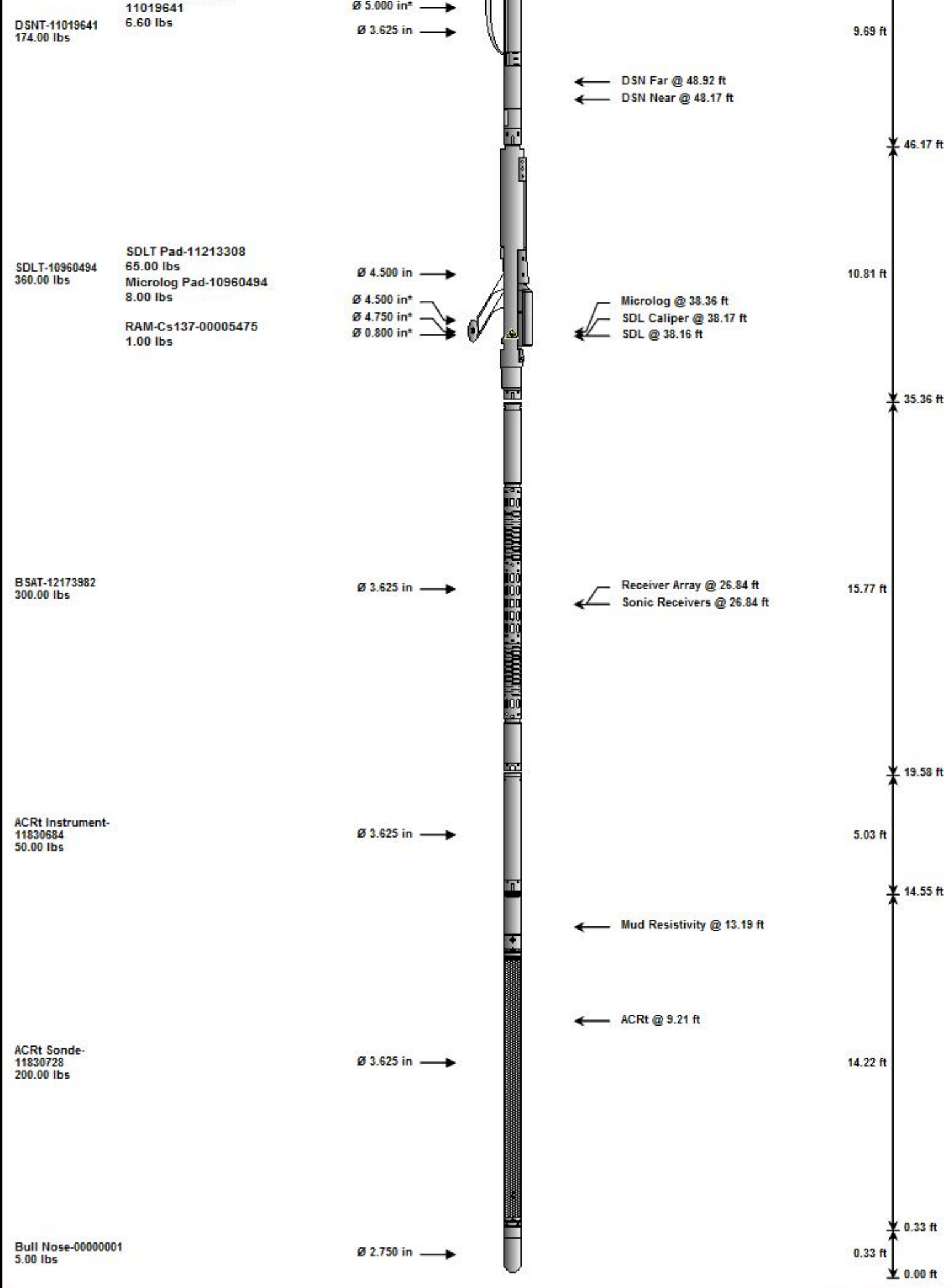
BOTTOM

Data: BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\IDLE **Date: 03-Oct-18 10:31:38**

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						74.37 ft
		Ø 2.310 in		Fishing Neck @ 73.49 ft		
RWCH-12345678 135.00 lbs		Ø 3.625 in		Load Cell @ 70.68 ft BH Temperature @ 70.12 ft	6.25 ft	
	Weak Point Solid- 00000025 0.01 lbs	Ø 0.010 in*				68.12 ft
SP Sub-11812437 60.00 lbs		Ø 3.625 in		SP @ 66.34 ft	3.74 ft	
				Z-Accelerometer @ 63.93 ft		64.38 ft
GTET-11013113 165.00 lbs		Ø 3.625 in		GammaRay @ 58.32 ft	8.52 ft	
						55.86 ft
	DSN Decentralizer-					



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	12345678	135.00	6.25		68.12	300.00
WPSS	Weak Point Solid	00000025	0.01	0.01	*	68.12	300.00

SP	SP Sub	11812437	60.00	3.74		64.38	300.00
GTET	Gamma Telemetry Tool	11013113	165.00	8.52		55.86	60.00
DSNT	Dual Spaced Neutron	11019641	174.00	9.69		46.17	60.00
DCNT	DSN Decentralizer	11019641	6.60	5.13	*	49.50	300.00
SDLT	Spectral Density Tool	10960494	360.00	10.81		35.36	60.00
SDLP	Density Insite Pad	11213308	65.00	2.55	*	37.57	60.00
Cs137	Logging Source, SDLT-I, 1.78 Ci - Cs137	00005475	1.00	0.80	*	37.80	300.00
MICP	Microlog Pad	10960494	8.00	1.00	*	37.86	60.00
BSAT	Borehole Sonic Array Tool	12173982	300.00	15.77		19.58	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11830684	50.00	5.03		14.55	120.00
ACRt	Array Compensated True Resistivity Sonde Section	11830728	200.00	14.22		0.33	120.00
BLNS	Bull Nose	00000001	5.00	0.33		0.00	300.00
Total			**1,529.61**	**74.37**			

* Not included in Total Length and Length Accumulation.

Data: BEREX_LENA_MAI\0001 RWCH-SP-GTET-DSNT-SDLT-BSAT-ACRT\IDLE **Date: 03-Oct-18 10:31:55**

DRILL STEM TEST REPORT

TRILOBITE TESTING, INC.

Berexco, LLC

2020 N Branblew ood
Wichita, Ks 67206

ATTN: Pete Vollmer

29 23s 32w

Lena Mai #5-29

Job Ticket: 64337 **DST#: 1**

Test Start: 2018.09.29 @ 17:02:00

GENERAL INFORMATION:

Formation: **Pawnee - Ft Scott**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 22:01:15
Time Test Ended: 05:21:30

Test Type: Conventional Bottom Hole (Initial)
Tester: Bradley Walter
Unit No: 78

Interval: 4470.00 ft (KB) To 4530.00 ft (KB) (TVD)
Total Depth: 4530.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

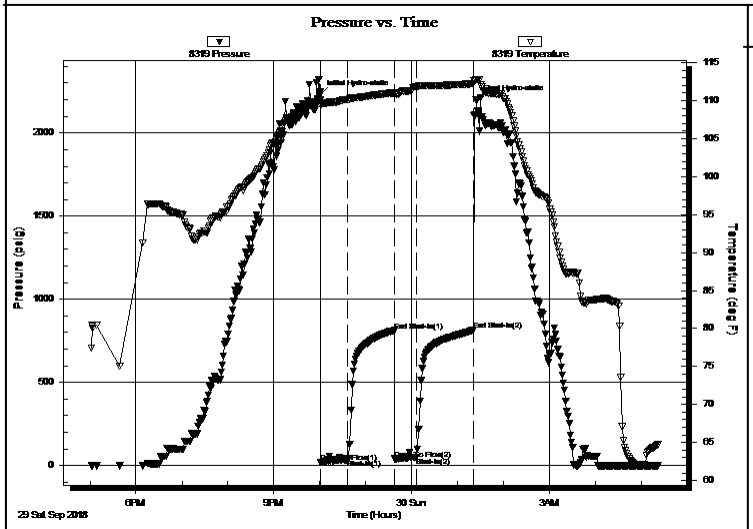
Reference Elevations: 2854.00 ft (KB)
2842.00 ft (CF)
KB to GR/CF: 12.00 ft

Serial #: 8319 **Inside**

Press@RunDepth: 50.29 psig @ 4471.00 ft (KB)
Start Date: 2018.09.29 End Date: 2018.09.30
Start Time: 17:02:05 End Time: 05:21:30

Capacity: 8000.00 psig
Last Calib.: 2018.09.30
Time On Btm: 2018.09.29 @ 22:00:45
Time Off Btm: 2018.09.30 @ 01:24:00

TEST COMMENT: IF: 1" blow .
ISI: No return.
FF: Surface blow .
FSI: No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2232.05	110.09	Initial Hydro-static
1	19.55	109.39	Open To Flow (1)
36	36.09	110.14	Shut-In(1)
97	811.47	111.04	End Shut-In(1)
98	41.03	110.75	Open To Flow (2)
126	50.29	111.88	Shut-In(2)
201	816.33	112.24	End Shut-In(2)
204	2199.14	112.77	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
45.00	w cm 10w 90m	0.22

Gas Rates

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

DRILL STEM TEST REPORT

Berexco, LLC

2020 N Branblew ood
Wichita, Ks 67206

ATTN: Pete Vollmer

29 23s 32w

Lena Mai #5-29

Job Ticket: 64337 **DST#: 1**

Test Start: 2018.09.29 @ 17:02:00

GENERAL INFORMATION:

Formation: **Pawnee - Ft Scott**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 22:01:15
Time Test Ended: 05:21:30

Test Type: Conventional Bottom Hole (Initial)
Tester: Bradley Walter
Unit No: 78

Interval: 4470.00 ft (KB) To 4530.00 ft (KB) (TVD)
Total Depth: 4530.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

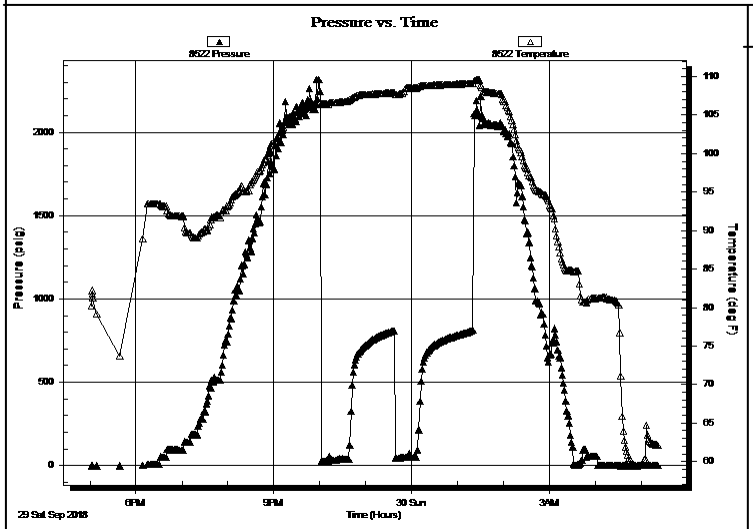
Reference Elevations: 2854.00 ft (KB)
2842.00 ft (CF)
KB to GR/CF: 12.00 ft

Serial #: 8522 **Outside**

Press@RunDepth: psig @ 4471.00 ft (KB)
Start Date: 2018.09.29 End Date: 2018.09.30
Start Time: 17:02:05 End Time: 05:21:30

Capacity: 8000.00 psig
Last Calib.: 2018.09.30
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: 1" blow .
ISI: No return.
FF: Surface blow .
FSI: No return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
45.00	w cm 10w 90m	0.22

Gas Rates

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

DRILL STEM TEST REPORT

FLUID SUMMARY

Berexco, LLC

2020 N Branblew ood
Wichita, Ks 67206

ATTN: Pete Vollmer

29 23s 32w

Lena Mai #5-29

Job Ticket: 64337 **DST#: 1**

Test Start: 2018.09.29 @ 17:02:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	0 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	0 ppm
Viscosity:	62.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	9.59 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	1650.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
45.00	w cm 10w 90m	0.221

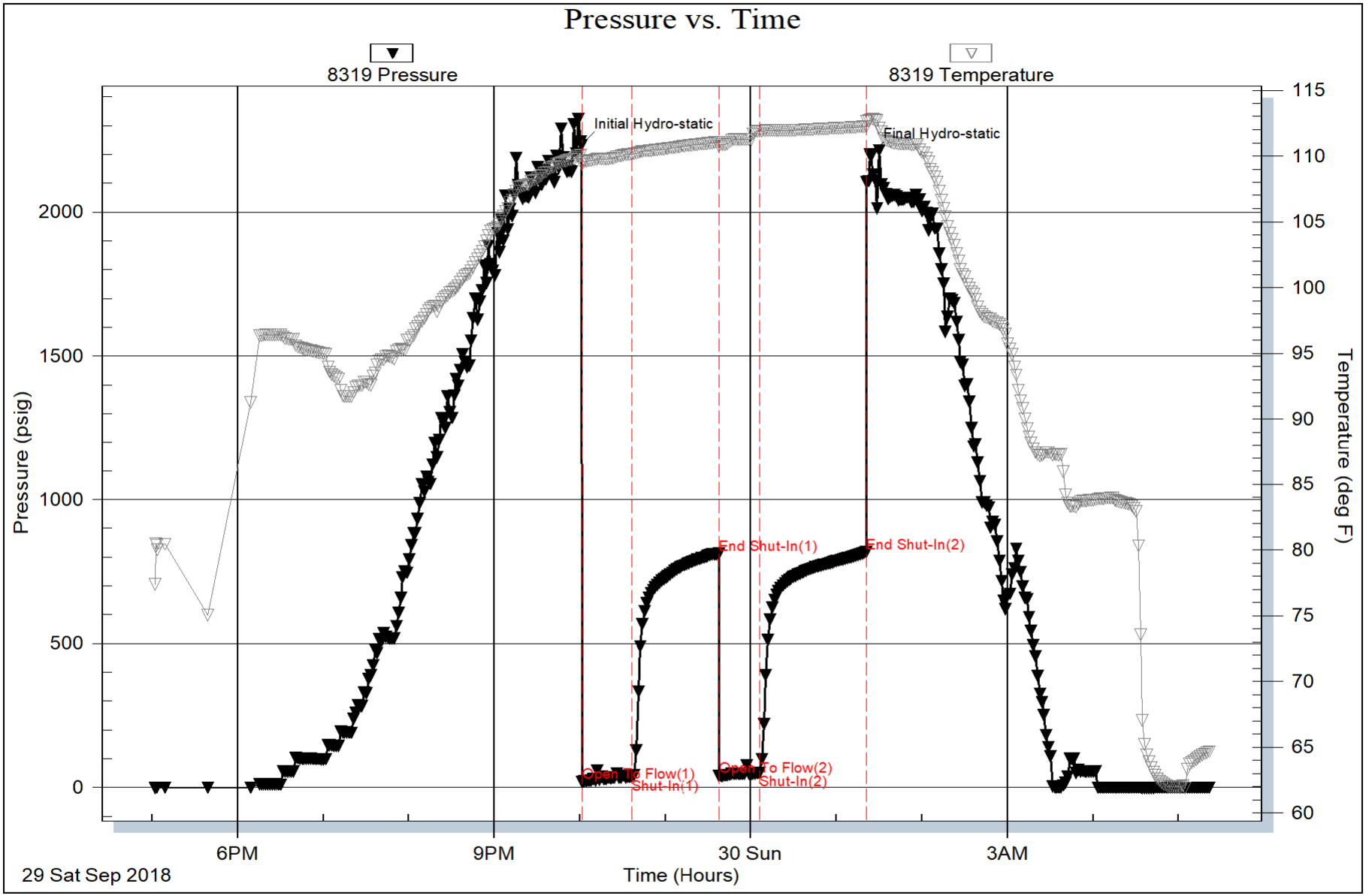
Total Length: 45.00 ft Total Volume: 0.221 bbl

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

Laboratory Name: Laboratory Location:

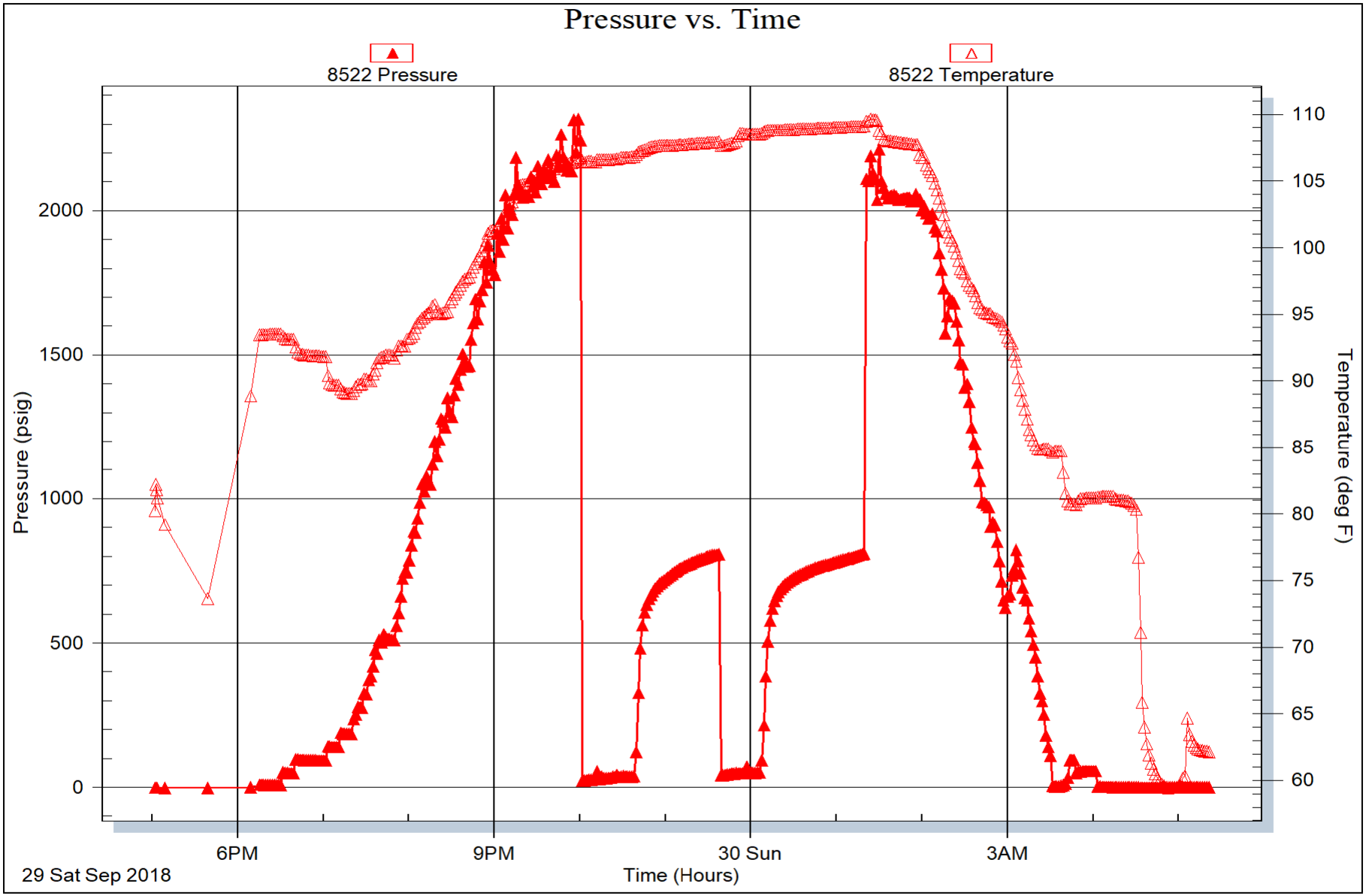
Recovery Comments:

Serial #: 8319 **Inside** Berexco, LLC Lena Mai #5-29 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 64337 Printed: 2018.09.30 @ 08:06:18

Serial #: 8522 **Outside** Berexco, LLC Lena Mai #5-29 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 64337 Printed: 2018.09.30 @ 08:06:18

DRILL STEM TEST REPORT

Berexco, LLC

2020 N Branblew ood
Wichita, Ks 67206

ATTN: Pete Vollmer

29 23s 32w

Lena Mai #5-29

Job Ticket: 64338 **DST#: 2**

Test Start: 2018.10.02 @ 01:44:00

GENERAL INFORMATION:

Formation: **Morrow Sand - St lou**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 07:51:30
Time Test Ended: 15:08:45

Test Type: Conventional Bottom Hole (Reset)
Tester: Bradley Walter
Unit No: 78

Interval: 4780.00 ft (KB) To 4810.00 ft (KB) (TVD)
Total Depth: 4810.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

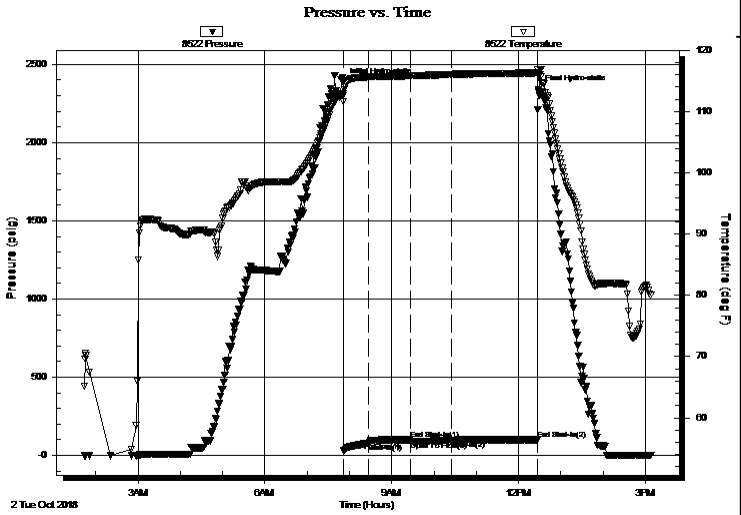
Reference Elevations: 2854.00 ft (KB)
2842.00 ft (CF)
KB to GR/CF: 12.00 ft

Serial #: 8522 **Outside**

Press@RunDepth: 96.50 psig @ 4781.00 ft (KB)
Start Date: 2018.10.02 End Date: 2018.10.02
Start Time: 01:44:05 End Time: 15:08:45

Capacity: 8000.00 psig
Last Calib.: 2018.10.02
Time On Btm: 2018.10.02 @ 07:51:00
Time Off Btm: 2018.10.02 @ 12:28:30

TEST COMMENT: IF: 5 1/2 " blow .
ISI: No return
FF: 2" blow .
FSI: No return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2383.85	112.94	Initial Hydro-static
1	28.49	112.55	Open To Flow (1)
37	79.68	115.68	Shut-In(1)
96	100.92	115.83	End Shut-In(1)
96	87.16	115.80	Open To Flow (2)
155	96.50	116.07	Shut-In(2)
276	100.61	116.32	End Shut-In(2)
278	2338.12	115.89	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
150.00	w cm 40w 60m	0.74
30.00	oil 100o	0.15
0.00	90' GIP	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

Berexco, LLC

2020 N Branblew ood
Wichita, Ks 67206

ATTN: Pete Vollmer

29 23s 32w

Lena Mai #5-29

Job Ticket: 64338 **DST#: 2**

Test Start: 2018.10.02 @ 01:44:00

GENERAL INFORMATION:

Formation: **Morrow Sand - St lou**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 07:51:30
Time Test Ended: 15:08:45

Test Type: Conventional Bottom Hole (Reset)
Tester: Bradley Walter
Unit No: 78

Interval: 4780.00 ft (KB) To 4810.00 ft (KB) (TVD)
Total Depth: 4810.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

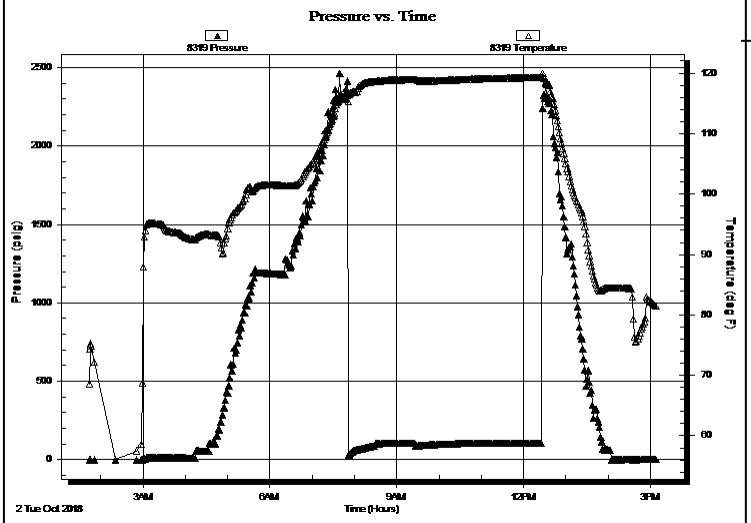
Reference Elevations: 2854.00 ft (KB)
2842.00 ft (CF)
KB to GR/CF: 12.00 ft

Serial #: 8319 **Inside**

Press@RunDepth: psig @ 4781.00 ft (KB)
Start Date: 2018.10.02 End Date: 2018.10.02
Start Time: 01:44:05 End Time: 15:08:45

Capacity: 8000.00 psig
Last Calib.: 2018.10.02
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: 5 1/2 " blow .
ISI: No return
FF: 2" blow .
FSI: No return.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
150.00	w cm 40w 60m	0.74
30.00	oil 100o	0.15
0.00	90' GIP	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

FLUID SUMMARY

Berexco, LLC

2020 N Branblew ood
Wichita, Ks 67206

ATTN: Pete Vollmer

29 23s 32w

Lena Mai #5-29

Job Ticket: 64338 **DST#: 2**

Test Start: 2018.10.02 @ 01:44:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	29 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	31000 ppm
Viscosity:	48.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	9.19 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	3300.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
150.00	w cm 40w 60m	0.738
30.00	oil 100o	0.148
0.00	90' GIP	0.000

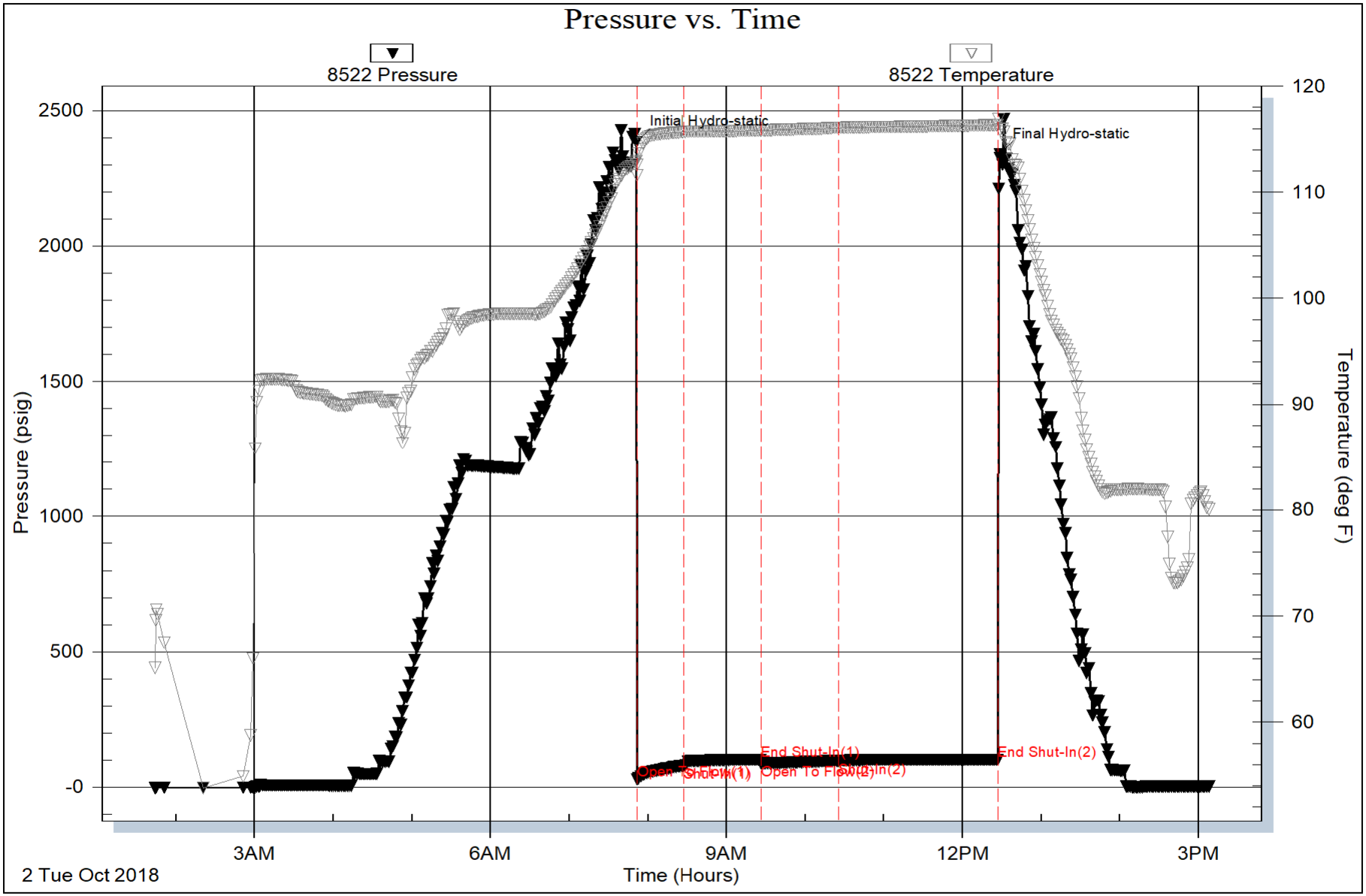
Total Length: 180.00 ft Total Volume: 0.886 bbl

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

Laboratory Name: Laboratory Location:

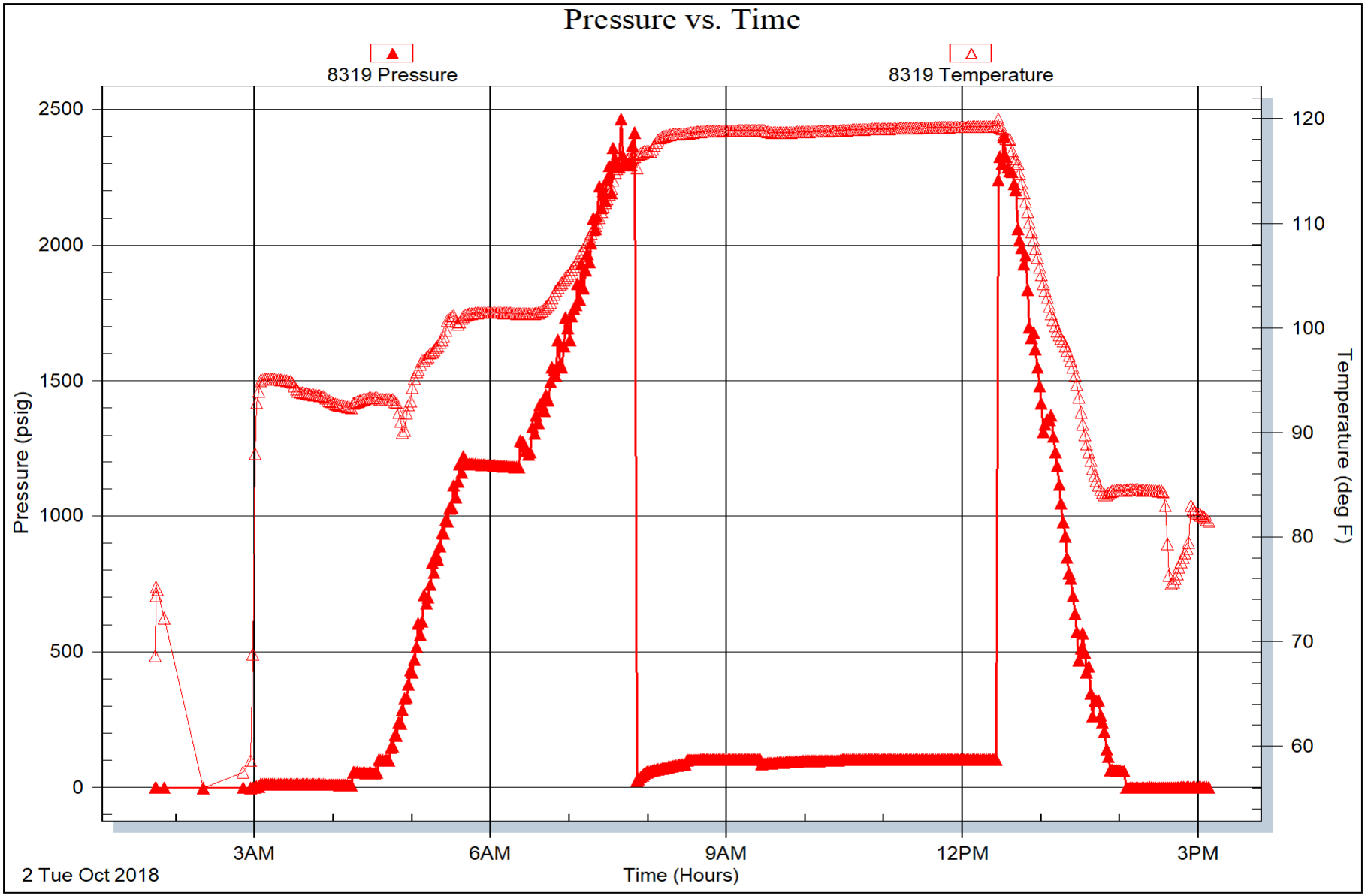
Recovery Comments: rw is .177 @ 86f = 31000ppm

Serial #: 8522 **Outside** Berexco, LLC Lena Mai #5-29 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 64338 Printed: 2018.10.02 @ 15:37:11

Serial #: 8319 **Inside** Berexco, LLC Lena Mai #5-29 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 64338 Printed: 2018.10.02 @ 15:37:11

BASIC ENERGY SERVICES

PRESSURE PUMPING

Job Log

Liberal Yard #1717 - Phone 620-624-2277 - 1700 S. Country Estates Road, Liberal KS 67901

Customer:	Berexco Inc	Cement Pump No.:	38119, 19570 Hrs.	Operator TRK No.:	96816		
Address:	2020 N BRAMBLEWOOD	Ticket #:	1718 15919 L	Bulk TRK No.:	27808, 37725 Noel	14354, 19578 Jesse	
City, State, Zip:	WICHITA KS 67206	Job Type:	Z42 - Cement Surface Casing				
Service District:	1718 - Liberal, Ks.	Well Type:	OIL				
Well Name and No.:	Lena Mai 5-29	Well Location:	29,23,32	County:	Finney	State:	Ks

Type of Cmt	Sacks	Additives	Truck Loaded On		
A-Serv Lite	625	3% Calcium Chloride, 1/4# Polyflake	27808, 37725 Noel	Front	Back
Premium Plus Cement	150	2% Calcium Chloride, 1/4# Polyflake	14354, 19578 Jesse	Front	Back
				Front	Back

Lead/Tail:	Weight #1 Gal.	Cu/Ft/sk	Water Requirements	CU. FT.	Man Hours / Personnel	
Lead:	12.3	2.08	11.52	1300	TT Man Hours:	45
Tail:	14.8	1.34	6.33	201	# of Men on Job:	3

Time (am/pm)	(BPM)	Volume (BBLS)	Pumps T	Pumps C	Pressure(PSI) Tubing	Pressure(PSI) Casing	Description of Operation and Materials
13:30							ON LOCATION
13:45							SAFETY MEETING
2:00 PM							RIG UP
4:30 PM							RIG TO CIRCULATE
5:15 PM							RIG TO P.T.
17:20							PRESSURE TEST TO 1850PSI
17:25	6	231.5 slurry				130	PUMP LEAD 625SX @ 12.3#
6:00 PM	6.1	35.7 slurry				70	PUMP 150SX TAIL @ 14.8#
18:09							SHUTDOWN / DROP PLUG
18:12	6	10				160	DISPLACE
	6.1	20				240	
	6.1	30				280	
	6	40				340	
	6.2	50				410	
18:24	6	60				460	CEMENT RETURNS
	5.9	70				520	
	5.9	80				580	
	5.9	90				640	
18:32	5.8	100				680	SLOW RATE TO 2.1BPM @ 530PSI
18:37	2.4	110.8				590	LAND PLUG / PRESSURE UP TO 990PSI
18:39							RELEASE BACK --- FLOAT HELD
							JOB COMPLETE

Size Hole	12 1/4"	Depth				TYPE	Plug Container		
Size & Wt. Csg.	8 5/8" 24#	Depth		New / Used		Packer		Depth	
Landing Press.	412.1psi	Depth				Retainer		Depth	
Shoe Jt.	42.18'	Type				Perfs		CIBP	

Customer Signature:	Basic Representative:	Daniel Beck
	Basic Signature:	Daniel Beck
	Date of Service:	9/22/2018

BASIC ENERGY SERVICES

PRESSURE PUMPING

Liberal Yard #1717 - Phone 620-624-2277 - 1700 S. Country Estates Road, Liberal KS 67901

Job Log

Customer:	Berexco Inc	Cement Pump No.:	38119-19570	Operator TRK No.:	96815		
Address:	2020 N BRAMBLEWOOD	Ticket #:	1718-15984 L	Bulk TRK No.:	33021-14284	19827-19883	
City, State, Zip:	WICHITA KS 67206	Job Type:	Z42 - Cement Production Casing				
Service District:		Well Type:	OIL				
Well Name and No.:	Lena Mai 5-29	Well Location:	29,23,32	County:	Finney	State:	Ks

Type of Cmt	Sacks	Additives	Truck Loaded On		
A-CON	400	3%CaCl, 1/4#POLYFLAKE	33021-14284	Front	Back
AA2	160	10%W-60, 10%SALT, 5#GILSONITE, .5% C-17, 1/4#DEFOAMER	19827-19883	Front	Back
				Front	Back

Lead/Tail:	Weight #1 Gal.	Cu/Ft/sk	Water Requirements	CU. FT.	Man Hours / Personnel	
Lead:	11.4	2.95	18.1	1180	Man Hours:	
Tail:	14.8	1.51	6.65	241.6	# of Men on Job:	4

Time (am/pm)	(BPM)	Volume (BBLS)	Pumps T	Pumps C	Pressure(PSI) Tubing	Pressure(PSI) Casing	Description of Operation and Materials
16:00							ON LOC, SAFTEY MTG, R.U.
18:46						4300	TEST LINES
6:48 PM	7					370	START LEAD @ 11.4#
6:55 PM	7.5	52.5				230	ON TAIL @ 14.8#
7:00 PM		30					SHUT DOWN, DROP PLUG, WASHUP
19:07	7.4					140	START DISPLACEMENT
19:13	8.5	40				180	ON MUD
7:23 PM	2.5	106				690	SLOW RATE
19:28		116				800-1690	PLUG DOWN
19:31							RELEASE PSI, FLOAT HELD
19:33							DROP BOMB
19:48	3.5	15				840-150	OPEN TOOL
19:57							HOOK TO RIG, CIRC 4 HRS
0:39							PLUG RAT & MOUSE
0:53	7.5					300	START LEAD @ 11.4#
1:12	7.2	131				220	ON TAIL @ 14.8#
1:16		13.5					SHUT DOWN, DROP PLUG, WASHUP
1:23	6.5					190	START DISPLACEMENT
1:33	2.5	66				530	SLOW RATE
1:38		76				800-2580	PLUG DOWN, CLOSE TOOL
							JOB COMPLETE
							THANK YOU FOR YOUR BUSINESS!!!

Size Hole	7 7/8	Depth				TYPE			
Size & Wt. Csg.	5 1/2 15.5	Depth	4913'	New / Used		D.V.TOOL		Depth	3190'
tbg.		Depth				Retainer		Depth	
Top Plugs		Type				Perfs		CIBP	

Customer Signature:	Basic Representative:	CHAD HINZ
	Basic Signature:	
	Date of Service:	10/5/2018