

HALLIBURTON

SPECTRAL DENSITY DUAL SPACED NEUTRON LOG

COMPANY		RUSSELL OIL, INC.	
WELL		NEWMAN #32-1	
FIELD/BLOCK			
COUNTY		SHERIDAN	
STATE		KANSAS	
Permanent Datum		GL	Elev. 2665.0 ft
Log measured from		KB	D.F. 2668.0 ft
Drilling measured from		KB	G.L. 2665.0 ft
Date	09-Nov-19		
Run No.	1		
Depth - Driller	4400.0 ft		
Depth - Logger	4400.0 ft		
Bottom - Logged Interval	4390		
Top - Logged Interval	2200		
Casing - Driller	8.625 in	@	
Casing - Logger	286.0 ft	@	
Bit Size	7.875 in	@	
Type Fluid in Hole	Water Based Mud	@	
Density	9.20 g/cc	58.00	sl/qt
PH	10.00 pH	8.0	cp/m
Source of Sample			
Rm @ Meas. Temperature	1.08 ohmm	@	72.00 degF
Rmf @ Meas. Temperature	0.88 ohmm	@	70.00 degF
Rmc @ Meas. Temperature	1.27 ohmm	@	70.00 degF
Source Rmf	Rmc		MEAS
Rm @ BHT	0.63 ohmm	@	128.0 degF
Time Since Circulation	05:00 hr		
Time on Bottom	09-Nov-19 07:32		
Max. Rec. Temperature	128.00 degF	@	4400.0 ft
Equipment	12156883		EL.RENO, OK
Recorded By	WHITLOCK		
Witnessed By	KITT NOAH		

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Service Ticket No.: 906098766		API No.: 15-179-21464-00-00		PGM Version: WL INSITE R6.2.7 (Build 7)					
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE				RESISTIVITY SCALE CHANGES					
Date	Sample No.			Type Log	Depth	Scale Up Hole	Scale Down Hole		
Depth-Driller									
Type Fluid in Hole									
Density	Viscosity								
Ph	Fluid Loss								
Source of Sample				RESISTIVITY EQUIPMENT DATA					
Rm @ Meas. Temp	@	@		Run No.	Tool Type & No.	Pad Type	Tool Pos.		
Rmf @ Meas. Temp.	@	@							
Rmc @ Meas. Temp.	@	@							
Source Rmf	Rmc								
Rm @ BHT	@	@							
Rmf @ BHT	@	@							
Rmc @ BHT	@	@							
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		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	Depth	Speed	Scale	Scale	Matrix	Scale	Matrix	Scale	Matrix
No.	From	To	L	R	L	R	L	R	L

DIRECTIONAL INFORMATION

Maximum Deviation @ KOP @

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

HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

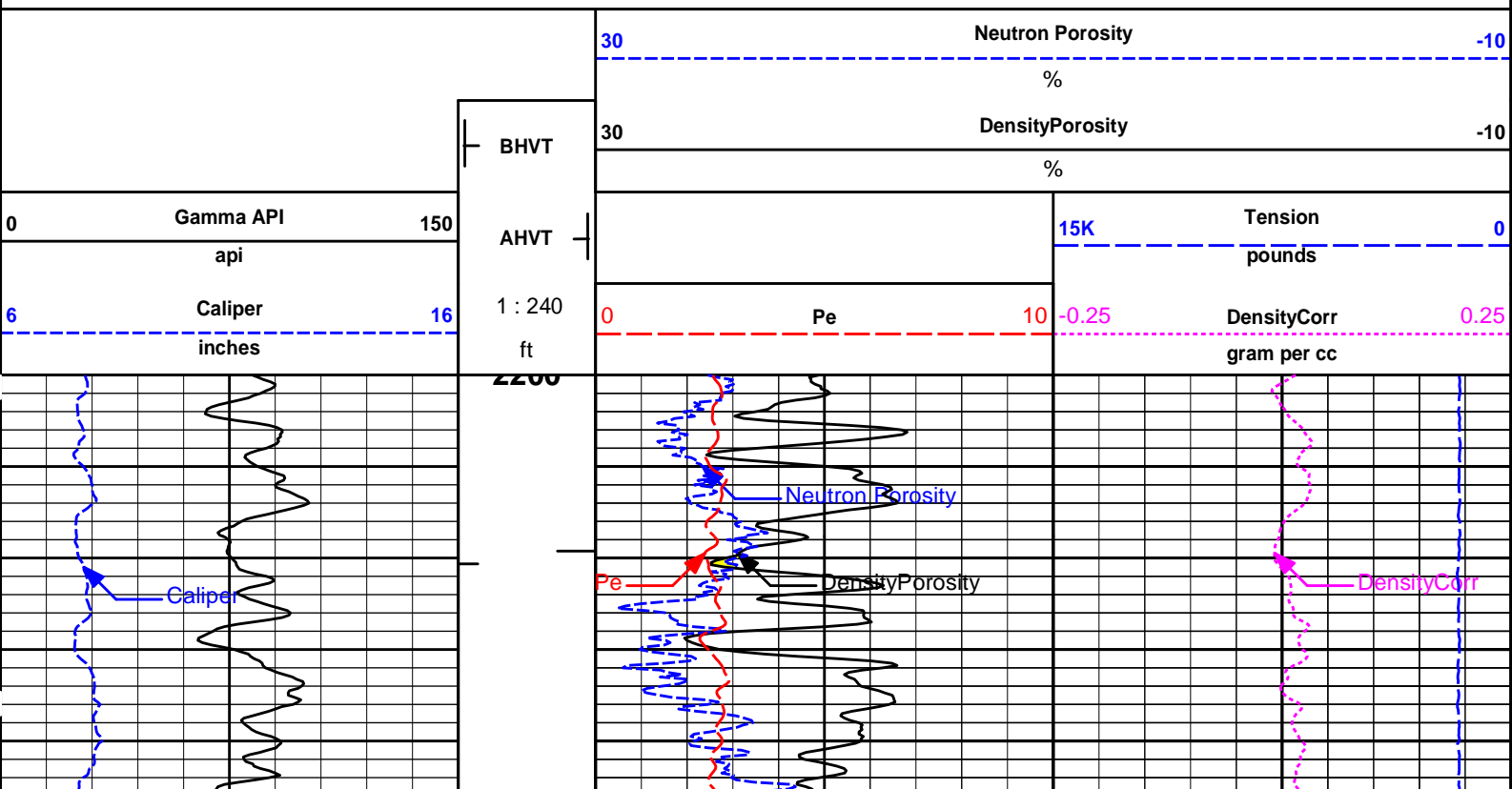
HALLIBURTON

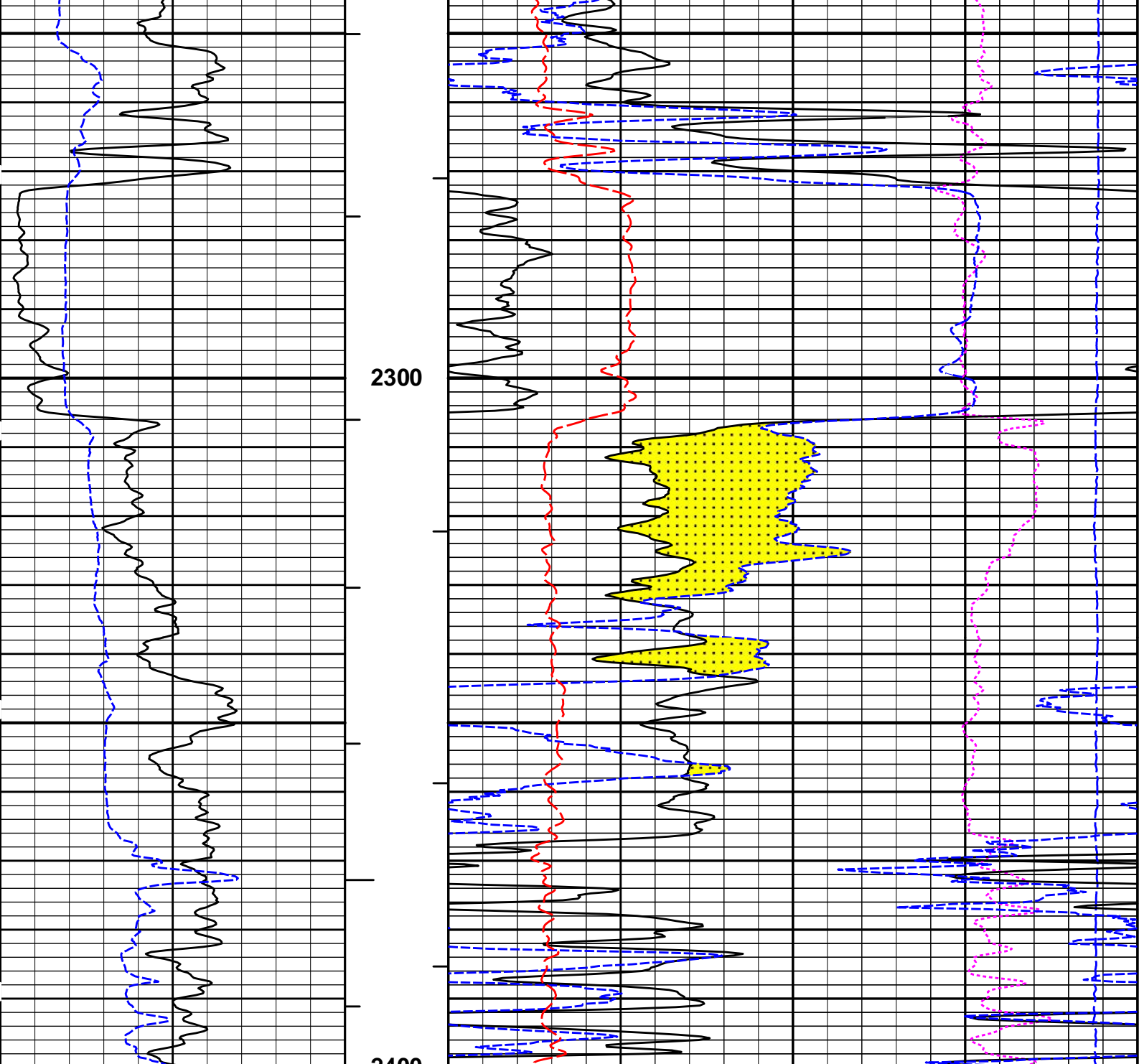


Plot Time: 09-Nov-19 10:19:20
 Plot Range: 2200 ft to 2400 ft
 Data: RUSSELL_NEWMAN\Well Based\DAQ-0001-003.01\
 Plot File: \\SDL-DSN\Poro_IQ_5_MAIN

5 INCH MAIN LOG

MAIN SECTION 5" PER 100'





6	Caliper	16	1 : 240	0	Pe	10	-0.25	DensityCorr	0.25
	inches		ft					gram per cc	
0	Gamma API	150	AHVT				15K	Tension	0
	api							pounds	
			BHVT	30	DensityPorosity				-10
					%				
				30	Neutron Porosity				-10
					%				

HALLIBURTON

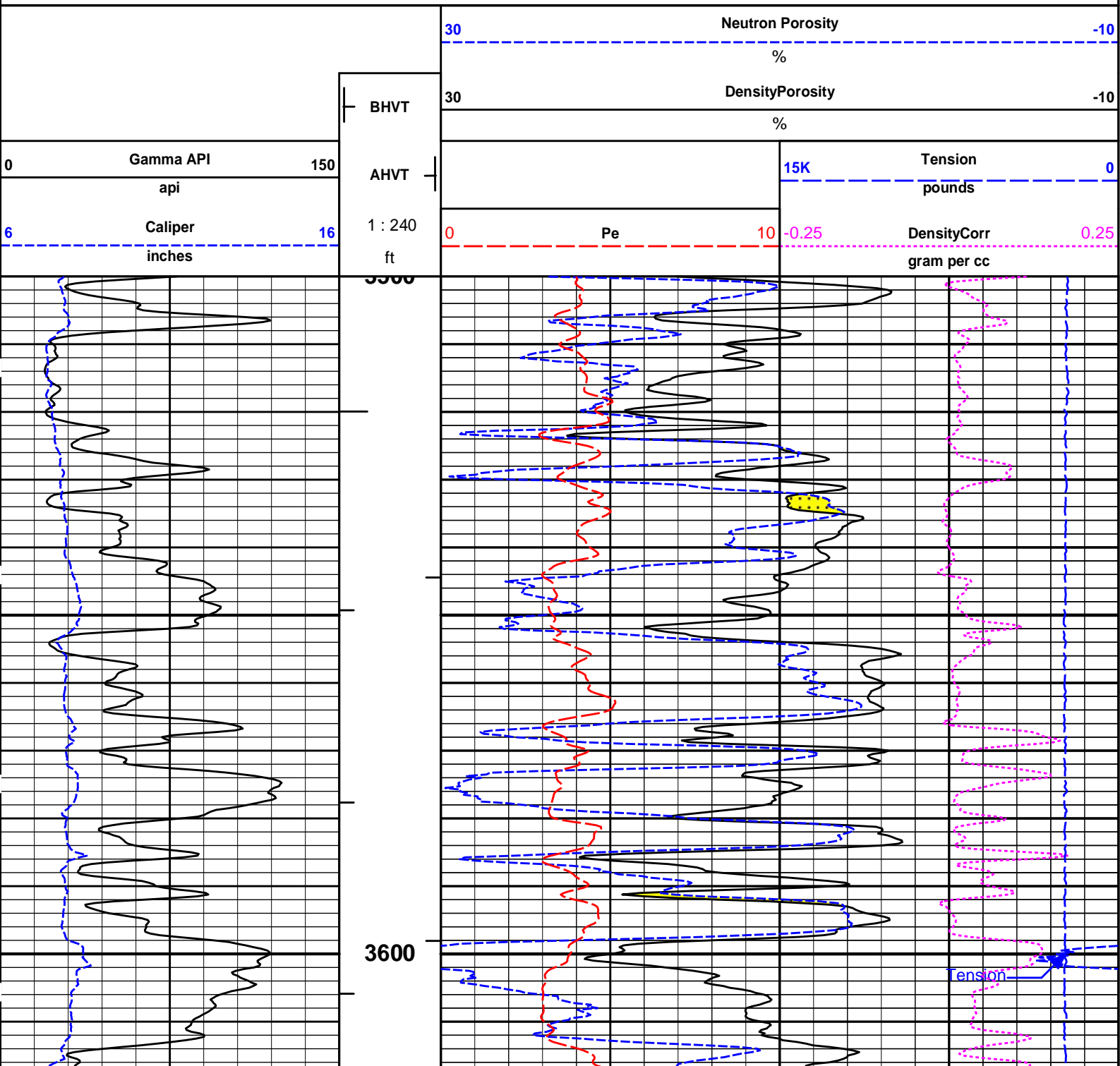
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 Plot File: \\SDL-DSN\Porosity_IQ_5_MAIN

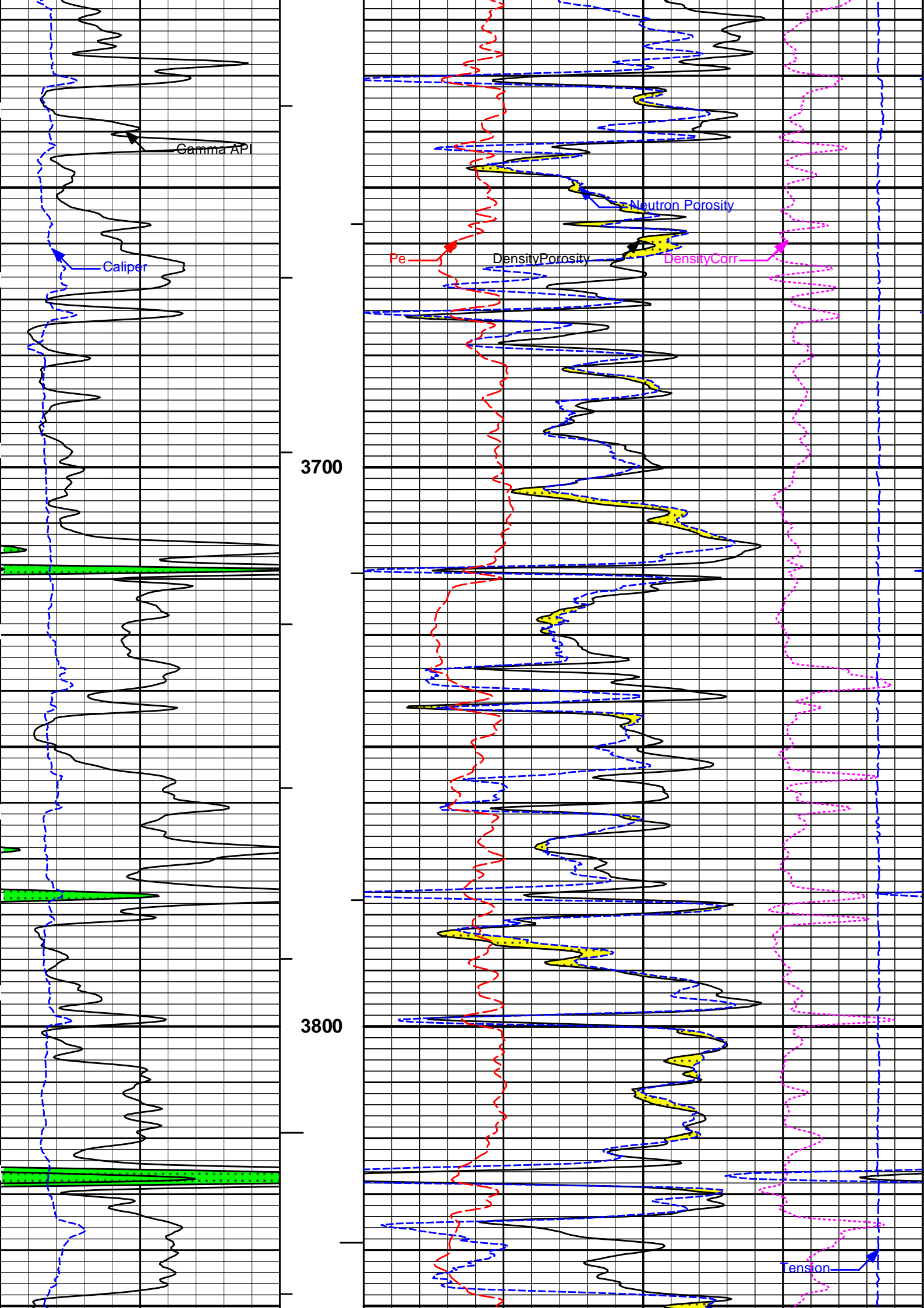
5 INCH MAIN LOG

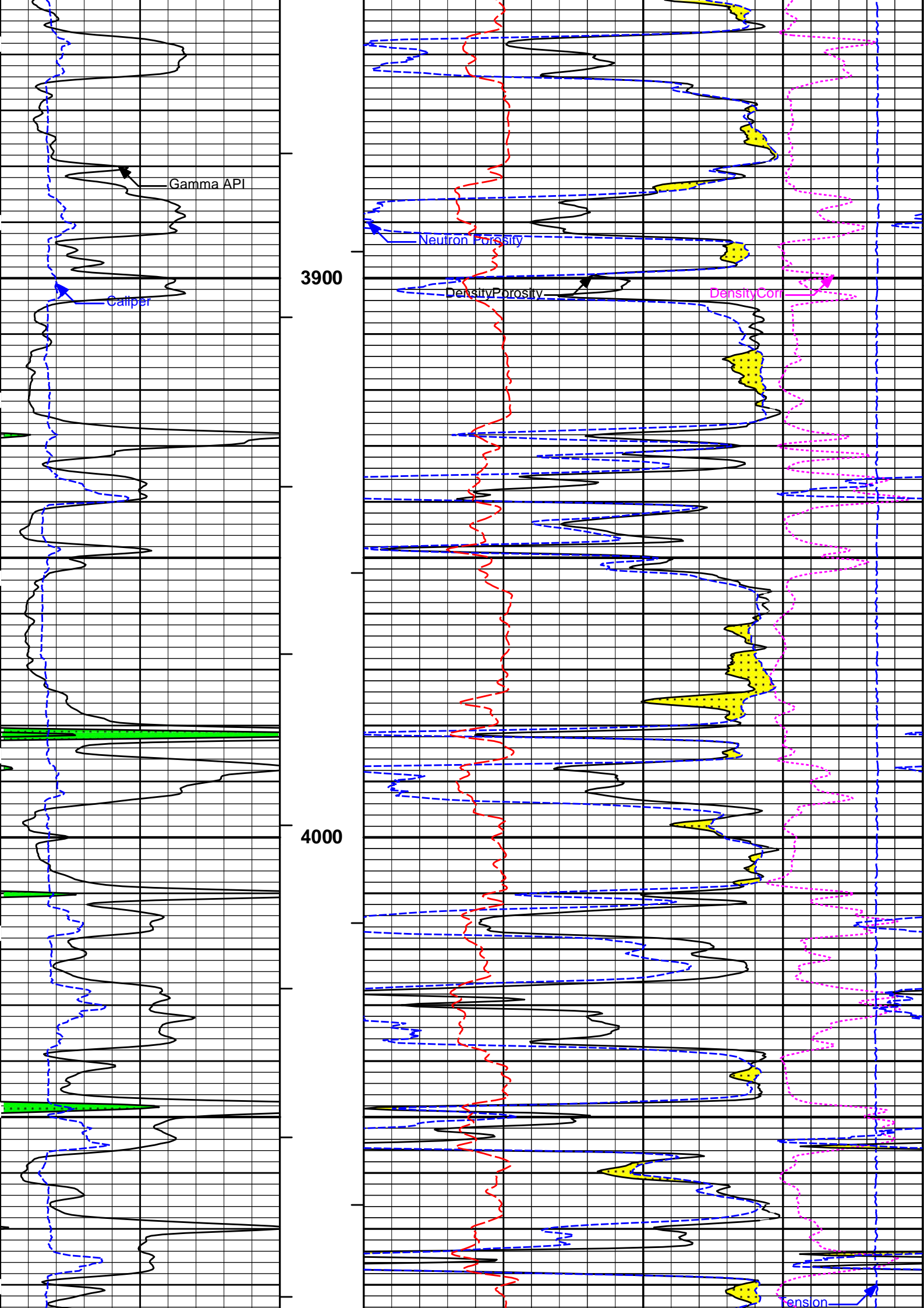
MAIN SECTION 5" PER 100'

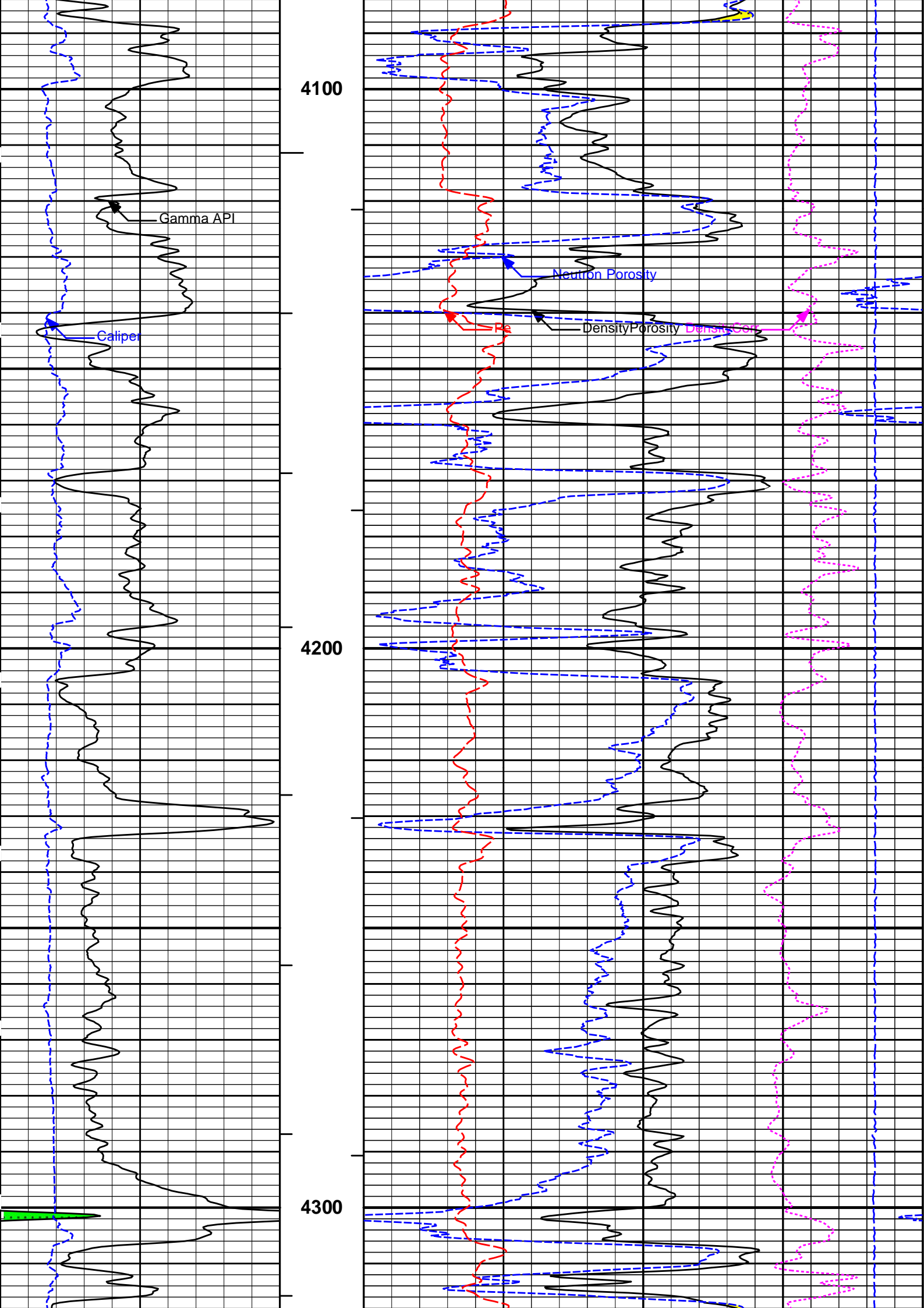
5 INCH MAIN LOG

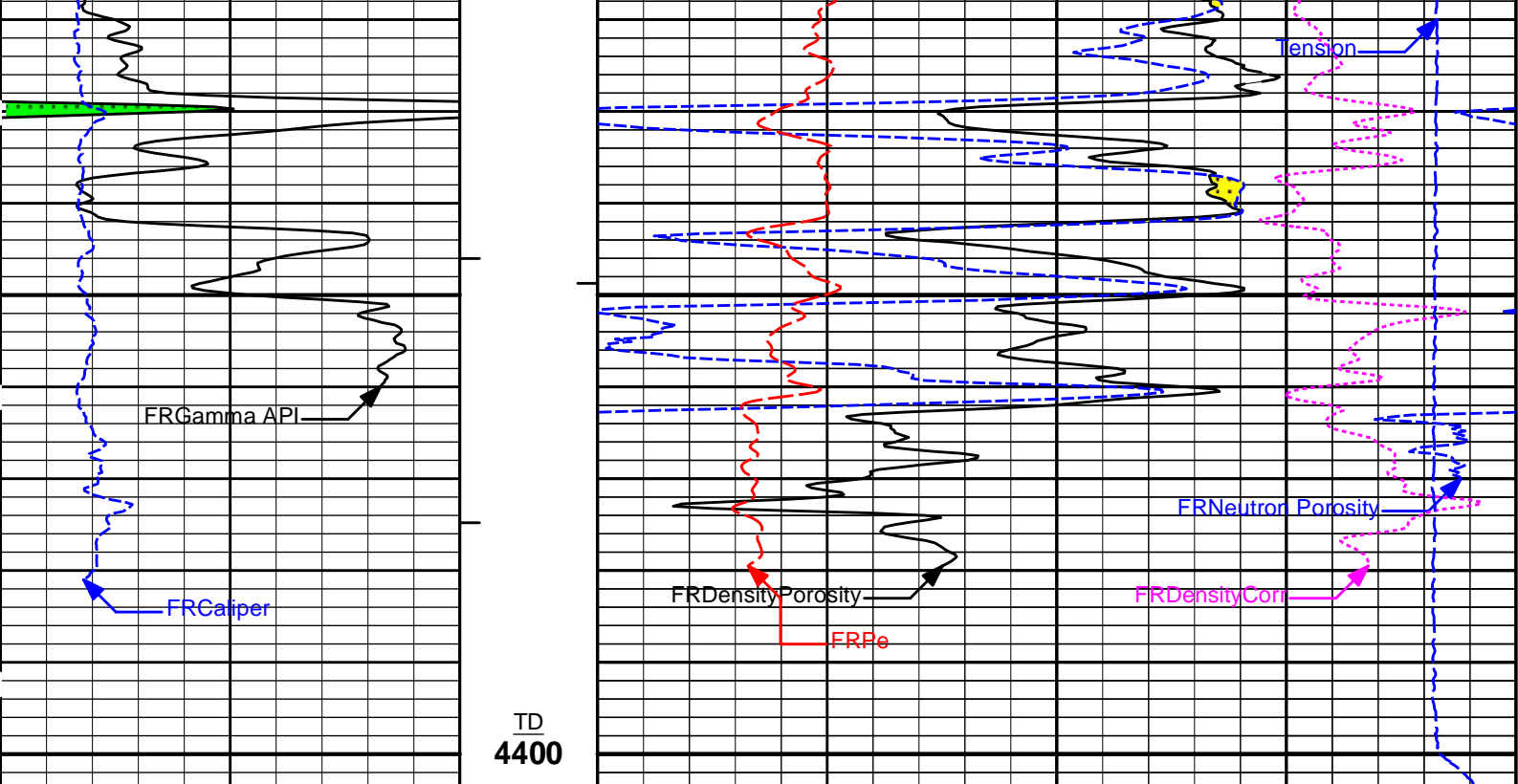
MAIN SECTION 5" PER 100'











6	Caliper	16	1 : 240	0	Pe	10	-0.25	DensityCorr	0.25
	inches		ft					gram per cc	
0	Gamma API	150	AHVT				15K	Tension	0
	api							pounds	
			BHVT	30	DensityPorosity				-10
					%				
				30	Neutron Porosity				-10
					%				

HALLIBURTON Plot Time: 09-Nov-19 10:19:25
 Plot Range: 3500 ft to 4403.67 ft
 Data: RUSSELL_NEWMAN\Well Based\DAQ-0001-003.01\
 Plot File: \\SDL-DSN\Porosity_IQ_5_MAIN

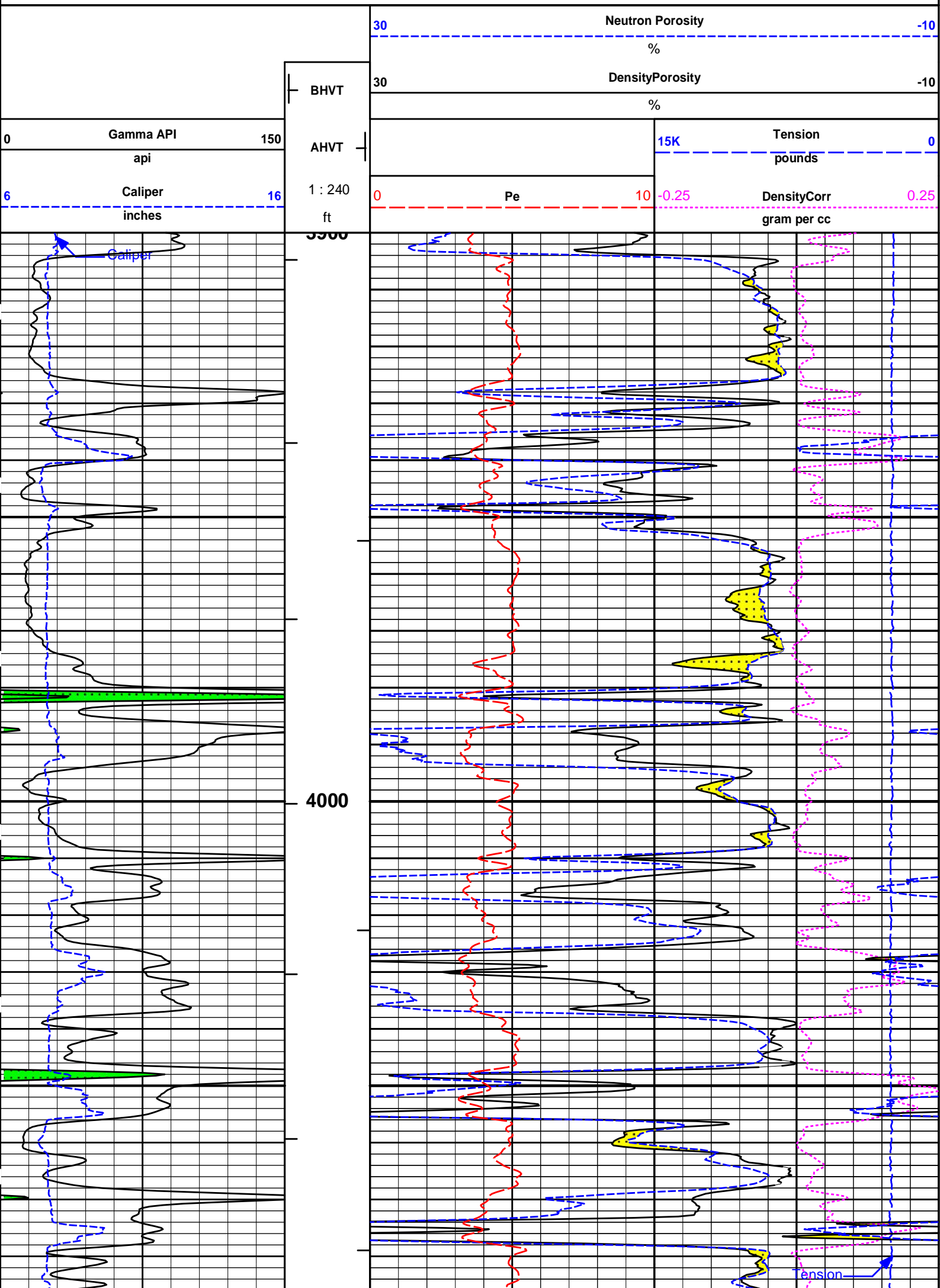
5 INCH MAIN LOG

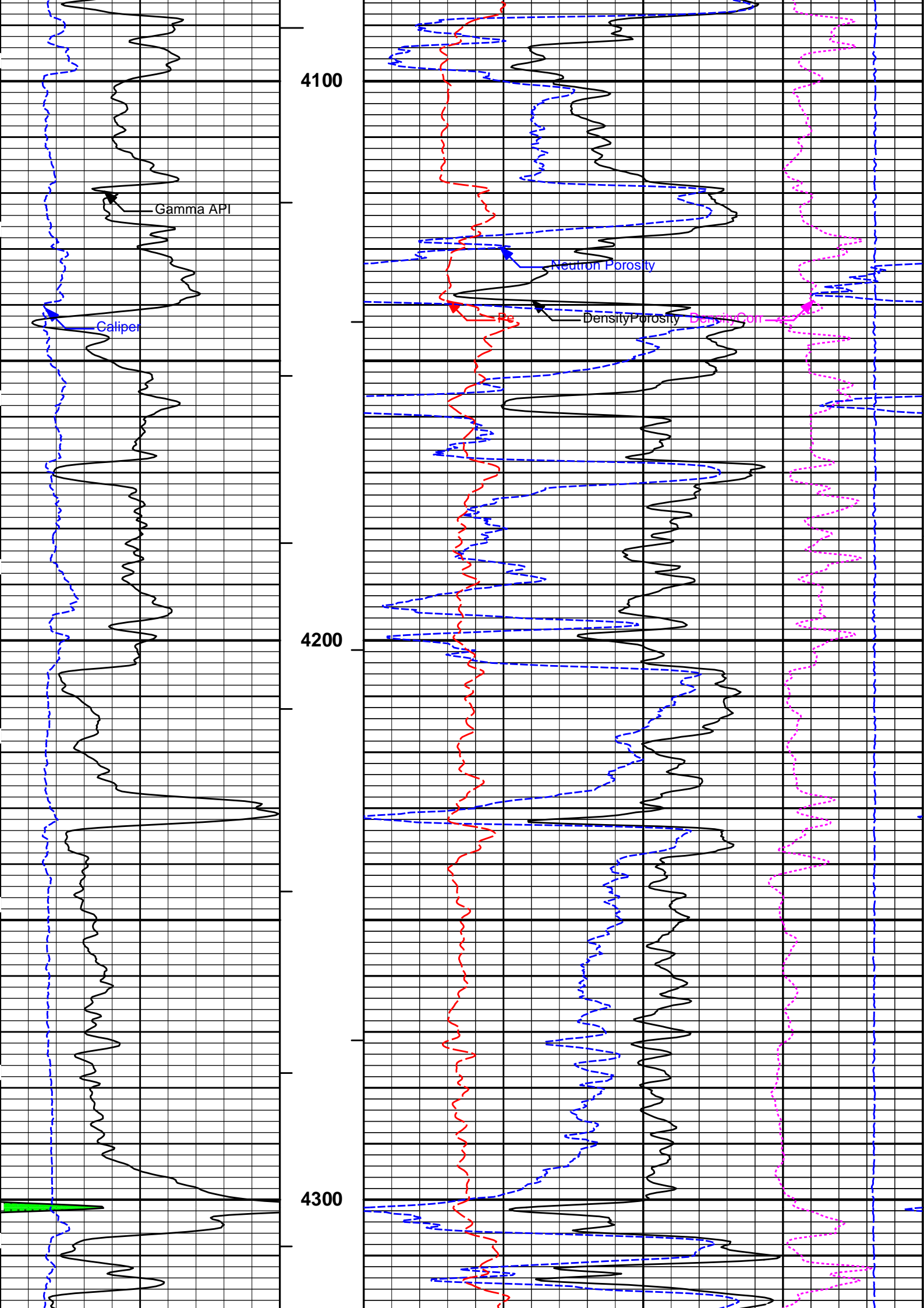
MAIN SECTION 5" PER 100'

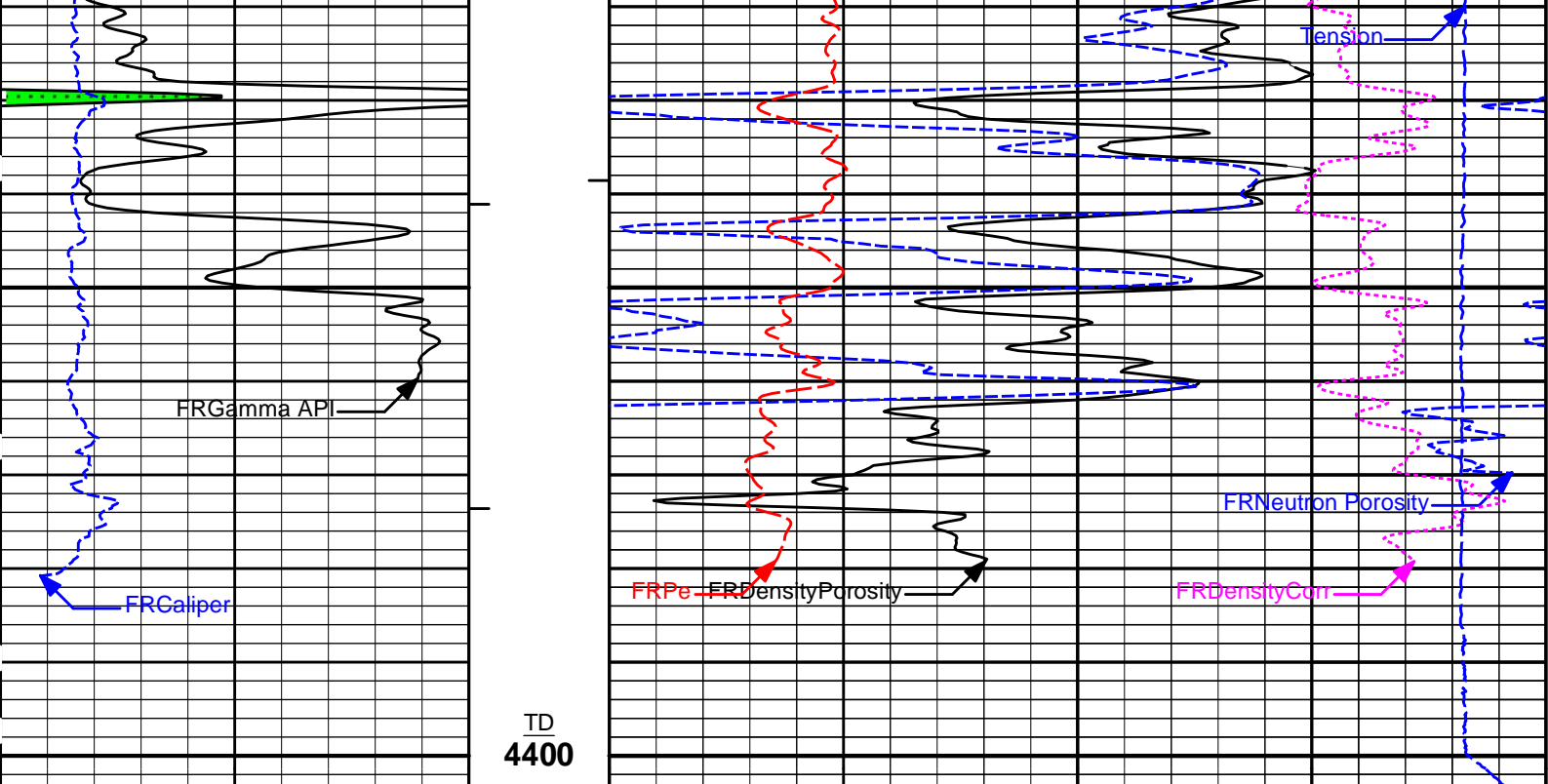
HALLIBURTON Plot Time: 09-Nov-19 10:19:25
 Plot Range: 3900 ft to 4403.25 ft
 Data: RUSSELL_NEWMAN\Well Based\DAQ-0001-002\
 Plot File: \\SDL-DSN\Porosity_IQ_5_MAIN

REPEAT SECTION

REPEAT SECTION







6	Caliper	16	1 : 240	0	Pe	10	-0.25	DensityCorr	0.25
	inches		ft					gram per cc	
0	Gamma API	150	AHVT				15K	Tension	0
	api		BHVT	30				pounds	
								DensityPorosity	-10
								%	
				30				Neutron Porosity	-10
								%	

HALLIBURTON Plot Time: 09-Nov-19 10:19:27
 Plot Range: 3900 ft to 4403.25 ft
 Data: RUSSELL_NEWMAN\Well Based\DAQ-0001-002\
 Plot File: \\SDL-DSN\Poro_IQ_5_MAIN

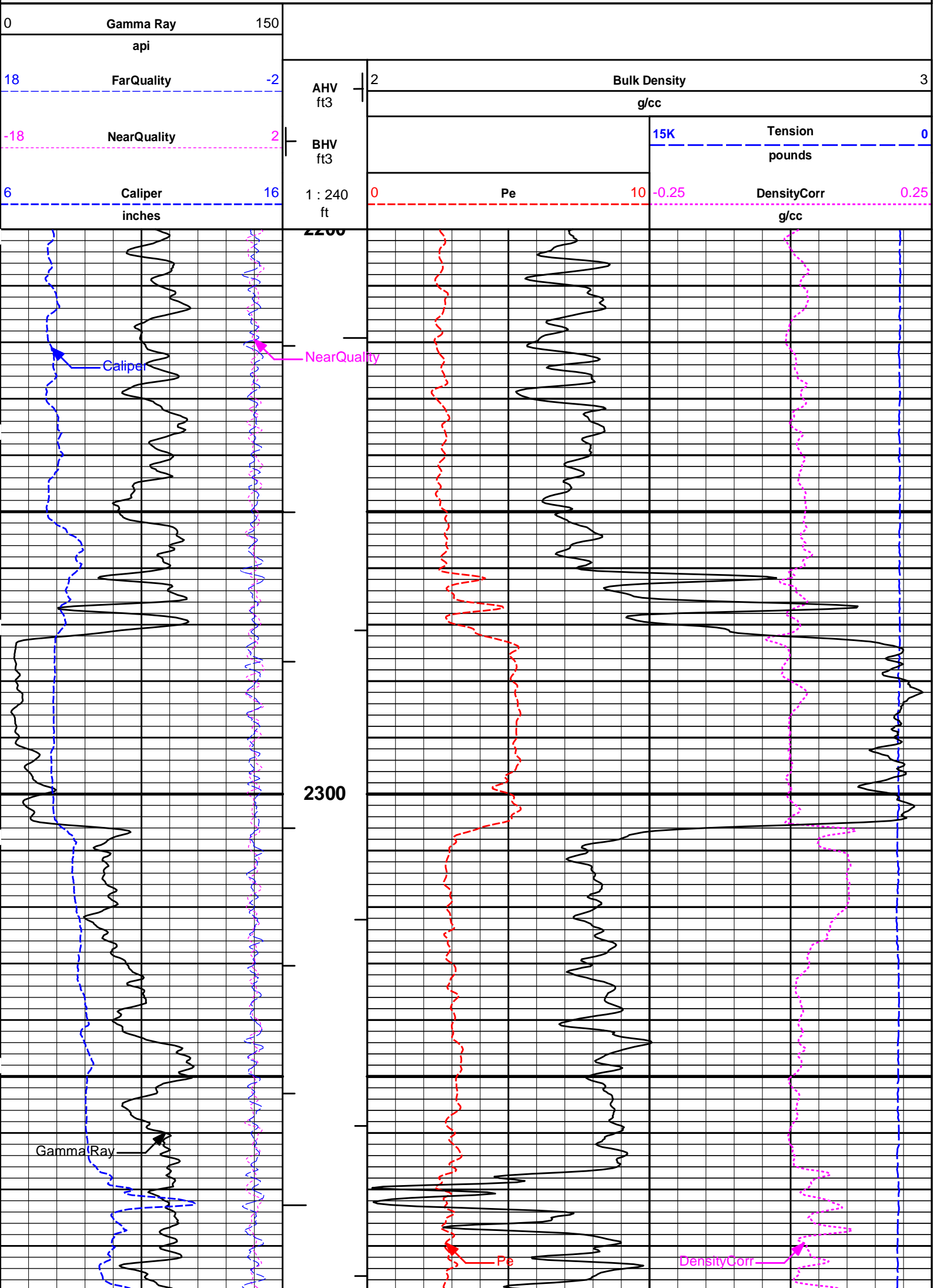
REPEAT SECTION

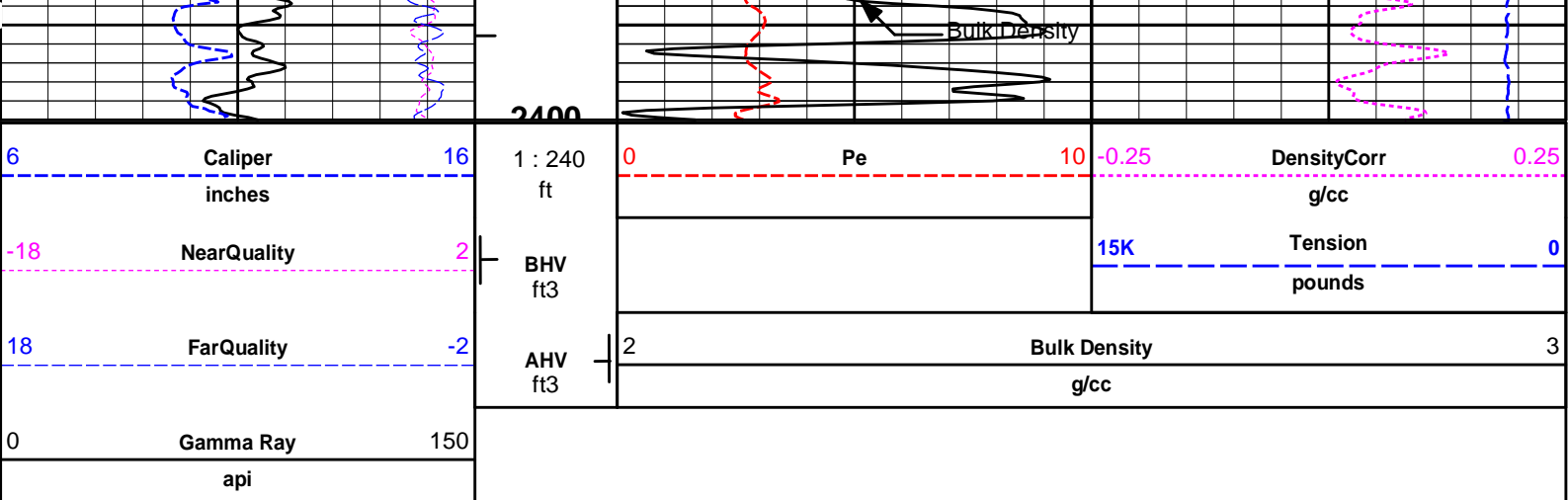
REPEAT SECTION

HALLIBURTON Plot Time: 09-Nov-19 10:19:28
 Plot Range: 2200 ft to 2400 ft
 Data: RUSSELL_NEWMAN\Well Based\DAQ-0001-003.01\
 Plot File: \\-LOCAL-1\RUSSELL_NEWMAN\0001 GTET-DSN-SDL-ACRT\SDL-DSN\BULKD_5_MAIN_IQ

5 INCH MAIN LOG

MAIN SECTION 5" PER 100'





HALLIBURTON

Plot Time: 09-Nov-19 10:19:29
 Plot Range: 2200 ft to 2400 ft
 Data: RUSSELL_NEWMAN\Well Based\DAQ-0001-003.01\
 Plot File: \\-LOCAL-\\RUSSELL_NEWMAN\0001 GTET-DSN-SDL-ACRT\SDL-DSN\BULKD_5_MAIN_IQ

5 INCH MAIN LOG

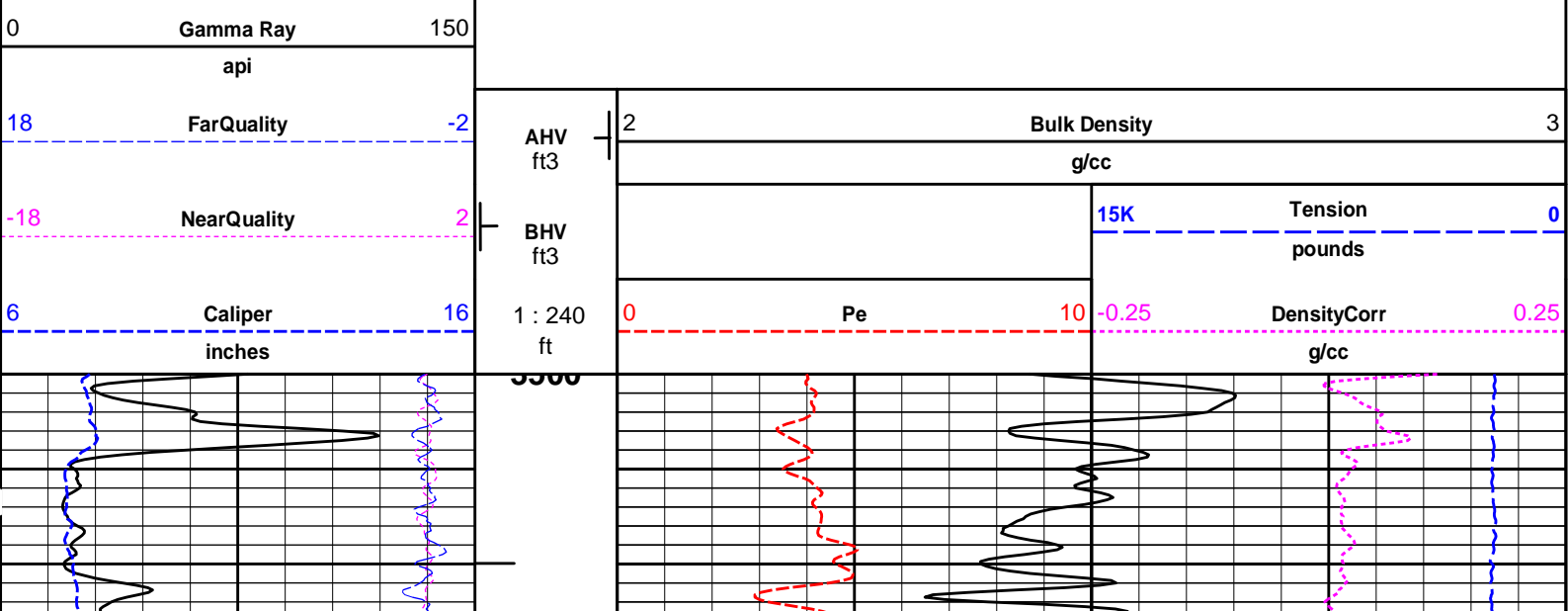
MAIN SECTION 5" PER 100'

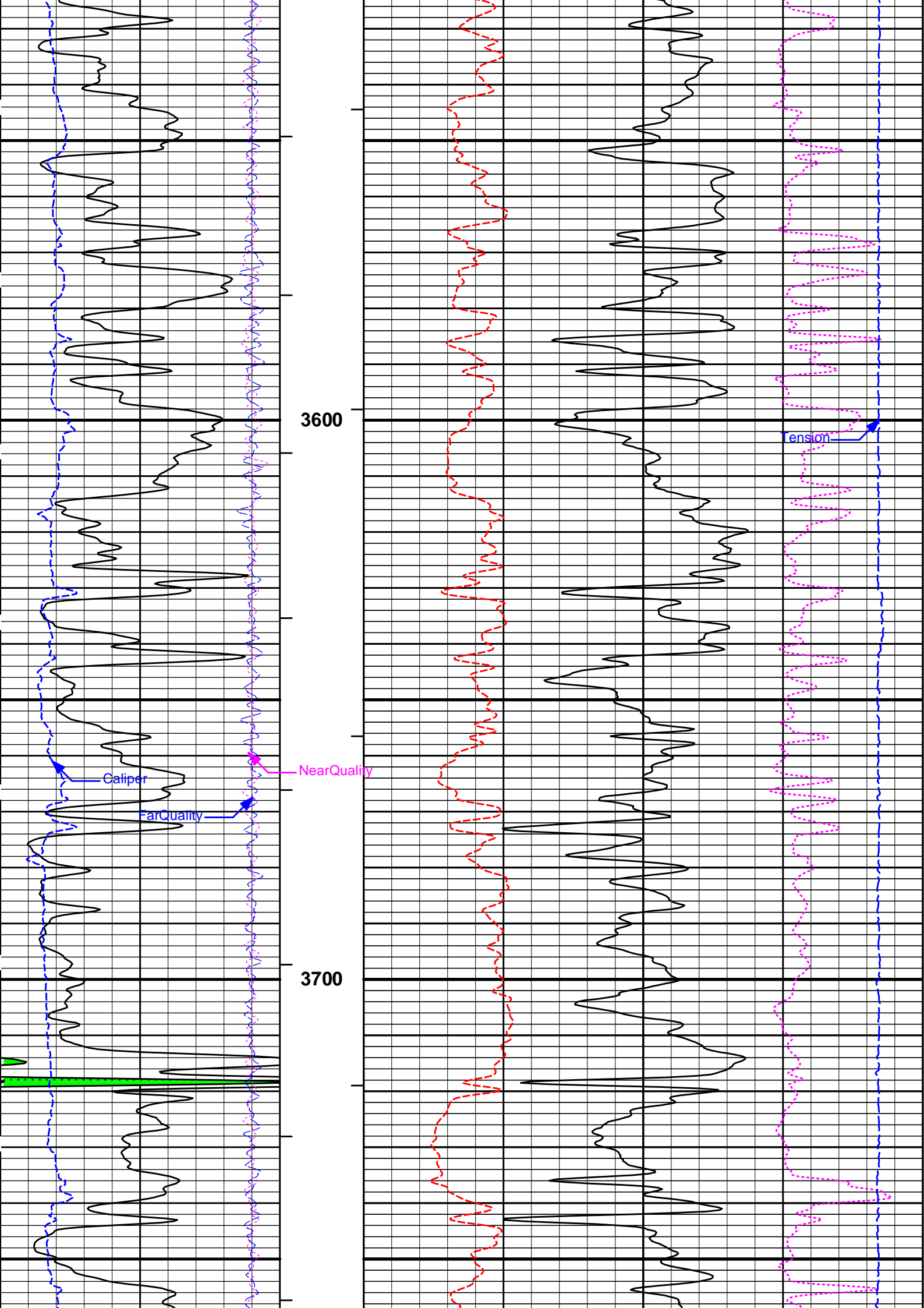
HALLIBURTON

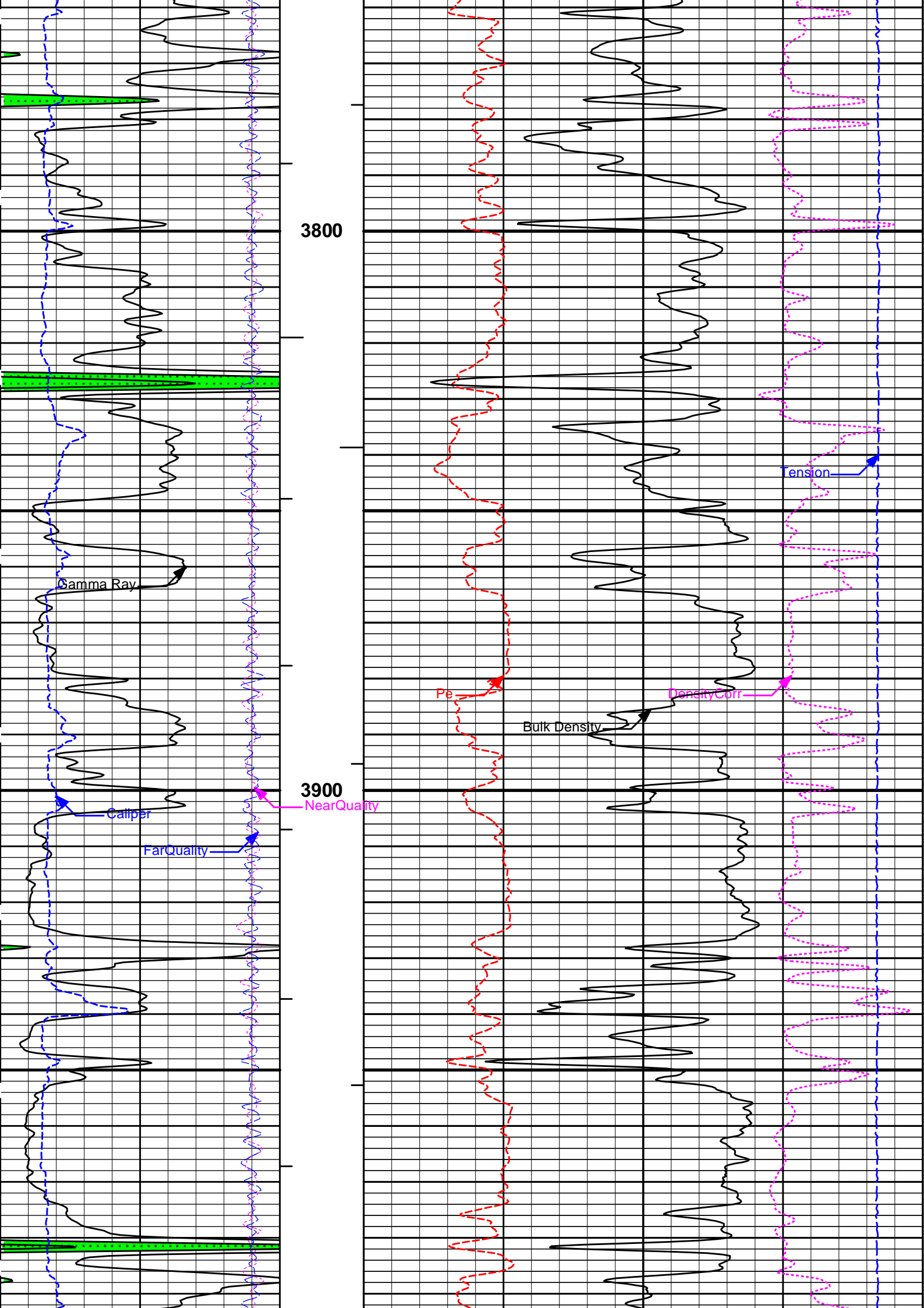
Plot Time: 09-Nov-19 10:19:29
 Plot Range: 3500 ft to 4403.67 ft
 Data: RUSSELL_NEWMAN\Well Based\DAQ-0001-003.01\
 Plot File: \\-LOCAL-\\RUSSELL_NEWMAN\0001 GTET-DSN-SDL-ACRT\SDL-DSN\BULKD_5_MAIN_IQ

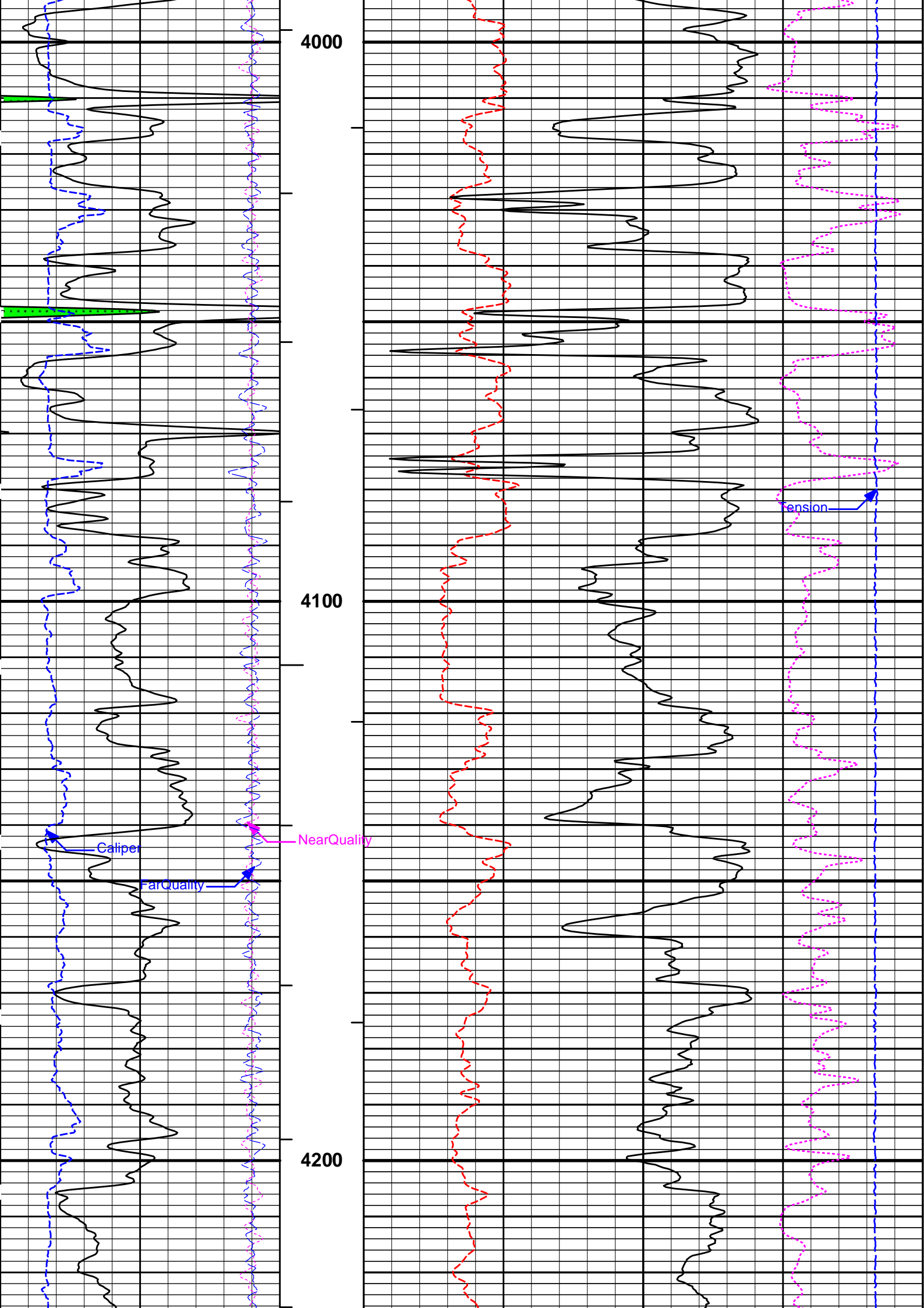
REPEAT SECTION

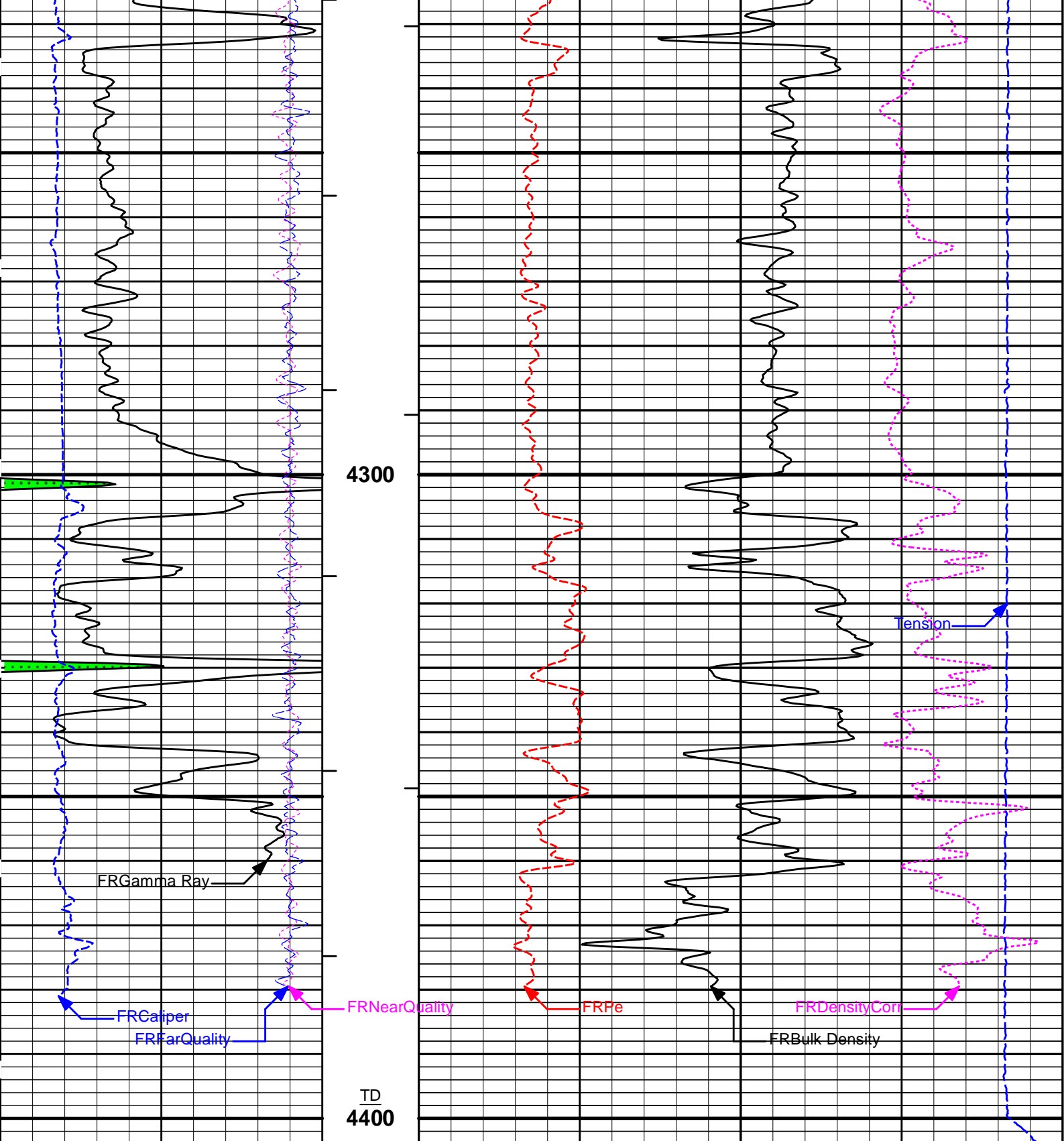
REPEAT SECTION











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

HALLIBURTON

Plot Time: 09-Nov-19 10:19:32
 Plot Range: 3500 ft to 4403.67 ft
 Data: RUSSELL_NEWMANWell Based\DAQ-0001-003.01\
 Plot File: \\-LOCAL-RUSSELL_NEWMAN\0001 GTET-DSN-SDL-ACRT\SDL-DSNBULKD_5_MAIN_IQ

REPEAT SECTION

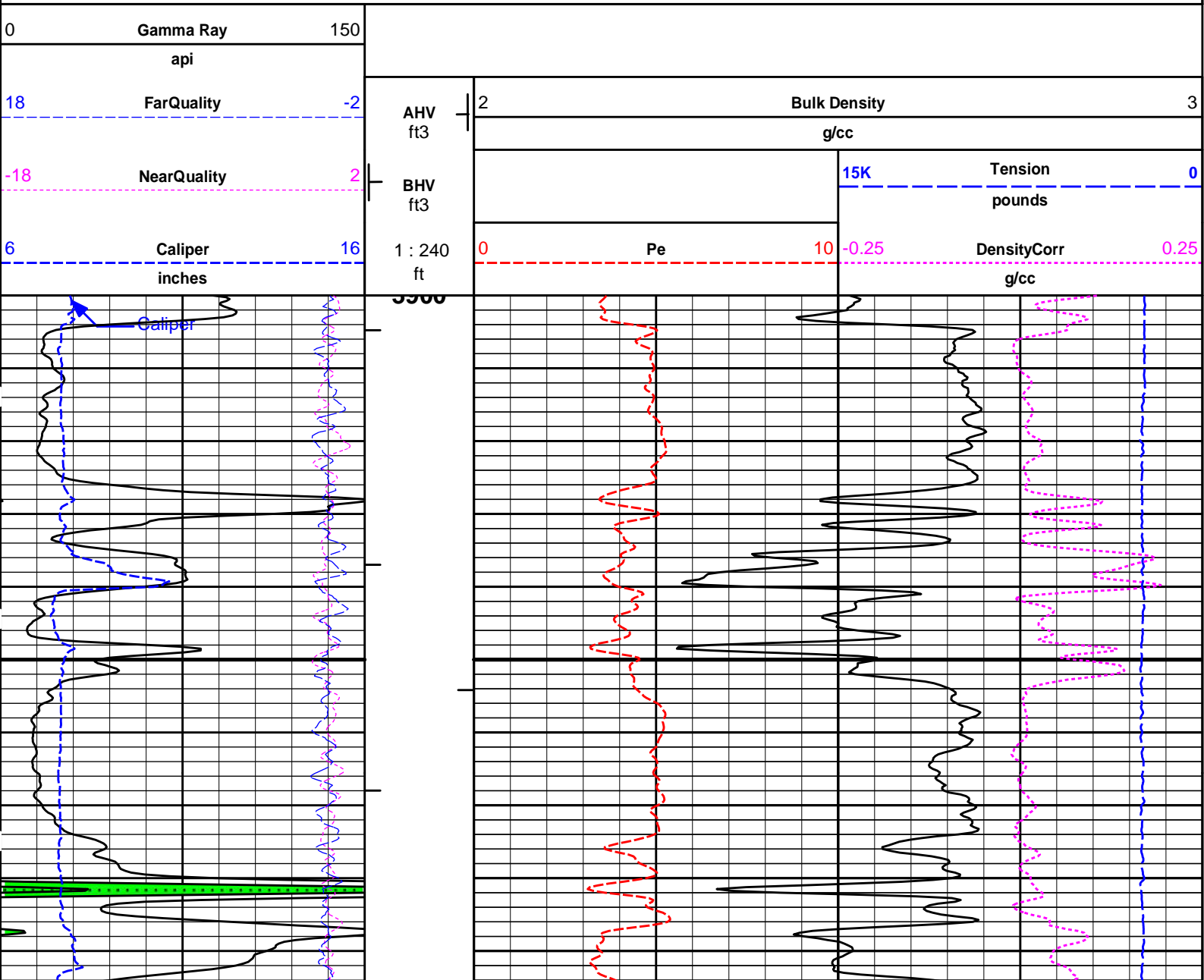
REPEAT SECTION

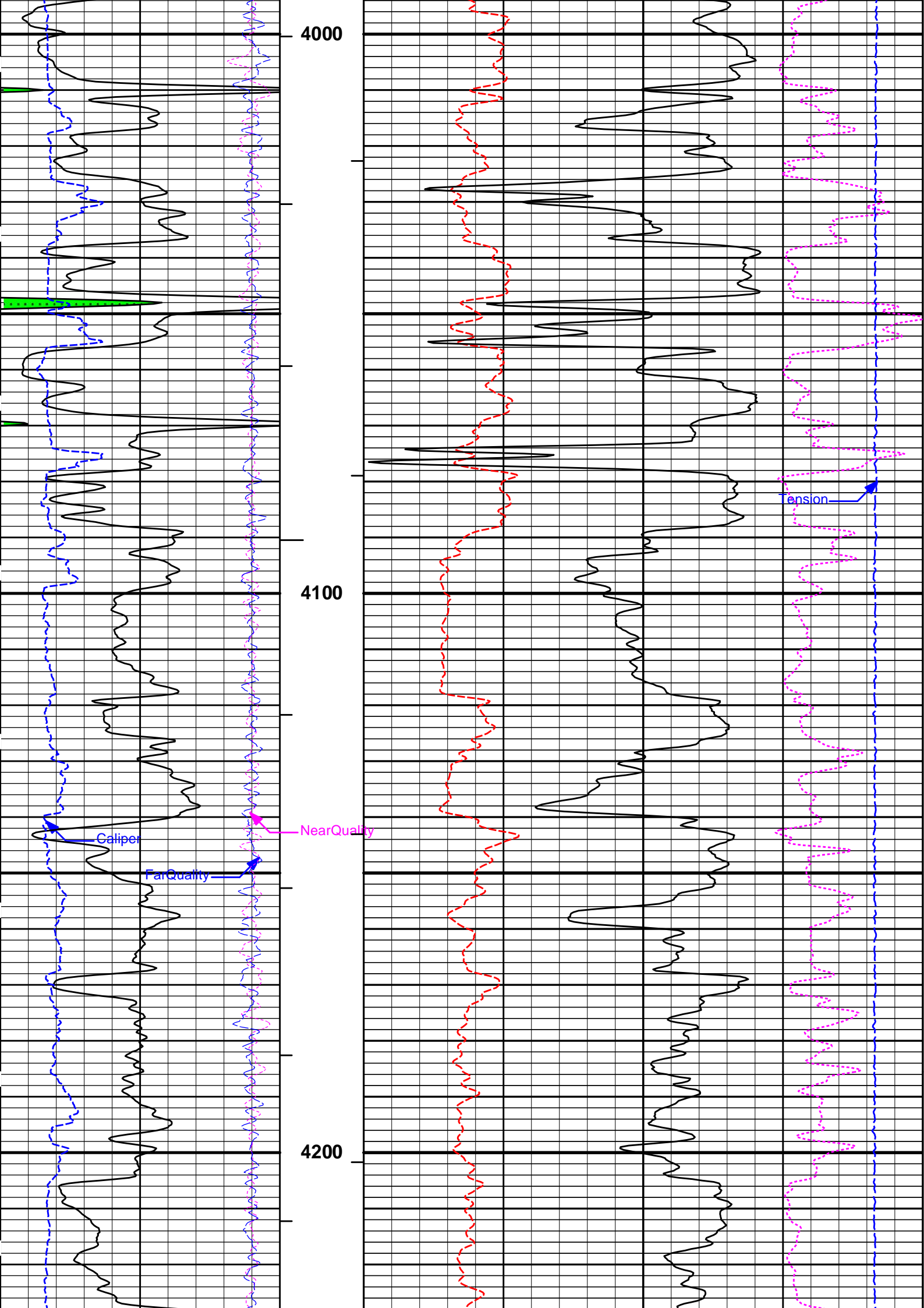
HALLIBURTON

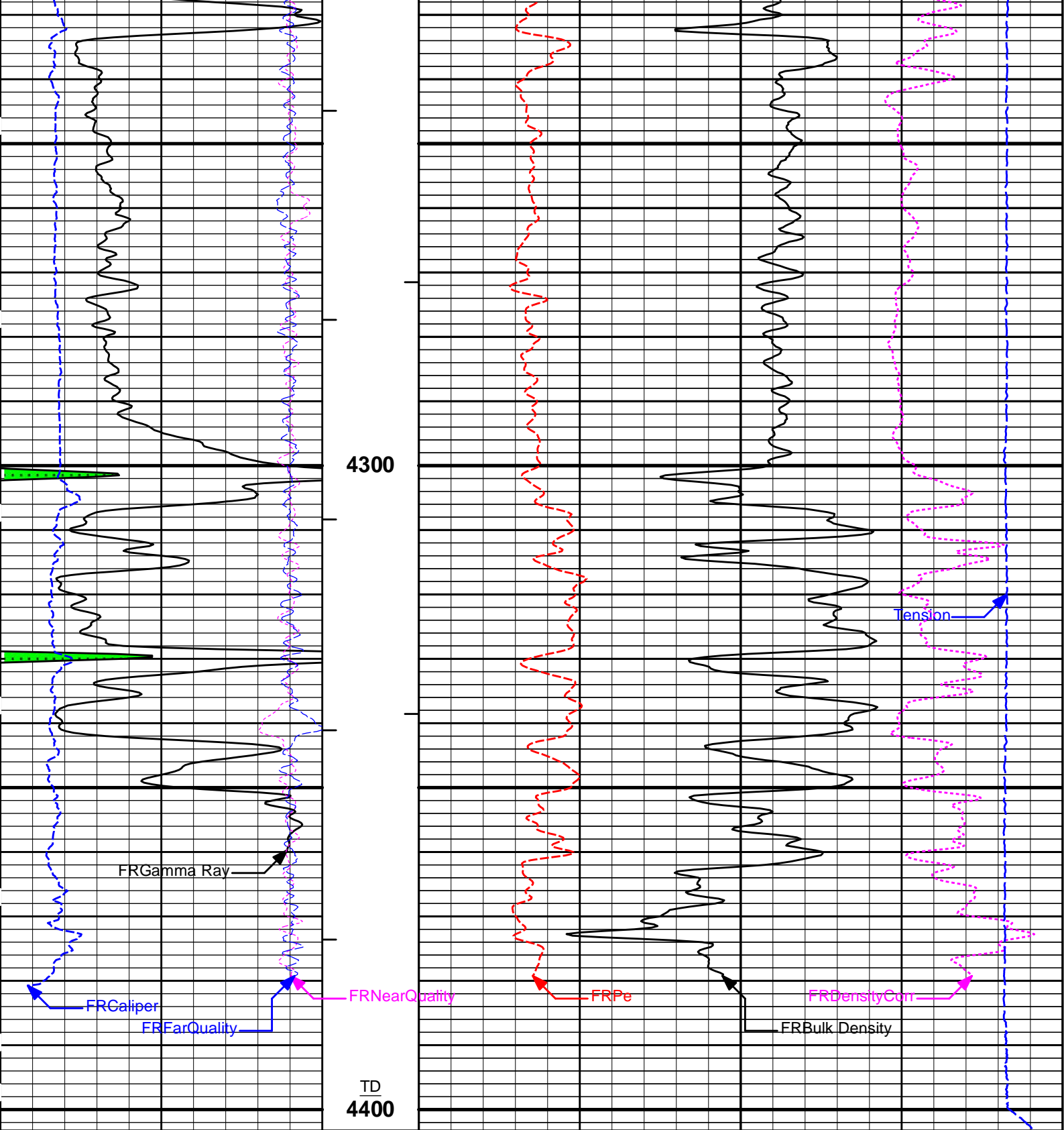
Plot Time: 09-Nov-19 10:19:32
Plot Range: 3900 ft to 4403.25 ft
Data: RUSSELL_NEWMANWell Based\DAQ-0001-002\
Plot File: \\-LOCAL-RUSSELL_NEWMAN\0001 GTET-DSN-SDL-ACRT\SDL-DSN\BULKD_5_MAIN_IQ

REPEAT SECTION

REPEAT SECTION







4300

TD
4400

FRGamma Ray

FRCaliper

FERFarQuality

FRNearQuality

FRPe

FRDensityCorr

FERBulk Density

Tension

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

HALLIBURTON

Plot Time: 09-Nov-19 10:19:36
 Plot Range: 3900 ft to 4403.25 ft
 Data: RUSSELL_NEWMANWell Based\DAQ-0001-002\
 Plot File: \\-LOCAL-1\RUSSELL_NEWMAN\0001 GTET-DSN-SDL-ACRT\SDL-DSN\BULKD_5_MAIN_IQ

REPEAT SECTION

REPEAT SECTION

HALLIBURTON

CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name: Depth Panel - 00000032 **Reference Calibration Date:** 18-Oct-19 08:14:38
Engineer: JORGE ORLANDO PEREZ **Calibration Date:** 02-Nov-19 07:11:44
Software Version: WL INSITE R6.2.7 (Build 7) **Calibration Version:** 1

SURFACE TENSION LOAD CELL

Measurement	Load Cell Value	Measurement	Calibrated	Units
Low	10002.34	-20.40	0.00	lbs
High	17218.88	7839.56	7830.00	lbs

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name: RWCH - 11830866 **Reference Calibration Date:** 30-Oct-19 11:42:39
Engineer: JORGE ORLANDO PEREZ **Calibration Date:** 02-Nov-19 07:14:22
Software Version: WL INSITE R6.2.7 (Build 7) **Calibration Version:** 1

DOWNHOLE LOAD CELL

Measurement	Tool Value	Measurement	Calibrated	Units
Low	-415.80	-20444.99	0.00	lbs
High	1076.38	115004.76	764.10	lbs

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11013113 **Reference Calibration Date:** 06-Sep-19 13:50:19
Engineer: WHITLOCK **Calibration Date:** 23-Oct-19 10:38:45
Software Version: WL INSITE R6.2.7 (Build 7) **Calibration Version:** 1

Calibrator Source S/N: TB79

Calibrator API Reference:222.00 api

Equivalent Calibrator API Reference:225.9 api

Measurement	Measured	Calibrated	Units
Background	25.3	25.6	api
Background + Calibrator	248.3	251.5	api
Calibrator	223.0	225.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11013113 **Reference Calibration Date:** 23-Oct-19 10:38:45
Engineer: WHITLOCK **Calibration Date:** 07-Nov-19 10:11:25
Software Version: WL INSITE R6.2.7 (Build 7) **Calibration Version:** 1

Calibrator Source S/N: TB79

Calibrator API Reference:222.00 api

Equivalent Calibrator API Reference:225.9 api

Field Verification	Shop	Field	Units
Background	25.6	22.1	api
Background + Calibrator	251.5	249.2	api
Calibrator	223.0	225.9	api

Shop	Field	Difference	Tolerance
225.9	227.1	-1.2	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11055304

Reference Calibration Date: 22-Aug-19 14:12:28

Engineer: WOLTEMATH

Calibration Date: 22-Aug-19 14:39:04

Software Version: WL INSITE R6.2.7 (Build 7)

Calibration Version: 1

Logging Source S/N: DSN-436

Tank Serial Number: 10730320

Reference value assigned to Tank: 56.100

Snow Block S/N: 12156883

Calibration Tank Water Temperature: 80 degF

Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	1.04178	1.04096	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):	0.2360	0.2358	0.0002	+/- 0.0020
Calibrated Ratio:	10.5680	10.5597	0.008	+/- 0.050

VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0796	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 - 11055304

Reference Calibration Date: 22-Aug-19 14:39:04

Engineer: WHITLOCK

Calibration Date: 07-Nov-19 10:31:22

Software Version: WL INSITE R6.2.7 (Build 7)

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):	0.0796	0.0841	0.0045	+/- 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: 04-Nov-19 15:23:08

Engineer: M. RICHTER

Calibration Date: 04-Nov-19 15:28:51

Software Version: WL INSITE R6.2.7 (Build 7)

Calibration Version: 1

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-4776.57	-4909.59	-7000.00 - -1000.00
Pad Gain	0.0003889	0.0003957	0.0002000 - 0.0006000
Arm Offset	-3625.30	-3353.87	-5000.00 - 3000.00
Arm Gain	0.0005621	0.0005296	0.000300 - 0.000700
Arm Power	-0.000006720	-0.000004566	-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)	2.02	2.00	-0.02	+/- 0.20
Medium Ring (in)	3.74	3.75	0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.51	6.50	-0.01	+/- 0.20
Medium Ring (in)	8.33	8.25	-0.08	+/- 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:	04-Nov-19 15:28:51
Engineer:	M. RICHTER	Calibration Date:	04-Nov-19 15:31:16
Software Version:	WL INSITE R6.2.7 (Build 7)	Calibration Version:	1

MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.80	0.05	+/- 0.10
Ring Diameter	8.25	8.26	0.01	+/- 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:	13-Sep-19 20:21:53
Engineer:	JORGE ORLANDO PEREZ	Calibration Date:	05-Nov-19 10:54:27
Software Version:	WL INSITE R6.2.7 (Build 7)	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	1.0307	1.05	0.95	1.0095	1.05	0.95	1.0014	1.05
A2 (50")	0.95	1.0359	1.05	0.95	1.0171	1.05	0.95	1.0115	1.05
A3 (29")	0.95	1.0310	1.05	0.95	1.0100	1.05	0.95	1.0035	1.05
A4 (17")	0.95	1.0328	1.05	0.95	1.0101	1.05	0.95	1.0052	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0034	1.05	0.95	0.9977	1.05

A6 (6")	N/A	N/A	N/A	0.95	1.0043	1.05	0.95	0.9978	1.05
SONDE OFFSET									
Subarray	R12KHz			R36KHz			R72KHz		
	(mmho/m)			(mmho/m)			(mmho/m)		
A1 (80")	-0.808			-5.207			-5.601		
A2 (50")	0.511			-3.609			-5.279		
A3 (29")	-12.434			-3.950			-3.771		
A4 (17")	-94.775			-29.778			-24.358		
A5 (10")	N/A			-73.178			-36.258		
A6 (6")	N/A			286.240			152.126		
TRANSMITTER CURRENT GAIN					R-MUD VERIFICATION				
Signal	Lower	R	Upper	Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)		
12K	0.6	0.83	1.3	Mud Cell	0.95	0.99	1.05		
36K	1.0	1.81	2.0						
72K	1.0	1.07	2.0						
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:	05-Nov-19 10:56:55			
Engineer:	JORGE ORLANDO PEREZ				Calibration Date:	05-Nov-19 10:58:40			
Software Version:	WL INSITE R6.2.7 (Build 7)				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	-0.007	> -0.500	Pass	-0.023	> -0.500	Pass
A5 (10")	-0.010	> -0.500	Pass	-0.016	> -0.500	Pass	-0.035	> -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")	-211017504.000	-210963520.000	53984.000	10548176.000	Pass
A2 (50")	-201063376.000	-201001456.000	61920.000	10050072.800	Pass
A3 (29")	-202298688.000	-202236272.000	62416.000	10111813.600	Pass
A4 (17")	-196769472.000	-196710160.000	59312.000	9835508.000	Pass
A5 (10")	-197638496.000	-197576928.000	61568.000	9878846.400	Pass
A6 (6")	-195283936.000	-195215792.000	68144.000	9760789.600	Pass

R36KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	45235592.000	45171552.000	64040.000	2258577.600	Pass
A2 (50")	31200082.000	31135516.000	64566.000	1556775.800	Pass
A3 (29")	26374304.000	26310728.000	63576.000	1315536.400	Pass
A4 (17")	25347108.000	25294182.000	52926.000	1264709.100	Pass
A5 (10")	25069158.000	25011902.000	57256.000	1250595.100	Pass
A6 (6")	23372746.000	23316728.000	56018.000	1165836.400	Pass

R72KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-91706976.000	-91683616.000	23360.000	4584180.800	Pass
A2 (50")	-88067264.000	-88037528.000	29736.000	4401876.400	Pass
A3 (29")	-88500760.000	-88474728.000	26032.000	4423736.400	Pass
A4 (17")	-86378136.000	-86351184.000	26952.000	4317559.200	Pass
A5 (10")	-85383264.000	-85355336.000	27928.000	4267766.800	Pass
A6 (6")	-85585888.000	-85556056.000	29832.000	4277802.800	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:	31-Oct-19 14:33:51
Engineer:	WHITLOCK	Calibration Date:	07-Nov-19 10:19:23
Software Version:	WL INSITE R6.2.7 (Build 7)	Calibration Version:	1
Host Tool Name:	DSNT - 11055304		

CALIBRATION COEFFICIENT SUMMARY

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Measured	Calibrated	Measured	Calibrated	
Tool Zero	-0.10	-0.14	-0.01	-0.01	ohmm
Calibration Point #1	0.04	0.00	-0.01	0.00	ohmm
Calibration Point #2	20.09	20.00	20.01	20.00	ohmm
Internal Reference	19.95	19.86	20.04	20.02	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	-5.49	-0.73	V
Calibration Point #1	32.76	1.11	V
Calibration Point #2	5354.31	6888.30	V
Internal Reference	5317.63	6895.72	V

MICRO LOG FIELD CHECK

Tool Name:	Microlog Pad - 10960494	Reference Calibration Date:	07-Nov-19 10:19:23
Engineer:	WHITLOCK	Calibration Date:	07-Nov-19 10:20:13
Software Version:	WL INSITE R6.2.7 (Build 7)	Calibration Version:	1

Measurement Micro Log Normal Micro Log Lateral

Measurement	Shop	Field	Shop	Field	Units
Micro Log Normal	-0.14	-0.12	-0.01	-0.00	ohmm
Internal Reference	19.86	19.87	20.02	20.03	ohmm
Summary					
Signal	Shop	Field	Difference	Tolerance	
Microlog Normal	19.86	19.87	-0.01	+/- 0.80	
Microlog Lateral	20.02	20.03	-0.01	+/- 0.80	

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 11213308	Reference Calibration Date: 23-Aug-19 13:54:16
Engineer: WOLTEMATH	Calibration Date: 23-Aug-19 14:21:32
Software Version: WL INSITE R6.2.7 (Build 7)	Calibration Version: 1

Logging Source S/N: 5475GW

Aluminum Block S/N: 63067

Density: 2.581g/cc

Pe: 3.170

Magnesium Block S/N: 63358

Density: 1.687g/cc

Pe: 2.594

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0035	1.0251	0.90 - 1.10
Near Dens Gain	0.9864	1.0119	0.90 - 1.10
Near Peak Gain	0.9964	1.0219	0.90 - 1.10
Near Lith Gain	0.9980	1.0302	0.90 - 1.10
Far Bar Gain	1.0048	1.0058	0.90 - 1.10
Far Dens Gain	0.9927	0.9950	0.90 - 1.10
Far Peak Gain	0.9899	0.9927	0.90 - 1.10
Far Lith Gain	0.9731	0.9727	0.90 - 1.10
Near Bar Offset	0.1179	-0.0816	NONE
Near Dens Offset	0.2714	0.0443	NONE
Near Peak Offset	0.1602	-0.0546	NONE
Near Lith Offset	0.1146	-0.1575	NONE
Far Bar Offset	0.0293	0.0219	NONE
Far Dens Offset	0.1505	0.1307	NONE
Far Peak Offset	0.1477	0.1245	NONE
Far Lith Offset	0.2309	0.2352	NONE
Near Bar Background	928.16	927.86	700 - 1450
Near Dens Background	309.39	308.18	230 - 480
Near Peak Background	135.94	135.97	100 - 210
Near Lith Background	164.35	163.99	125 - 260
Far Bar Background	470.03	472.28	450 - 900
Far Dens Background	188.64	187.22	175 - 345
Far Peak Background	75.92	76.21	70 - 140
Far Lith Background	76.82	77.51	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.686	1.687	0.001	+/- 0.015
Pe	2.567	2.561	-0.006	+/- 0.150
ALUMINUM				
Density (g/cc)	2.582	2.580	-0.002	+/- 0.01500
Pe	3.117	3.134	0.017	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0002	+/- 0.0110	-0.0008	+/- 0.0140
Magnesium Block	0.0001	+/- 0.0110	-0.0002	+/- 0.0140
Aluminum Block	-0.0003	+/- 0.0110	0.0010	+/- 0.0140
Resolution	9.31	6.00 - 11.50	9.26	6.00 - 11.50
Internal Verifier(B+D+P+L)	1536	1200 - 2700	813	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:** 23-Aug-19 14:21:32
Engineer: WHITLOCK **Calibration Date:** 07-Nov-19 10:09:54
Software Version: WL INSITE R6.2.7 (Build 7) **Calibration Version:** 1

Pad Temperature: 71.7 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1535.997	1527.229	-8.768	15.780
Far (B+D+P+L) cps	813.216	803.660	-9.556	15.754
Near Resolution	9.31	9.30	-0.010	0.50
Far Resolution	9.26	9.42	0.160	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-00000032						
Tension Zero	0.00	-----	-----	0.00	-----	lbs
Tension Cal	7830.00	-----	-----	0.00	-----	lbs
RWCH-11830866						
DH Tension Zero	0.00	-----	-----	0.00	-----	lbs
DH Tension Cal	764.10	-----	-----	0.00	-----	lbs
GTET-11013113						
Gamma Ray Calibrator	225.9	227.1	-----	-1.2	+/- 9.00	api
DSNT-11055304						
Snow-Block Porosity	0.0796	0.0841	-----	-0.0045	+/- 0.0150	decp
SDLT-10960494						
Pad Extension	3.75	3.80	-----	-0.05	+/-0.10	in
Ring Diameter	8.25	8.26	-----	-0.01	+/-0.15	in
ACRt Sonde-11830728						
Mud Cell	0.99	-----	-----	0	-----	ohm-m
Microlog Pad-10960494						

MicroLog Normal	19.86	19.87	-----	-0.01	+/-0.80	ohmm
MicroLog Lateral	20.02	20.03	-----	-0.01	+/-0.80	ohmm
SDLT Pad-11213308						
Near(B+D+P+L)	1535.997	1527.229	-----	8.768	+/-15.780	cps
Far(B+D+P+L)	813.216	803.660	-----	9.556	+/-15.754	cps
Data: RUSSELL_NEWMAN0001 GTET-DSN-SDL-ACRTIDLE					Date: 09-Nov-19 06:56:00	

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	9.200	ppg
	SHARED	WAGT	Weighting Agent	Barite	
	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	1.800	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	4400.00	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	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	
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

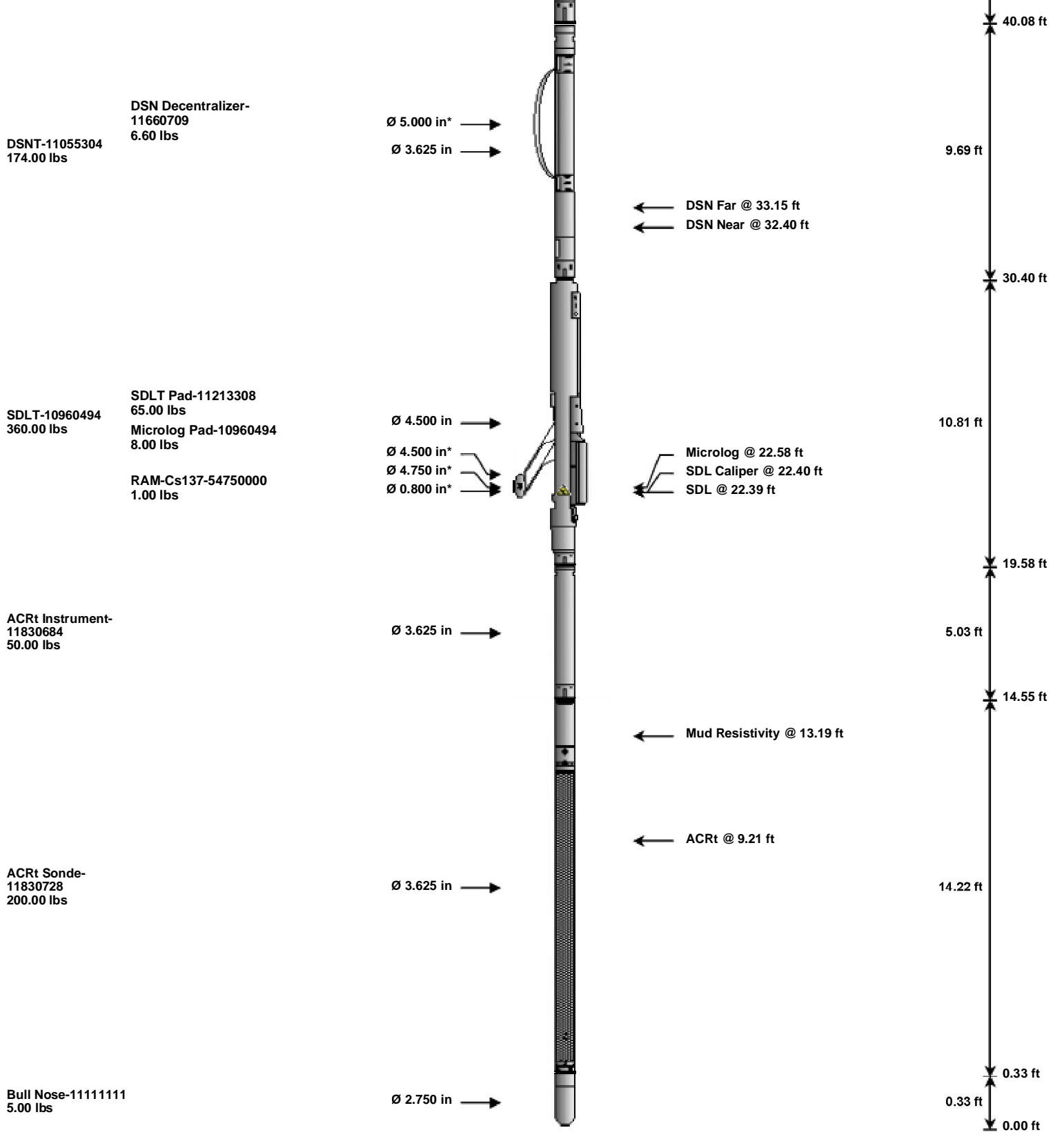
Data: RUSSELL_NEWMAN0001 GTET-DSN-SDL-ACRTIDLE

Date: 09-Nov-19 06:56:54

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
		Ø 2.310 in →		← Fishing Neck @ 57.71 ft		58.59 ft
RWCH-11830866 135.00 lbs		Ø 3.625 in →		← Load Cell @ 54.91 ft ← BH Temperature @ 54.34 ft	6.25 ft	
	Weak Point Solid- 11111111 0.01 lbs	Ø 0.010 in* →				52.34 ft
SP Sub-11812437 60.00 lbs		Ø 3.625 in →		← SP @ 50.56 ft	3.74 ft	
				← Z-Accelerometer @ 48.15 ft		48.60 ft
GTET-11013113 165.00 lbs		Ø 3.625 in →		← GammaRay @ 42.54 ft	8.52 ft	



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max. Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	11830866	135.00	6.25	52.34	300.00
WPSS	Weak Point Solid	11111111	0.01	0.01	* 52.34	300.00
SP	SP Sub	11812437	60.00	3.74	48.60	300.00
GTET	Gamma Telemetry Tool	11013113	165.00	8.52	40.08	60.00
DSNT	Dual Spaced Neutron	11055304	174.00	9.69	30.40	60.00
DCNT	DSN Decentralizer	11660709	6.60	5.13	* 33.73	300.00
SDLT	Spectral Density Tool	10960494	360.00	10.81	19.58	60.00
SDLP	Density Insite Pad	11213308	65.00	2.55	* 21.79	60.00
Cs137	Logging Source, SDLT-I, 1.78 Ci - Cs137	54750000	1.00	0.80	* 22.02	300.00
MICP	Microlog Pad	10960494	8.00	1.00	* 22.08	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	11111111	5.00	0.33	0.00	300.00

Total **1,229.61** **58.59**

* Not included in Total Length and Length Accumulation.

