

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.

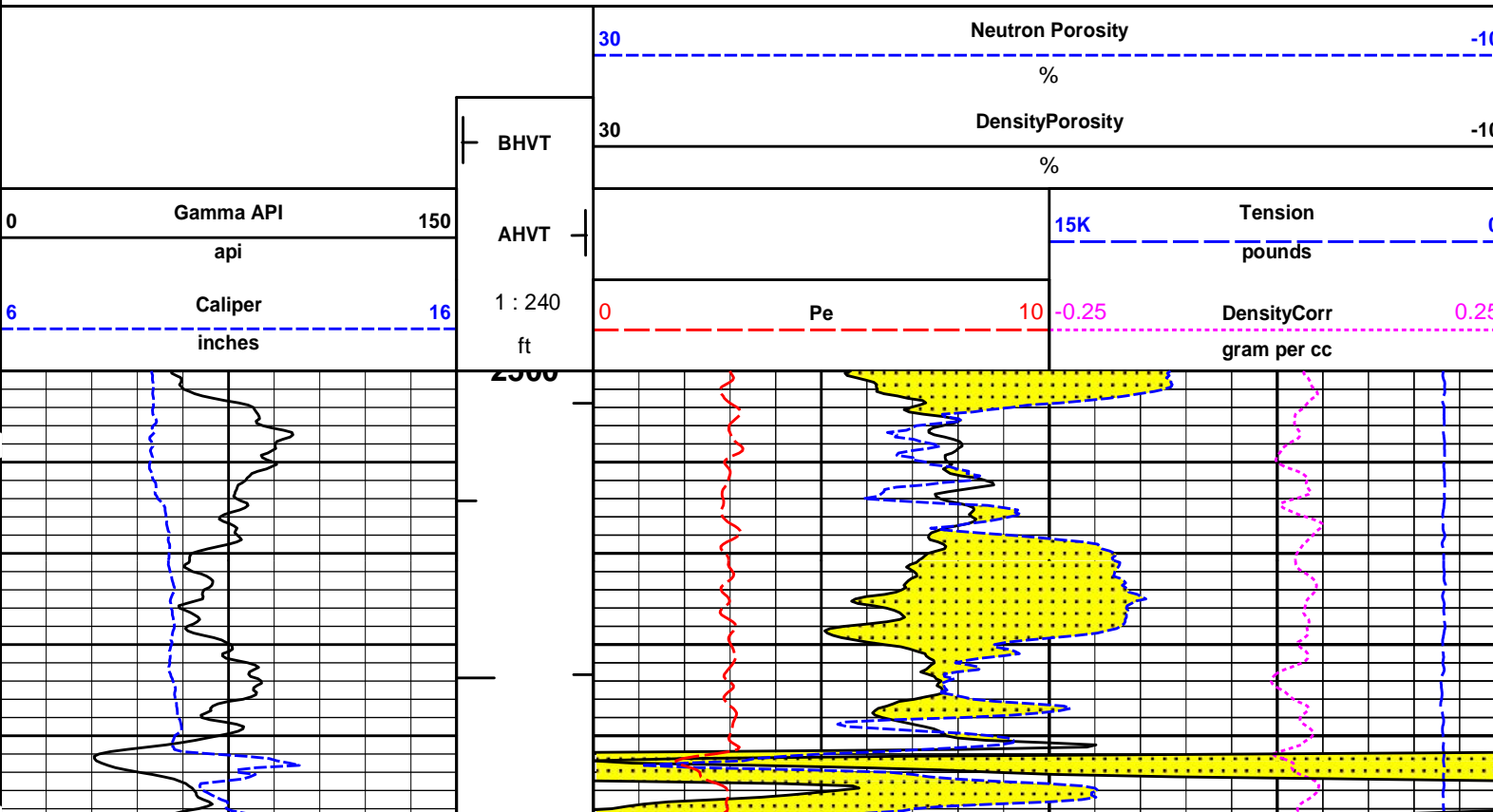
HALLIBURTON

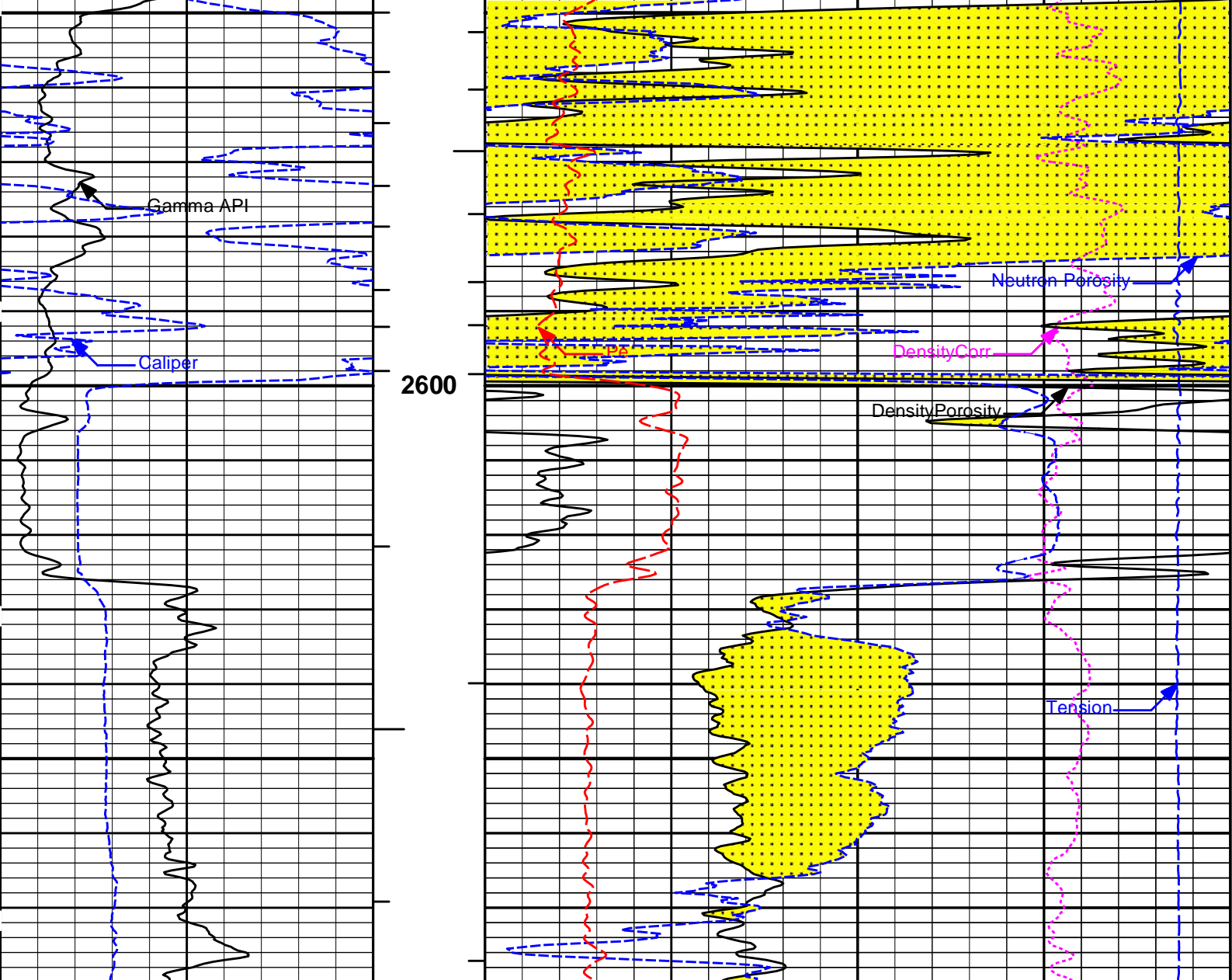


Plot Time: 05-May-19 03:37:28
 Plot Range: 2500 ft to 2680 ft
 Data: RUSSEL_ROHLEDER\Well Based\DAQ-0001-004\
 Plot File: \\SDL-DSN\Porosity_IQ_5_MAIN

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		BHVT					pounds	
				30				DensityPorosity	-10
								%	
				30				Neutron Porosity	-10
								%	

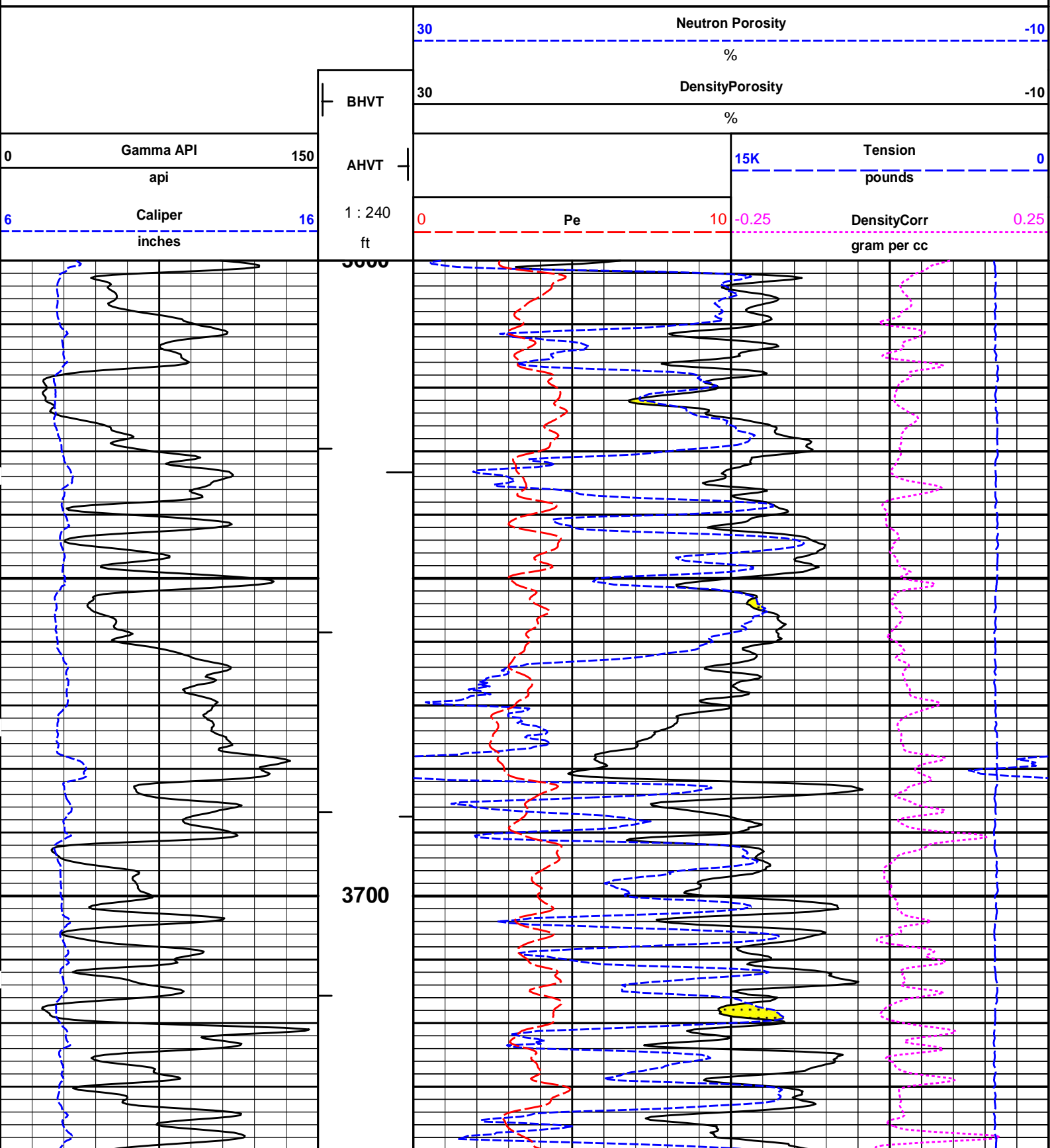
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 Plot Range: 2500 ft to 2680 ft
 Data: RUSSEL_ROHLEDER\Well Based\DAQ-0001-004\
 Plot File: \\SDL-DSN\Poro_IQ_5_MAIN

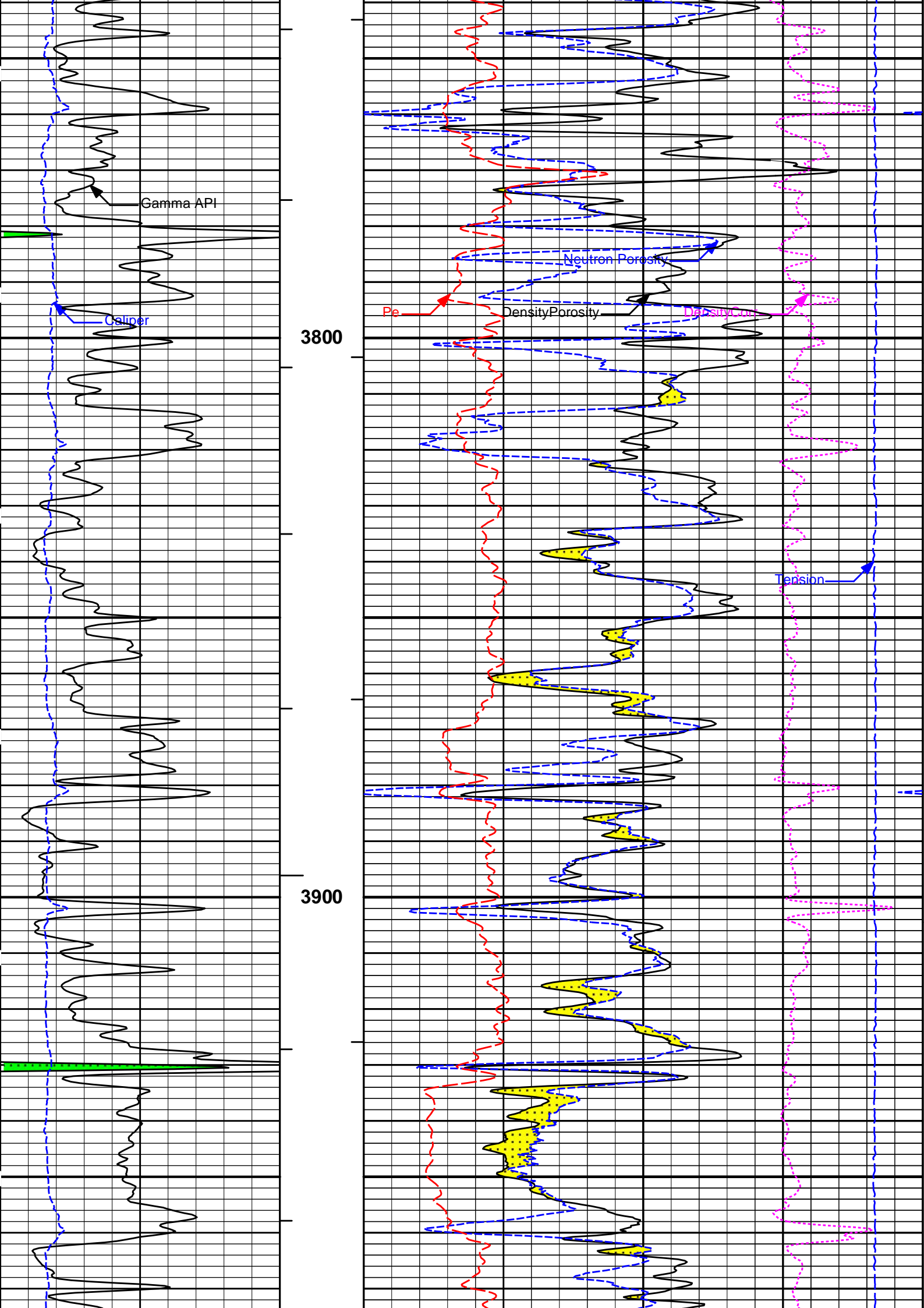
5 INCH MAIN LOG

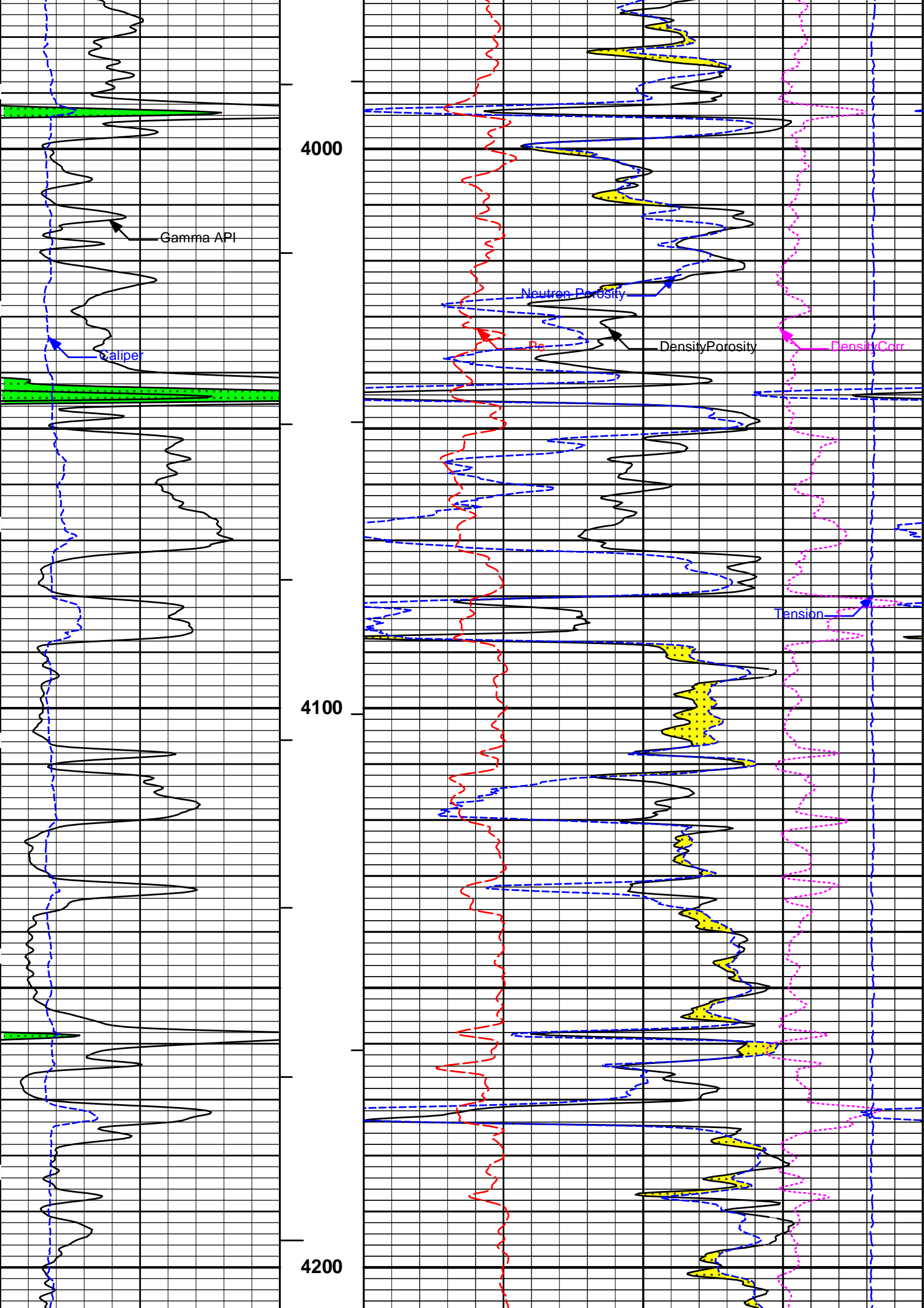
MAIN SECTION 5" PER 100'

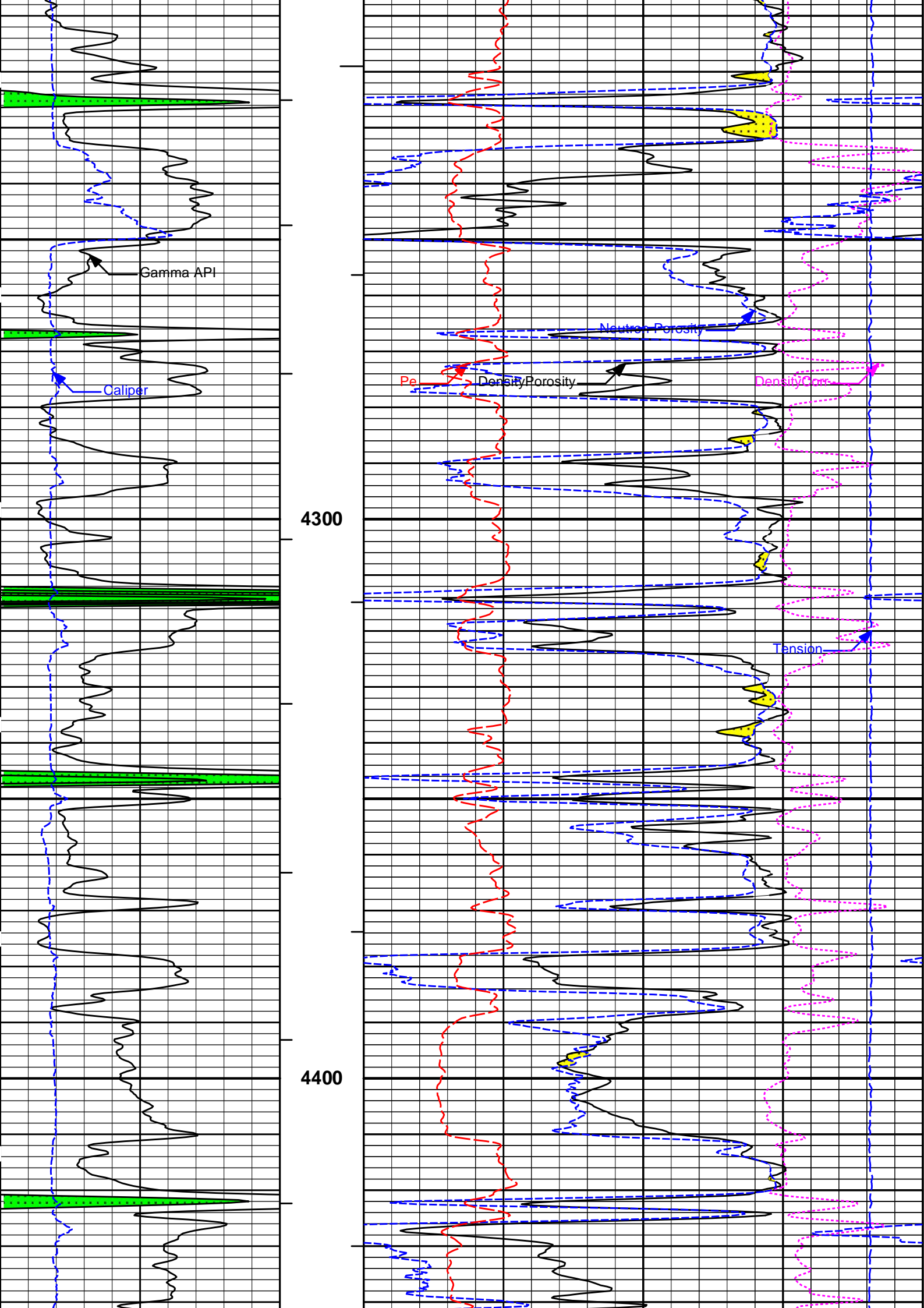
5 INCH MAIN LOG

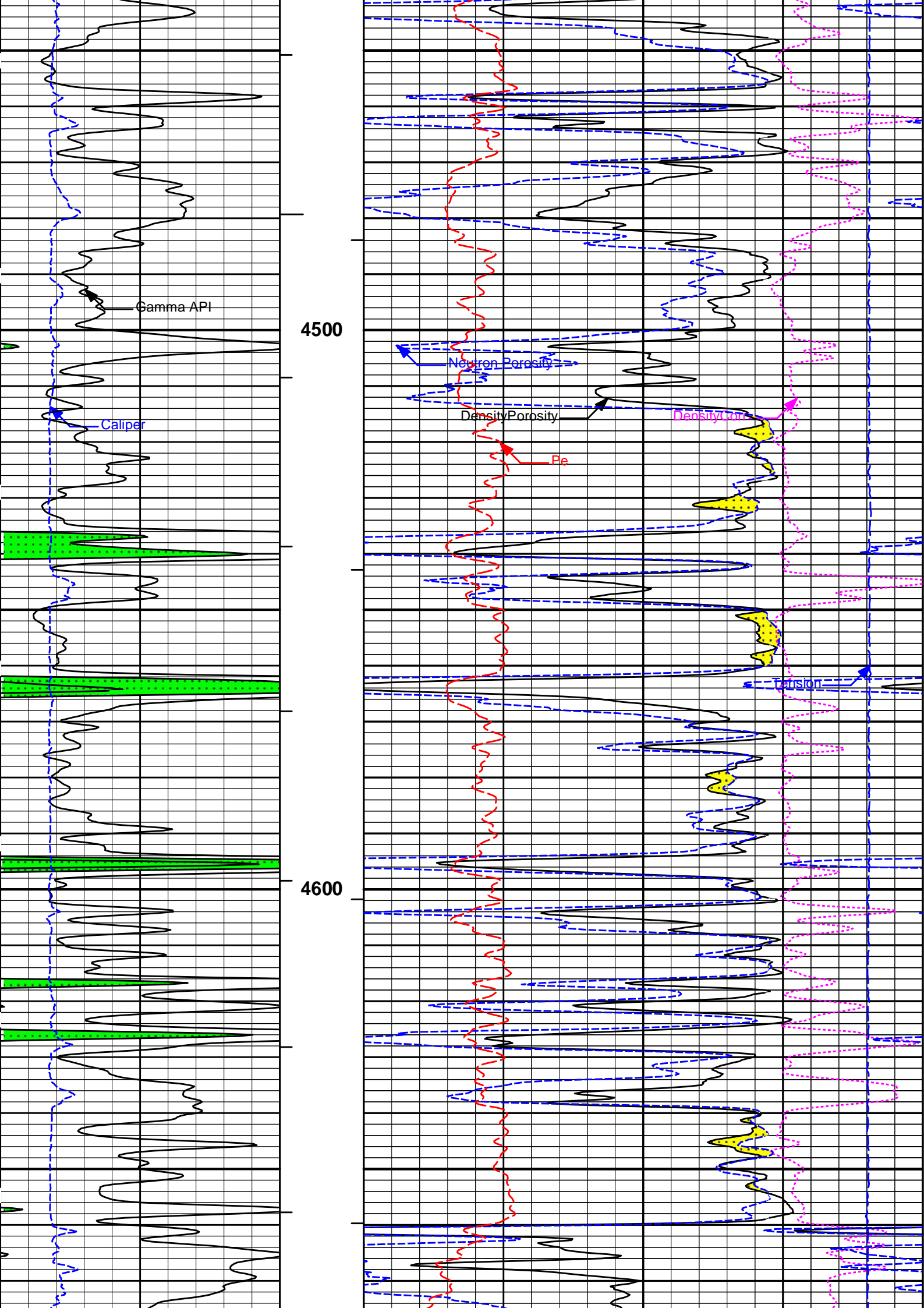
MAIN SECTION 5" PER 100'

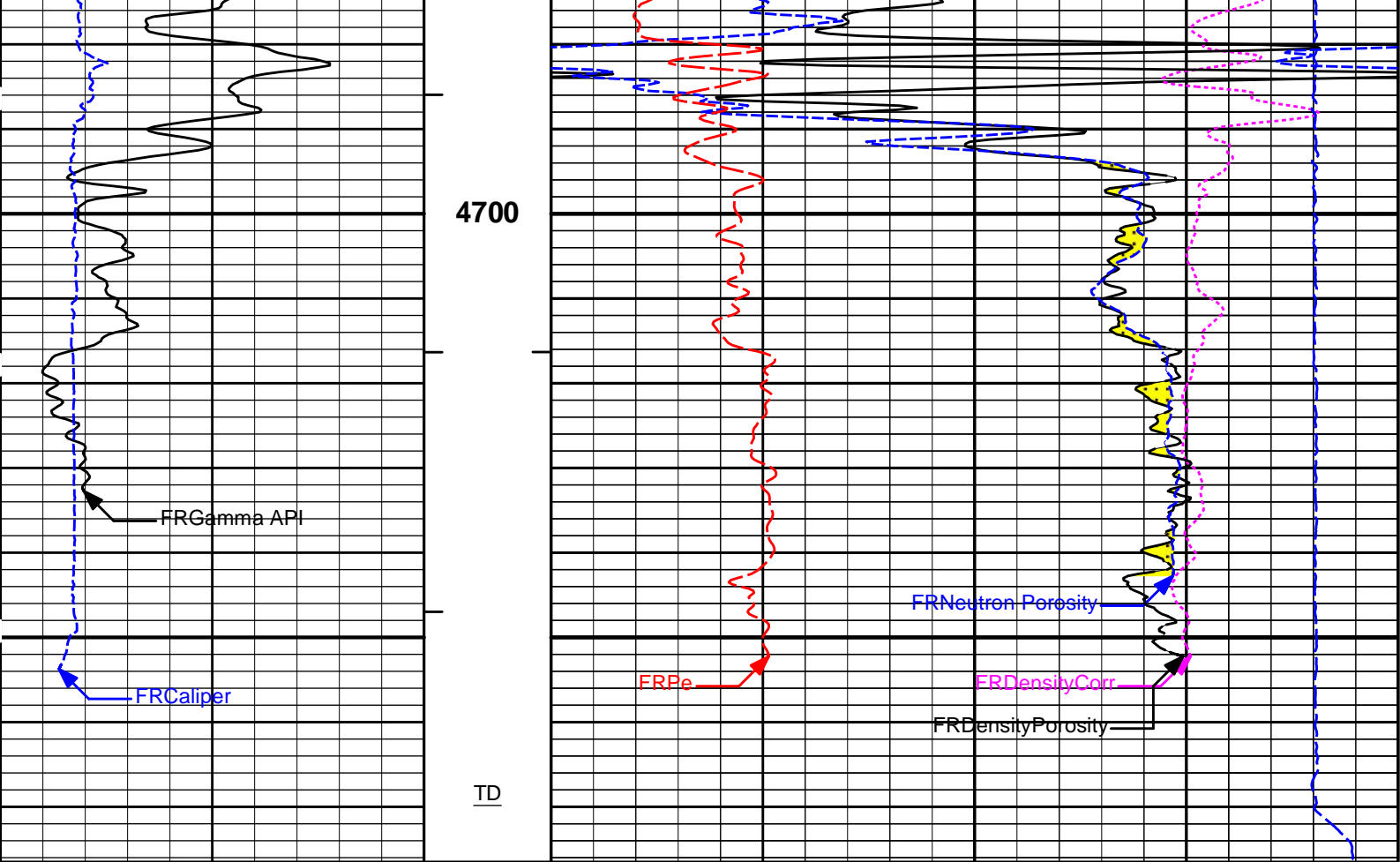












6	Caliper	16	1 : 240	0	Pe	10	-0.25	DensityCorr	0.25
	inches		ft					gram per cc	
0	Gamma API	150	AHVT				15K	Tension	0
	api		BHVT					pounds	
				30	DensityPorosity				-10
					%				
				30	Neutron Porosity				-10
					%				

HALLIBURTON Plot Time: 05-May-19 03:37:34
 Plot Range: 3600 ft to 4776.5 ft
 Data: RUSSEL_ROHLEDER\Well Based\DAQ-0001-004\
 Plot File: \\SDL-DSN\Poro_IQ_5_MAIN

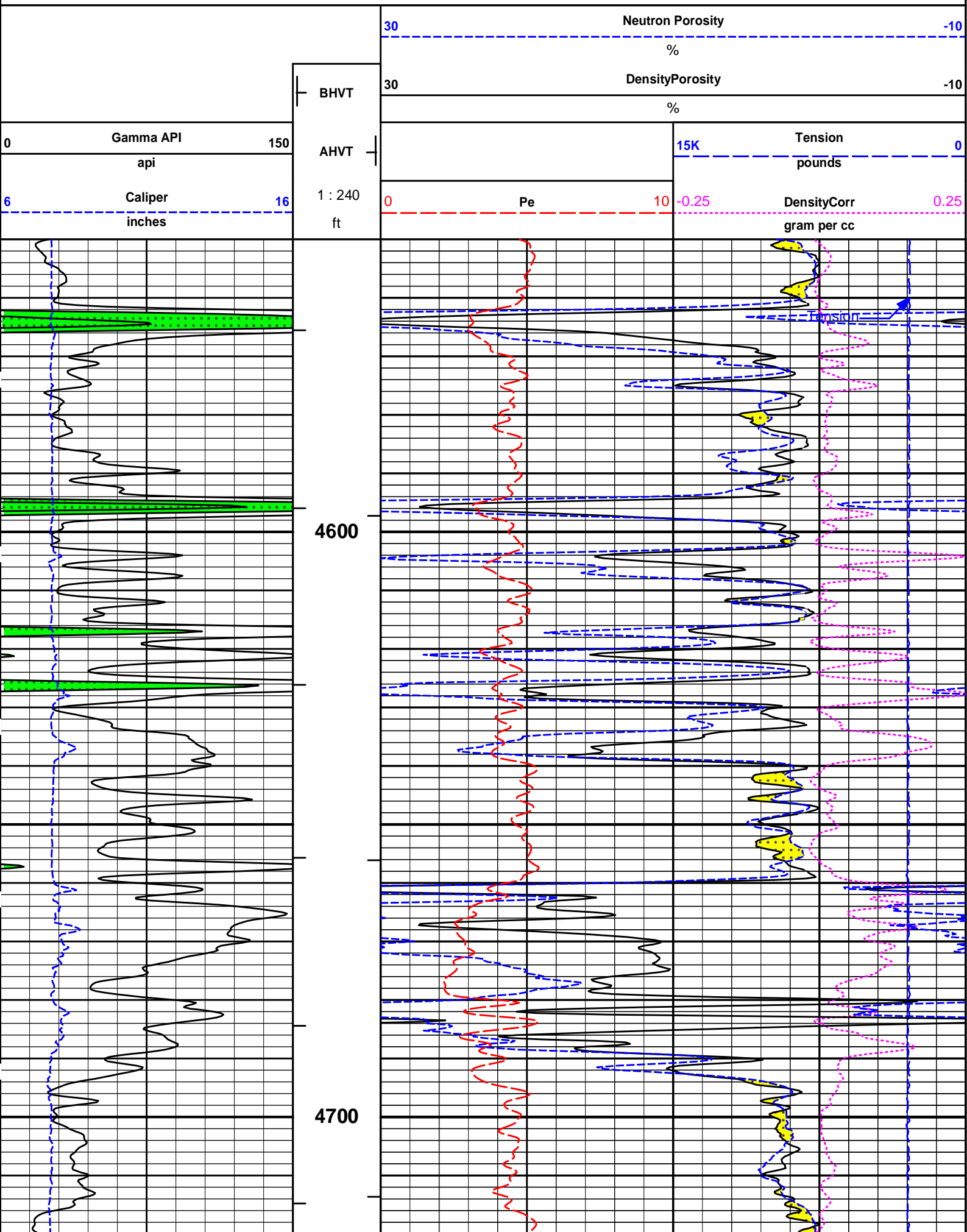
5 INCH MAIN LOG

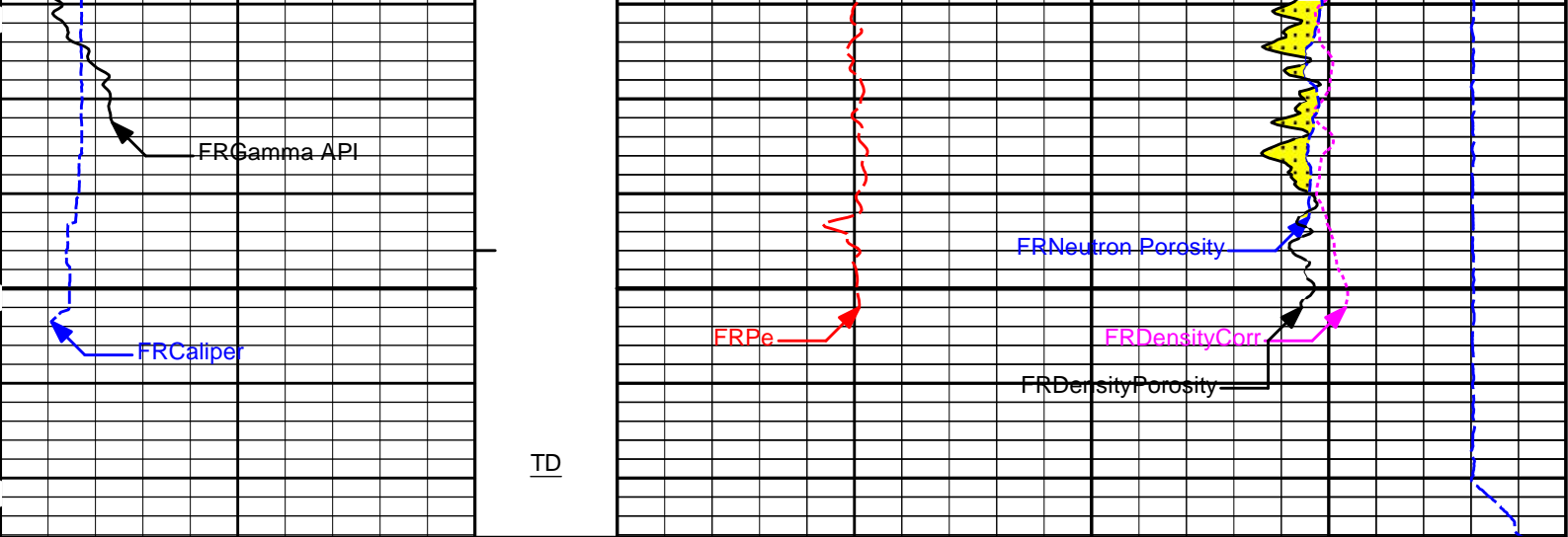
MAIN SECTION 5" PER 100'

HALLIBURTON Plot Time: 05-May-19 03:37:34
 Plot Range: 4550 ft to 4776.25 ft
 Data: RUSSEL_ROHLEDER\Well Based\DAQ-0001-003\
 Plot File: \\SDL-DSN\Poro_IQ_5_MAIN

REPEAT SECTION

REPEAT SECTION





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

HALLIBURTON Plot Time: 05-May-19 03:37:36
 Plot Range: 4550 ft to 4776.25 ft
 Data: RUSSEL_ROHLEDER\Well Based\DAQ-0001-003\
 Plot File: \\SDL-DSN\Poro_IQ_5_MAIN

REPEAT SECTION

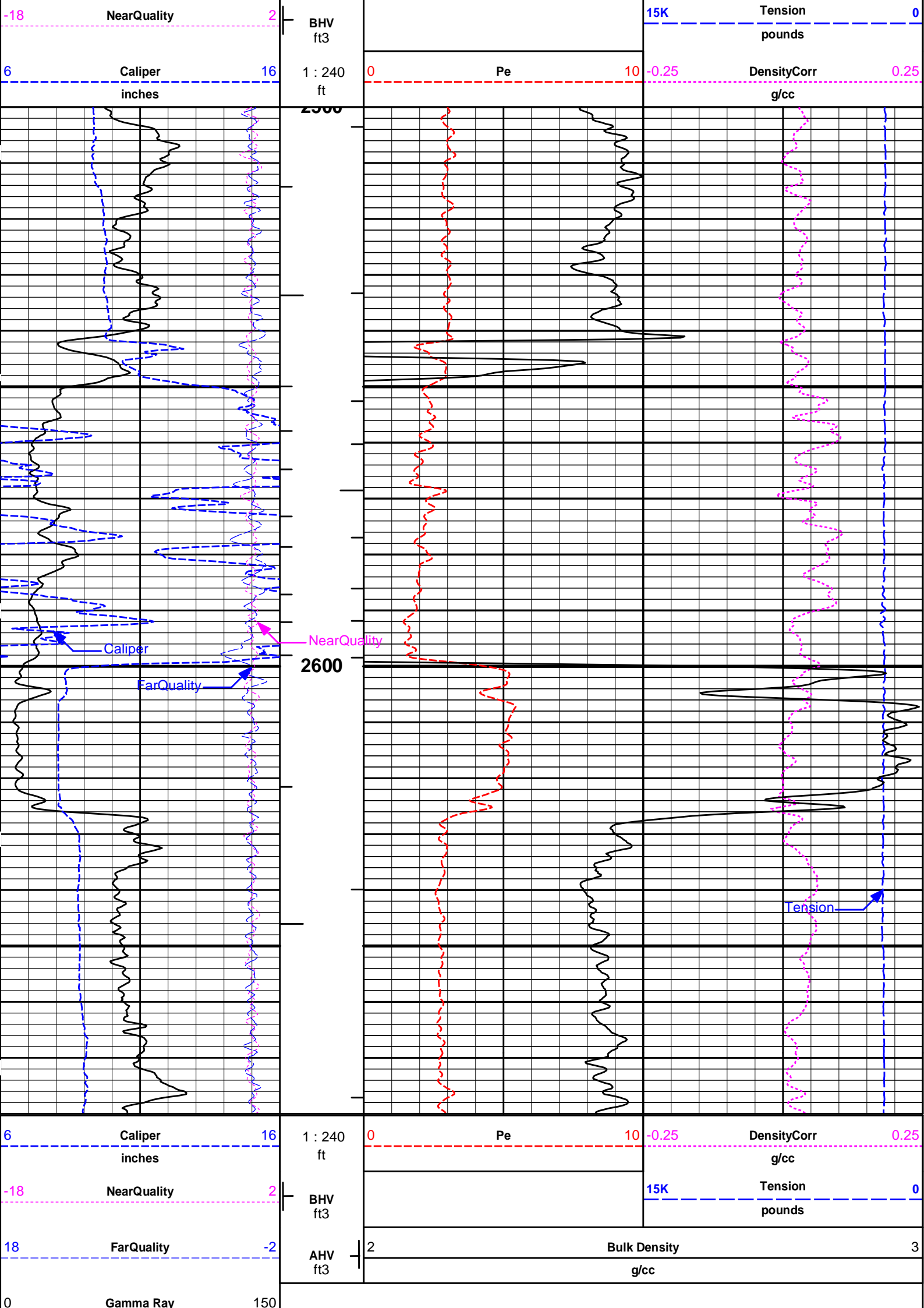
REPEAT SECTION

HALLIBURTON Plot Time: 05-May-19 03:37:36
 Plot Range: 2500 ft to 2680 ft
 Data: RUSSEL_ROHLEDER\Well Based\DAQ-0001-004\
 Plot File: \\LOCAL\RUSSEL_ROHLEDER\0001 SP_GTET-DSN-SDL-ACRT\SDL-DSN\BULKD_5_MAIN_IQ

5 INCH MAIN LOG

MAIN SECTION 5" PER 100'

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



HALLIBURTON

Plot Time: 05-May-19 03:37:38
Plot Range: 2500 ft to 2680 ft
Data: RUSSEL_ROHLEDER\Well Based\DAQ-0001-004\
Plot File: \\-LOCAL-RUSSEL_ROHLEDER\0001 SP_GTET-DSN-SDL-ACRT\SDL-DSN\BULKD_5_MAIN_IQ

5 INCH MAIN LOG

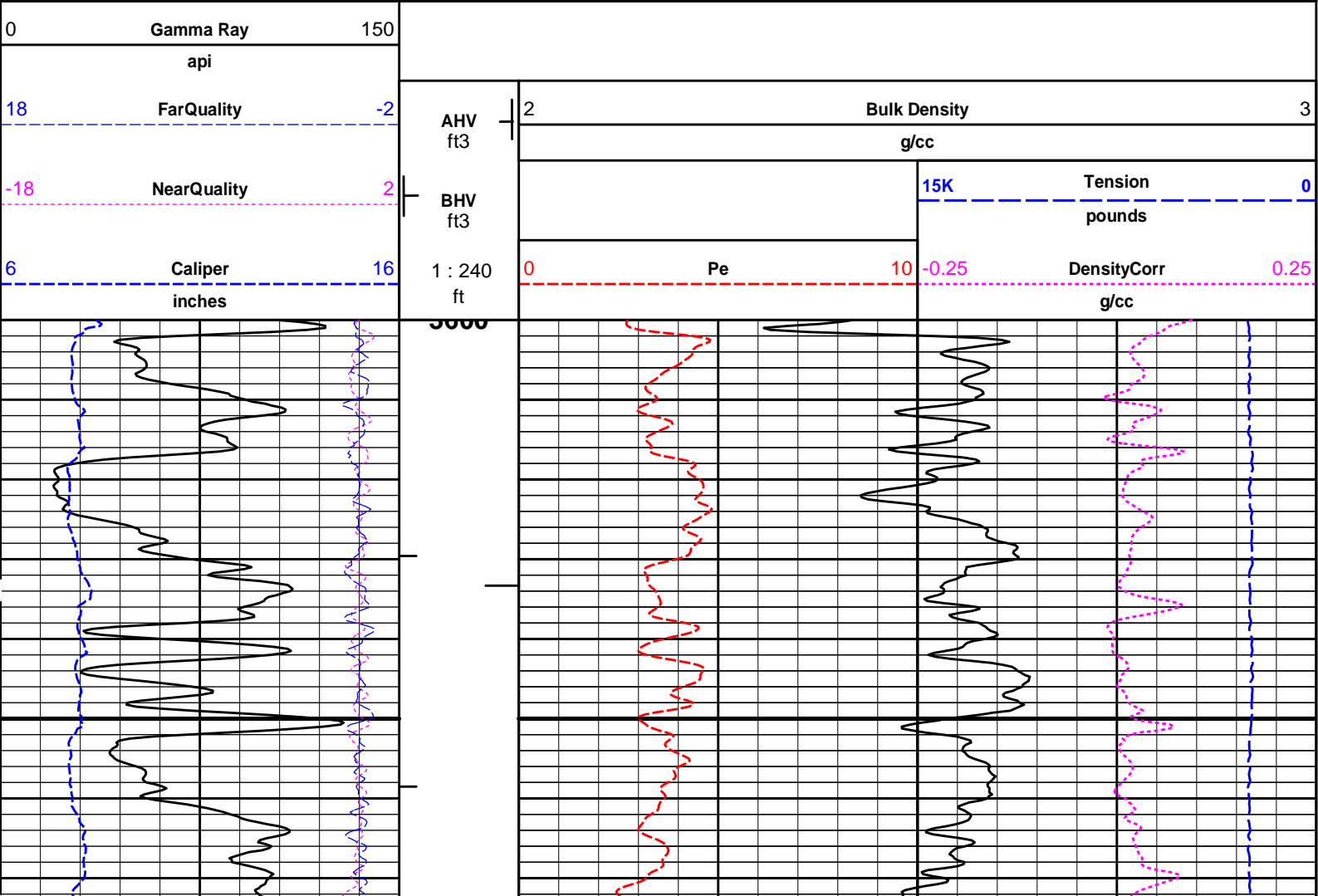
MAIN SECTION 5" PER 100'

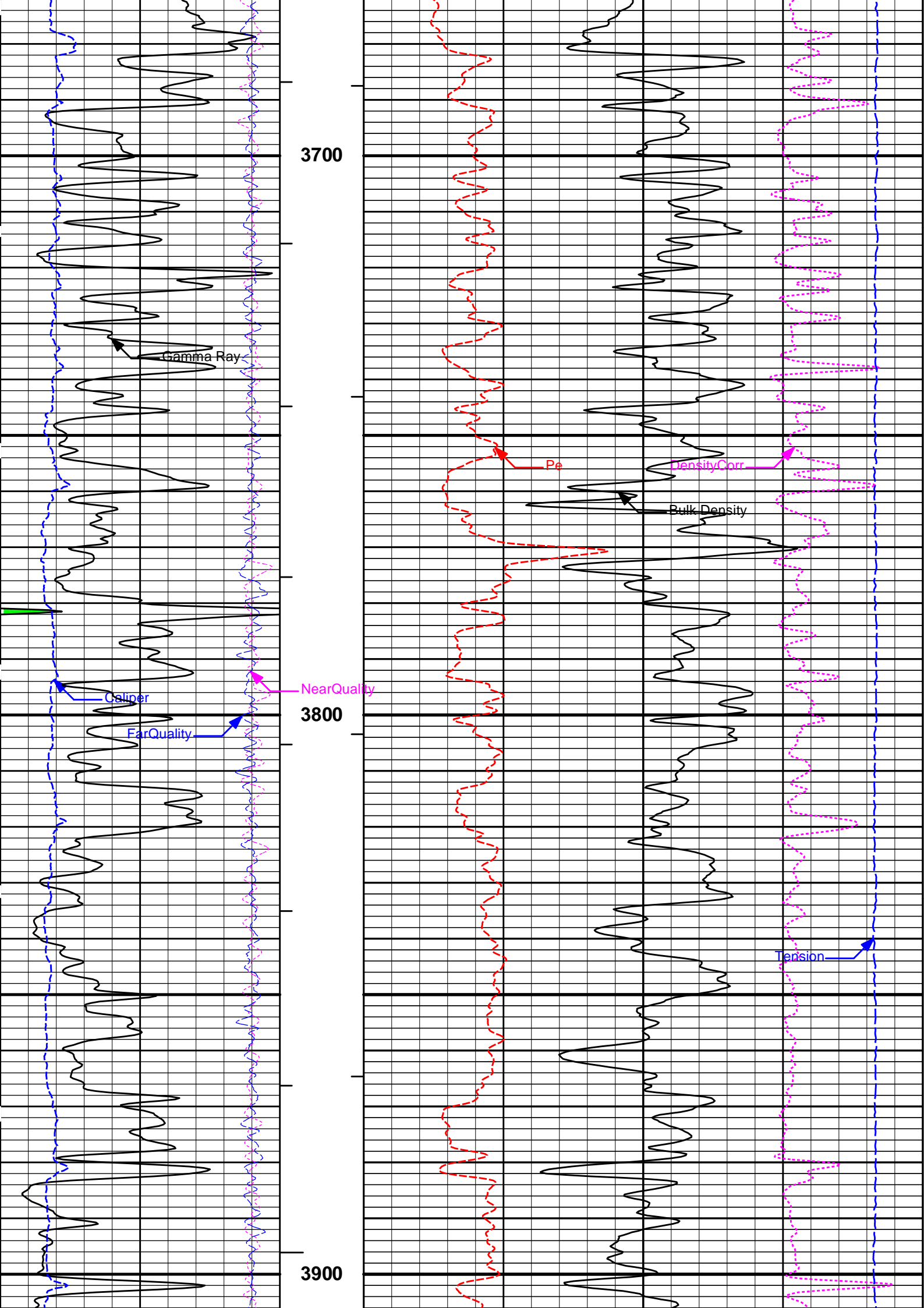
HALLIBURTON

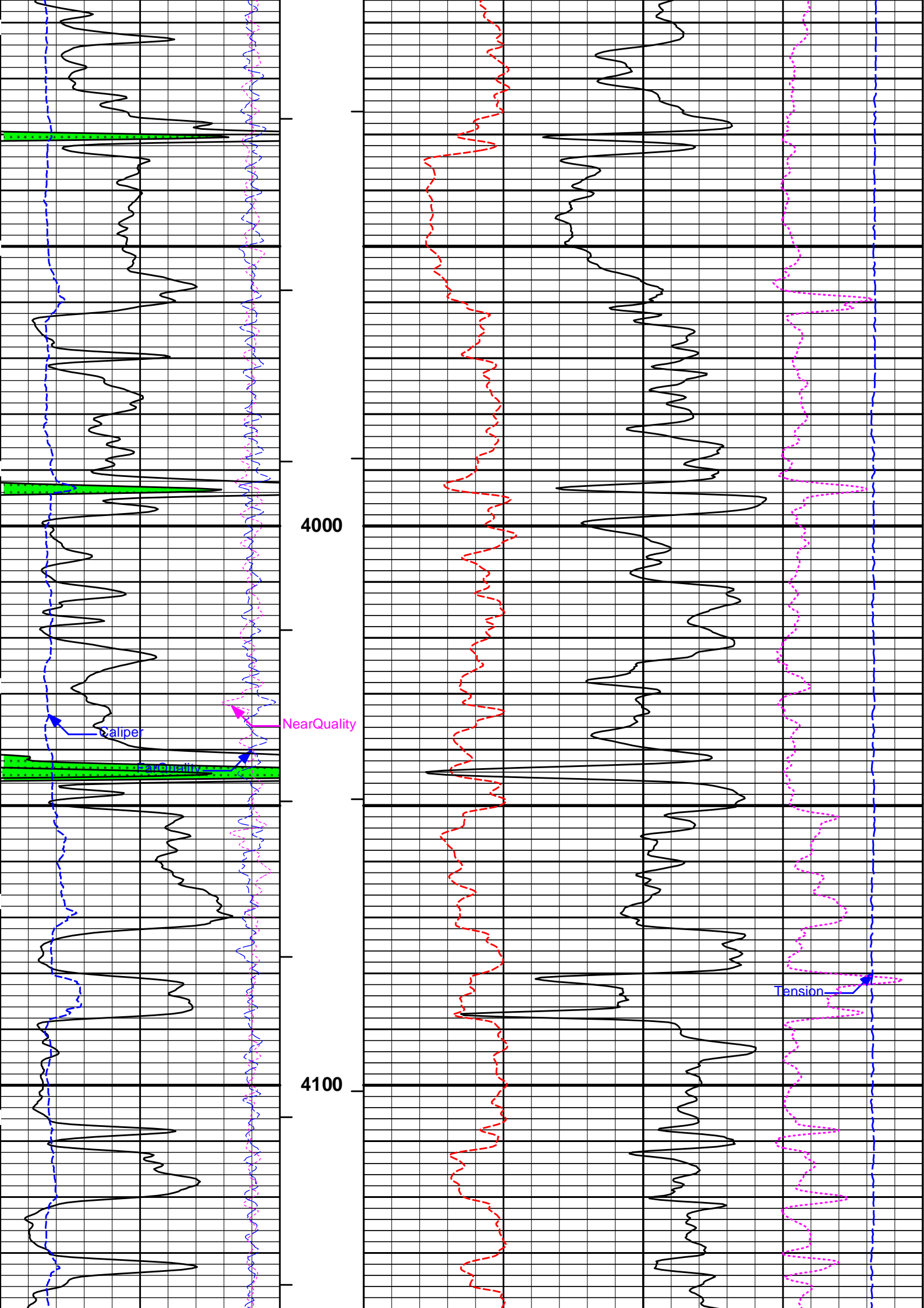
Plot Time: 05-May-19 03:37:38
Plot Range: 3600 ft to 4776.5 ft
Data: RUSSEL_ROHLEDER\Well Based\DAQ-0001-004\
Plot File: \\-LOCAL-RUSSEL_ROHLEDER\0001 SP_GTET-DSN-SDL-ACRT\SDL-DSN\BULKD_5_MAIN_IQ

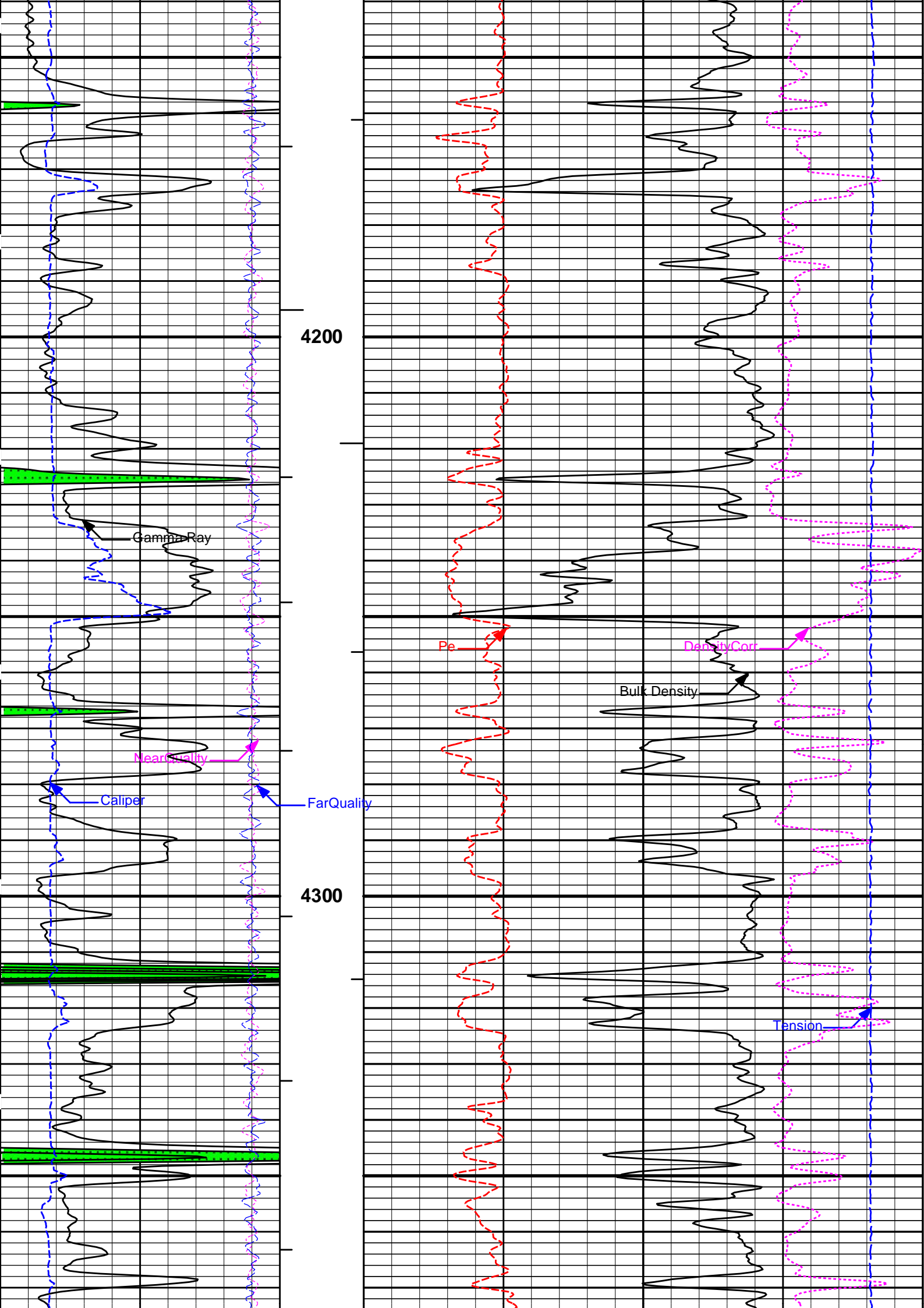
5 INCH MAIN LOG

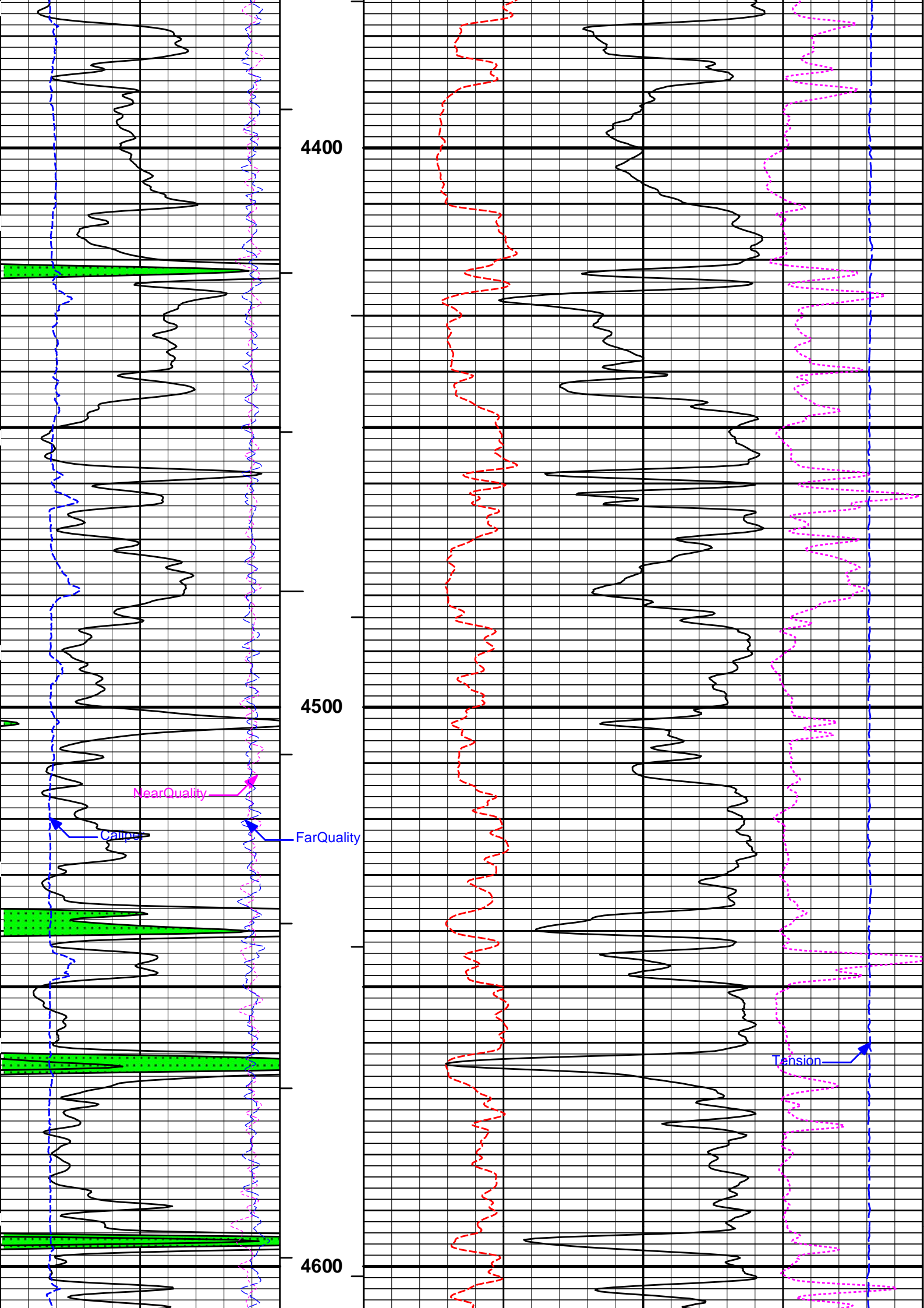
MAIN SECTION 5" PER 100'

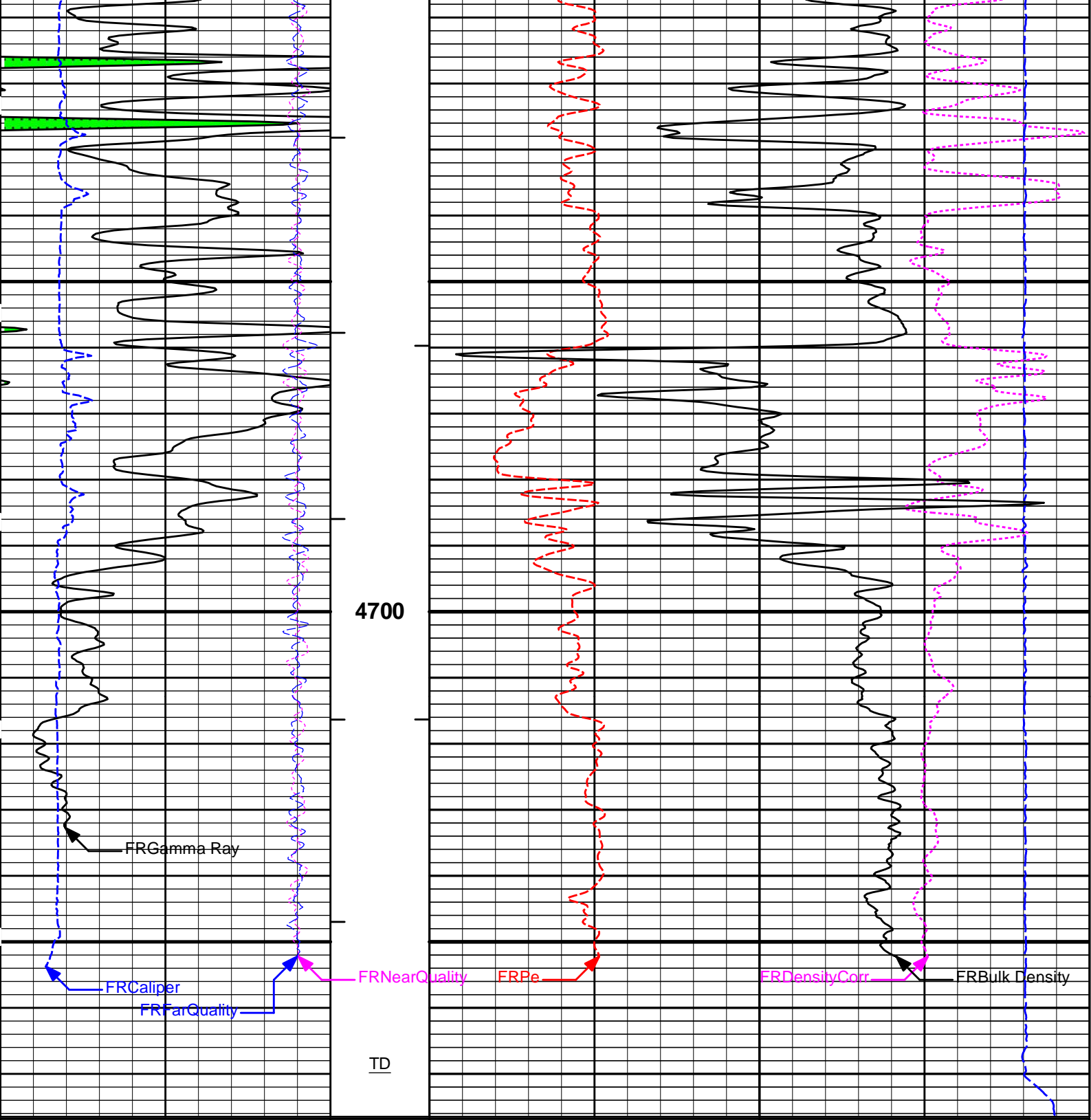












4700

FRGamma Ray

FRCaliper
FRFarQuality

TD

FRPe

FRDensityCorr

FRBulk Density

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	
0	Gamma Ray api	150							3

HALLIBURTON

Plot Time: 05-May-19 03:37:41
 Plot Range: 3600 ft to 4776.5 ft
 Data: RUSSEL_ROHLEDER\Well Based\DAQ-0001-004
 Plot File: \\-LOCAL-RUSSEL_ROHLEDER\0001 SP_GTET-DSN-SDL-ACRT\SDL-DSN\BULKD_5_MAIN_IQ

5 INCH MAIN LOG

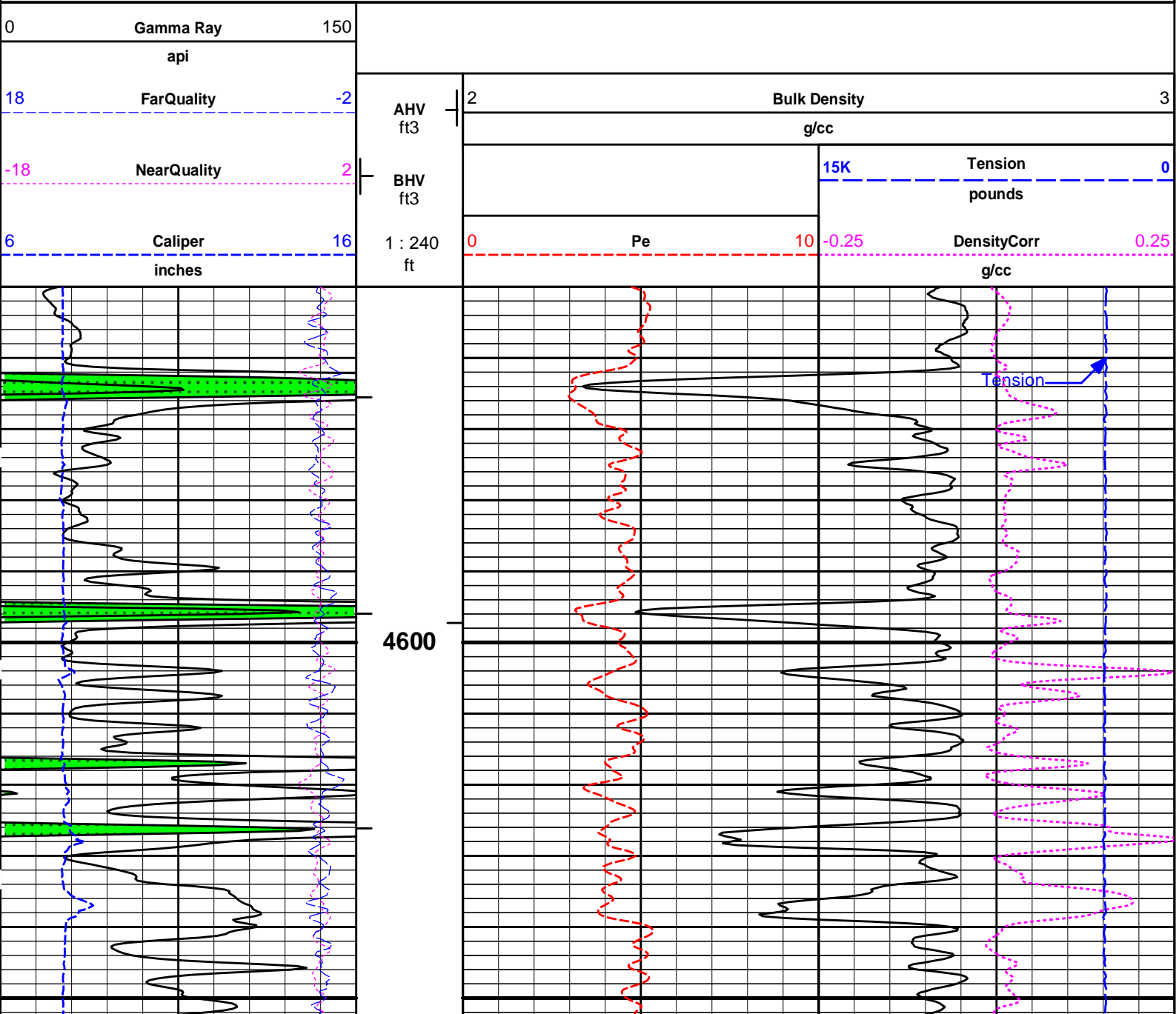
MAIN SECTION 5" PER 100'

HALLIBURTON

Plot Time: 05-May-19 03:37:42
 Plot Range: 4550 ft to 4776.25 ft
 Data: RUSSEL_ROHLEDER\Well Based\DAQ-0001-003\
 Plot File: \\-LOCAL-RUSSEL_ROHLEDER\0001 SP_GTET-DSN-SDL-ACRT\SDL-DSN\BULKD_5_MAIN_IQ

REPEAT SECTION

REPEAT SECTION



CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name: Depth Panel - 00000032 **Reference Calibration Date:** 16-Mar-16 11:27:47
Engineer: WOLTEMATH **Calibration Date:** 23-Apr-19 21:27:33
Software Version: WL INSITE R6.0.8 (Build 3) **Calibration Version:** 1

SURFACE TENSION LOAD CELL

Measurement	Load Cell Value	Measurement	Calibrated	Units
Low	10072.80	-778.11	0.00	lbs
High	17464.09	7985.85	7830.00	lbs

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name: RWCH - 12345678 **Reference Calibration Date:** 02-May-19 23:19:11
Engineer: WHITLOCK **Calibration Date:** 03-May-19 13:30:37
Software Version: WL INSITE R6.0.8 (Build 3) **Calibration Version:** 1

DOWNHOLE LOAD CELL

Measurement	Tool Value	Measurement	Calibrated	Units
Low	20474.45	6958.47	0.00	lbs
High	22151.95	7513.40	1380.00	lbs

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11013113 **Reference Calibration Date:** 25-Feb-19 14:17:44
Engineer: WHITLOCK **Calibration Date:** 17-Apr-19 14:54:48
Software Version: WL INSITE R6.0.8 (Build 3) **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	25.4	25.1	api
Background + Calibrator	254.2	251.0	api
Calibrator	228.8	225.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11013113 **Reference Calibration Date:** 17-Apr-19 14:54:48
Engineer: WHITLOCK **Calibration Date:** 26-Apr-19 10:24:46
Software Version: WL INSITE R6.0.8 (Build 3) **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	25.1	25.2	api
Background + Calibrator	251.0	249.4	api
Calibrator	225.9	224.2	api

Shop	Field	Difference	Tolerance
225.9	224.2	1.7	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11055304 **Reference Calibration Date:** 19-Apr-19 12:59:35
Engineer: WHITLOCK **Calibration Date:** 19-Apr-19 13:31:18
Software Version: WL INSITE R6.0.8 (Build 3) **Calibration Version:** 1

Logging Source S/N: DSN-436
Tank Serial Number: EL RENO
Reference value assigned to Tank: 56.100
Snow Block S/N: 12156882

CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	1.04550	1.04715	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):	0.2353	0.2358	0.0005	+/- 0.0020
Calibrated Ratio:	10.5429	10.5596	0.017	+/- 0.050

VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0694	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: 19-Apr-19 13:31:18
Engineer: WHITLOCK	Calibration Date: 26-Apr-19 10:34:06
Software Version: WL INSITE R6.0.8 (Build 3)	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):	0.0694	0.0707	0.0012	+/- 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: 19-Apr-19 15:10:24
Software Version: WL INSITE R6.0.8 (Build 3)	Calibration Version: 1
Host Tool Name: DSNT - 11055304	

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-4116.41	-4116.41	-7000.00 - -1000.00
Pad Gain	0.0003782	0.0003782	0.0002000 - 0.0006000
Arm Offset	-2612.76	-2612.76	-5000.00 - 3000.00
Arm Gain	0.0005131	0.0005131	0.000300 - 0.000700
Arm Power	-0.000004627	-0.000004627	-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:	19-Apr-19 15:10:24
Engineer:	WHITLOCK	Calibration Date:	19-Apr-19 15:12:12
Software Version:	WL INSITE R6.0.8 (Build 3)	Calibration Version:	1

MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.75	0.00	+/- 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:	31-Oct-18 14:22:50
Engineer:	WHITLOCK	Calibration Date:	27-Mar-19 11:06:32
Software Version:	WL INSITE R6.0.2 (Build 8)	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	1.0408	1.05	0.95	1.0181	1.05	0.95	1.0095	1.05
A2 (50")	0.95	1.0367	1.05	0.95	1.0155	1.05	0.95	1.0105	1.05
A3 (29")	0.95	1.0317	1.05	0.95	1.0098	1.05	0.95	1.0024	1.05
A4 (17")	0.95	1.0385	1.05	0.95	1.0148	1.05	0.95	1.0094	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0181	1.05	0.95	1.0119	1.05
A6 (6")	N/A	N/A	N/A	0.95	1.0267	1.05	0.95	1.0201	1.05

SONDE OFFSET			
Subarray	R12KHz (mmho/m)	R36KHz (mmho/m)	R72KHz (mmho/m)
A1 (80")	-0.236	-5.186	-5.852
A2 (50")	0.946	-3.552	-5.481
A3 (29")	-12.619	-4.085	-3.872
A4 (17")	-94.869	-29.774	-24.286
A5 (10")	N/A	-74.930	-36.896
A6 (6")	N/A	293.687	156.113

TRANSMITTER CURRENT GAIN

R-MUD VERIFICATION

Signal	Lower	R	Upper	Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K	0.6	0.84	1.3	Mud Cell	0.95	0.99	1.05
36K	1.0	1.81	2.0				
72K	1.0	1.08	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:	27-Mar-19 11:08:08
Engineer:	WHITLOCK	Calibration Date:	27-Mar-19 11:09:33
Software Version:	WL INSITE R6.0.2 (Build 8)	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	-0.024	> -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")	-214207680.000	-214179520.000	28160.000	10708976.000	Pass
A2 (50")	-206708368.000	-206673776.000	34592.000	10333688.800	Pass
A3 (29")	-201738432.000	-201708688.000	29744.000	10085434.400	Pass
A4 (17")	-201131136.000	-201103920.000	27216.000	10055196.000	Pass
A5 (10")	-201166688.000	-201139392.000	27296.000	10056969.600	Pass
A6 (6")	-200820928.000	-200790224.000	30704.000	10039511.200	Pass

R36KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	49716636.000	49685420.000	31216.000	2484271.000	Pass
A2 (50")	35654644.000	35621340.000	33304.000	1781067.000	Pass
A3 (29")	29652460.000	29621220.000	31240.000	1481061.000	Pass

A4 (17")	29377682.000	29345894.000	31788.000	1467294.700	Pass
A5 (10")	28976940.000	28946928.000	30012.000	1447346.400	Pass
A6 (6")	27667190.000	27635410.000	31780.000	1381770.500	Pass

R72KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-93174168.000	-93165432.000	8736.000	4658271.600	Pass
A2 (50")	-90798624.000	-90786864.000	11760.000	4539343.200	Pass
A3 (29")	-88522848.000	-88513168.000	9680.000	4425658.400	Pass
A4 (17")	-88712168.000	-88700376.000	11792.000	4435018.800	Pass
A5 (10")	-87283416.000	-87271512.000	11904.000	4363575.600	Pass
A6 (6")	-88347128.000	-88335576.000	11552.000	4416778.800	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: 09-Jan-16 16:38:49
Engineer: WHITLOCK	Calibration Date: 19-Apr-19 15:03:30
Software Version: WL INSITE R6.0.8 (Build 3)	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	0.00	-0.11	0.00	-0.01	ohmm
Calibration Point #1	0.11	0.00	0.01	0.00	ohmm
Calibration Point #2	20.61	20.00	23.36	20.00	ohmm
Internal Reference	20.50	19.89	23.34	19.98	ohmm

Measurement	Micro Log Normal Tool Value		Micro Log Lateral Tool Value		Units
	Tool Zero		-1.03		
Calibration Point #1		27.13		4.08	V
Calibration Point #2		5346.13		6899.88	V
Internal Reference		5316.31		6893.17	V

MICRO LOG FIELD CHECK

Tool Name: Microlog Pad - 10960494	Reference Calibration Date: 19-Apr-19 15:03:30
Engineer: WHITLOCK	Calibration Date: 29-Apr-19 09:51:09
Software Version: WL INSITE R6.0.8 (Build 3)	Calibration Version: 1

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Shop	Field	Shop	Field	
Tool Zero	-0.11	-0.10	-0.01	-0.01	ohmm
Internal Reference	19.89	19.91	19.98	20.00	ohmm

Summary

Signal	Shop	Field	Difference	Tolerance
Microlog Normal	19.89	19.91	-0.02	+/- 0.80
Microlog Lateral	19.98	20.00	-0.02	+/- 0.80

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 11213308	Reference Calibration Date: 14-Dec-18 11:15:00
Engineer: WHITLOCK	Calibration Date: 20-Feb-19 12:17:03

Logging Source S/N: 5475GW

Aluminum Block S/N: El Reno Aluminum Block

Density: 2.581g/cc

Pe: 3.170

Magnesium Block S/N: El Reno Magnesium Block

Density: 1.687g/cc

Pe: 2.594

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	0.9935	0.9902	0.90 - 1.10
Near Dens Gain	0.9891	0.9881	0.90 - 1.10
Near Peak Gain	1.0020	1.0148	0.90 - 1.10
Near Lith Gain	1.0071	1.0175	0.90 - 1.10
Far Bar Gain	1.0015	1.0048	0.90 - 1.10
Far Dens Gain	0.9919	0.9938	0.90 - 1.10
Far Peak Gain	0.9878	0.9921	0.90 - 1.10
Far Lith Gain	0.9743	0.9808	0.90 - 1.10
<hr/>			
Near Bar Offset	0.1918	0.2246	NONE
Near Dens Offset	0.2308	0.2401	NONE
Near Peak Offset	0.0959	-0.0122	NONE
Near Lith Offset	0.0296	-0.0574	NONE
Far Bar Offset	0.0411	0.0135	NONE
Far Dens Offset	0.1442	0.1314	NONE
Far Peak Offset	0.1660	0.1305	NONE
Far Lith Offset	0.2364	0.1860	NONE
<hr/>			
Near Bar Background	937.48	939.15	700 - 1450
Near Dens Background	311.57	312.43	230 - 480
Near Peak Background	135.23	136.70	100 - 210
Near Lith Background	166.58	166.31	125 - 260
Far Bar Background	479.15	478.16	450 - 900
Far Dens Background	191.75	190.12	175 - 345
Far Peak Background	77.50	76.92	70 - 140
Far Lith Background	79.00	78.81	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.689	1.687	-0.002	+/- 0.015
Pe	2.556	2.551	-0.005	+/- 0.150
ALUMINUM				
Density (g/cc)	2.580	2.581	0.001	+/- 0.01500
Pe	3.107	3.123	0.016	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0000	+/- 0.0110	-0.0004	+/- 0.0140
Magnesium Block	-0.0005	+/- 0.0110	-0.0010	+/- 0.0140
Aluminum Block	-0.0013	+/- 0.0110	0.0004	+/- 0.0140
Resolution	9.27	6.00 - 11.50	9.45	6.00 - 11.50
Internal Verifier(B+D+P+L)	1555	1200 - 2700	824	800 - 1700

PASS/FAIL SUMMARY

Background Quality Check: Passed

Background Range 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: 20-Feb-19 12:17:03
Engineer: WHITLOCK	Calibration Date: 29-Apr-19 09:53:55
Software Version: WL INSITE R6.0.8 (Build 3)	Calibration Version: 1

Pad Temperature: 78.8 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1554.595	1544.138	-10.457	15.869
Far (B+D+P+L) cps	824.007	811.331	-12.676	15.826
Near Resolution	9.27	9.15	-0.120	0.50
Far Resolution	9.45	9.35	-0.100	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-12345678						
DH Tension Zero	0.00	-----	-----	0.00	-----	lbs
DH Tension Cal	1380.00	-----	-----	0.00	-----	lbs
GTET-11013113						
Gamma Ray Calibrator	225.9	224.2	-----	1.7	+/- 9.00	api
DSNT-11055304						
Snow-Block Porosity	0.0694	0.0707	-----	-0.0013	+/- 0.0150	decp
SDLT-10960494						
Pad Extension	3.75	3.75	-----	0.00	+/-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	19.89	19.91	-----	-0.02	+/-0.80	ohmm
MicroLog Lateral	19.98	20.00	-----	-0.02	+/-0.80	ohmm
SDLT Pad-11213308						
Near(B+D+P+L)	1554.595	1544.138	-----	10.457	+/-15.869	cps
Far(B+D+P+L)	824.007	811.331	-----	12.676	+/-15.826	cps

Data: RUSSEL_ROHLEDER\0001 SP_GTET-DSN-SDL-ACRTIDLE

Date: 05-May-19 01:06:18

HALLIBURTON

PARAMETERS REPORT

Depth

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	2.000	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	4770.00	ft
	SHARED	BHT	Bottom Hole Temperature	120.0	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	
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	

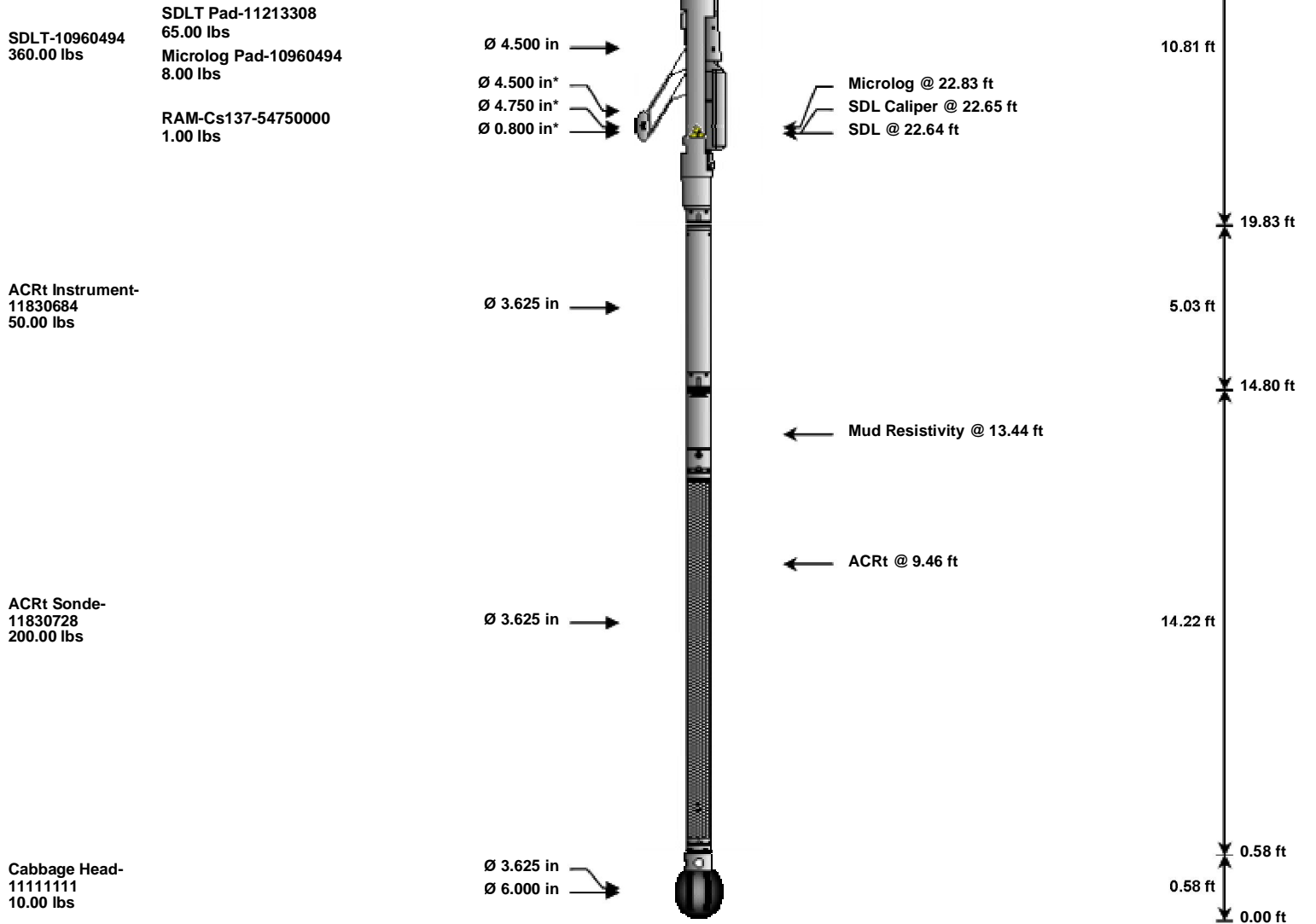
BOTTOM _____

Data: RUSSEL_ROHLEDER\0001 SP_GTET-DSN-SDL-ACRTIDLE Date: 05-May-19 01:07:11



TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
		Ø 2.310 in →		← Fishing Neck @ 57.96 ft		58.84 ft
RWCH-12345678 135.00 lbs		Ø 3.625 in →		← Load Cell @ 55.16 ft ← BH Temperature @ 54.59 ft	6.25 ft	
	Weak Point Solid- 11111111 0.01 lbs	Ø 0.010 in* →		↕		52.59 ft
SP Sub-11812437 60.00 lbs		Ø 3.625 in →		← SP @ 50.81 ft	3.74 ft	
				← Z-Accelerometer @ 48.40 ft		48.85 ft
GTET-11013113 165.00 lbs		Ø 3.625 in →		← GammaRay @ 42.79 ft	8.52 ft	
				↕		40.33 ft
DSN Decentralizer- 11055304 6.60 lbs		Ø 5.000 in* →				
DSNT-11055304 174.00 lbs		Ø 3.625 in →		← DSN Far @ 33.39 ft ← DSN Near @ 32.64 ft	9.69 ft	
						30.64 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	52.59	300.00
WPSS	Weak Point Solid	11111111	0.01	0.01	* 52.59	300.00
SP	SP Sub	11812437	60.00	3.74	48.85	300.00
GTET	Gamma Telemetry Tool	11013113	165.00	8.52	40.33	60.00
DSNT	Dual Spaced Neutron	11055304	174.00	9.69	30.64	60.00
DCNT	DSN Decentralizer	11055304	6.60	5.13	* 33.97	300.00
SDLT	Spectral Density Tool	10960494	360.00	10.81	19.83	60.00
SDLP	Density Insite Pad	11213308	65.00	2.55	* 22.04	60.00
Cs137	Logging Source, SDLT-I, 1.78 Ci - Cs137	54750000	1.00	0.80	* 22.27	300.00
MICP	Microlog Pad	10960494	8.00	1.00	* 22.33	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11830684	50.00	5.03	14.80	120.00
ACRt	Array Compensated True Resistivity Sonde Section	11830728	200.00	14.22	0.58	120.00
CBHD	Cabbage Head	11111111	10.00	0.58	0.00	300.00

Total **1,234.61** **58.84**

* Not included in Total Length and Length Accumulation.