

**SPECTRAL DENSITY
DUAL SPACED NEUTRON
GAMMA RAY**

Sales Order Number: 907428128																API No.: 15-167-24110										PGM Version: WL INSITE R6.4.5 (Build 6)									
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.		Other															
Rmf @ Meas. Temp.				@				@				ONE		ACRT		NONE		1.5 in S.O.		N/A															
Rmc @ Meas. Temp.				@				@						I-10988483																					
Source Rmf		Rmc												S-10988480																					
Rm @ BHT				@				@																											
Rmf @ BHT				@				@																											
Rmc @ BHT				@				@																											
EQUIPMENT DATA																																			
GAMMA						ACOUSTIC						DENSITY						NEUTRON																	
Run No.			ONE			Run No.			ONE			Run No.			ONE			Run No.			ONE														
Serial No.			11958947			Serial No.			10747681			Serial No.			10844781			Serial No.			11020487														
Model No.			GTET			Model No.			BSAT			Model No.			SDLT			Model No.			DSNT														
Diameter			3.625 in			No. of Cent.			2			Diameter			4.5 in			Diameter			3.625 in														
Detector Model No.			GTET			Spacing			0.5'			Log Type			GAM-GAM			Log Type			NEU-NEU														
Type			SCINT									Source Type			Cs-137			Source Type			Am241Be														
Length			8 in			LSA [Y/N]			N/A			Serial No.			5262GW			Serial No.			DSN-416														
Distance to Source			10 ft			FWDA [Y/N]			N/A			Strength			1.78 Ci			Strength			15.0 Ci														

HALLIBURTON

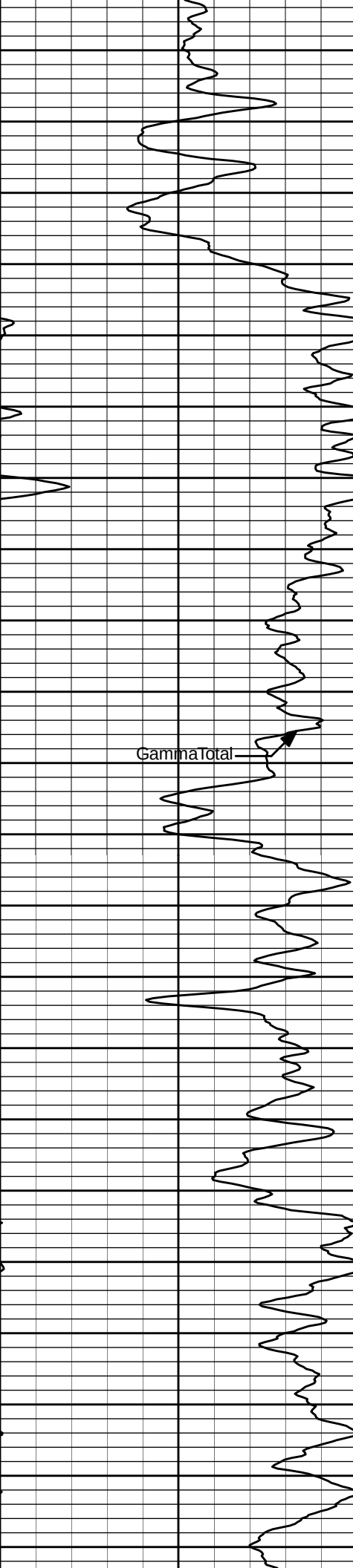
Plot Time: 19-Oct-21 08:02:06
Plot Range: 48 ft to 3365.08 ft
Data: BK_OAK_STCKL_16\Well Based\DAQ-0001-007\
Plot File: \\PORO\IQ-CSNG-DSNT-SDLT-5in

5" = 100' MAIN PASS

Tension	Neutron Porosity
10000 pounds	30 % Matrix: Limestone
Caliper inches	Crossplot Porosity %
GammaKT api	Density Porosity % Matrix: 2.71 g/cc
GammaTotal api	MicrologNormal 20 ohm-metre
DensityCorr g/cc	MicrologLateral 20 ohm-metre

AHVT BHVT MD 1 : 240

Pe



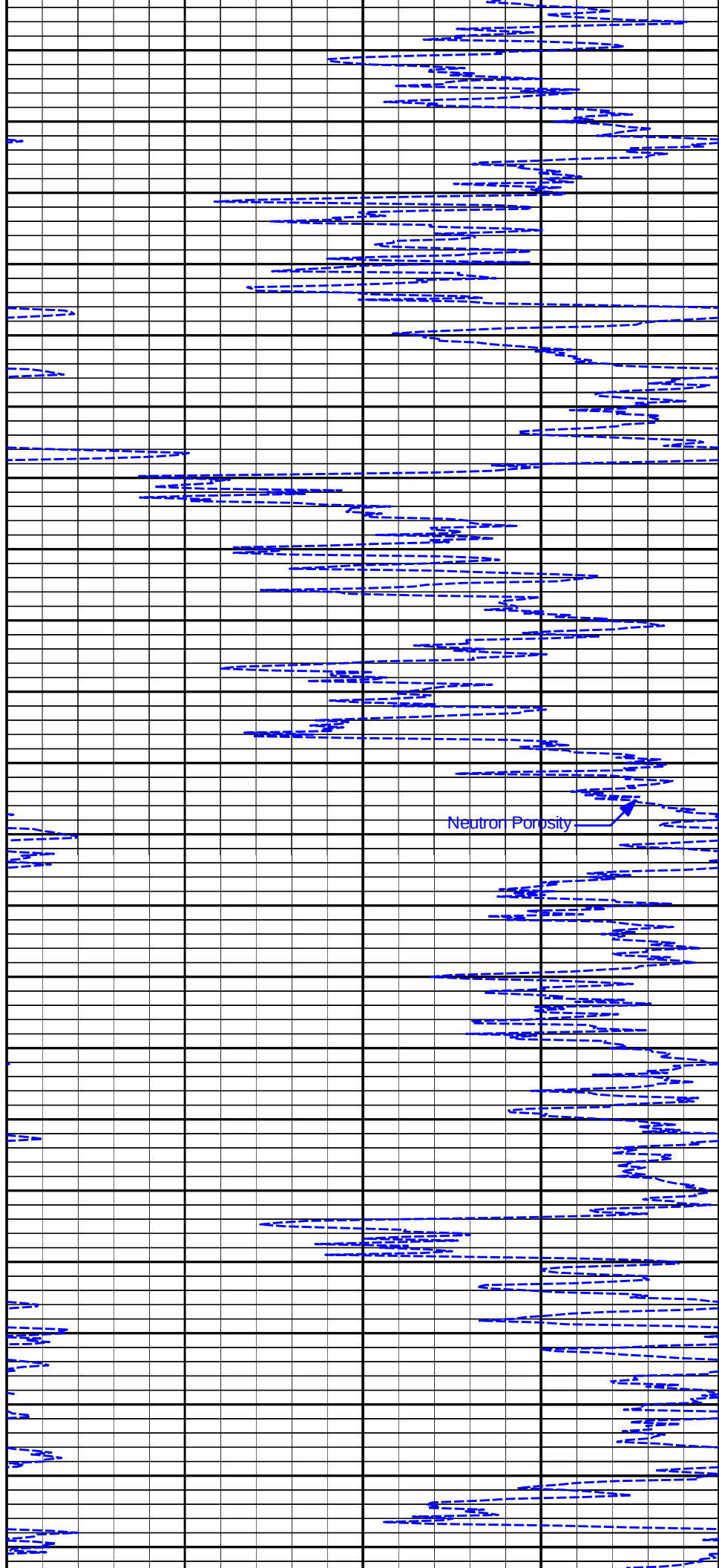
Gamma Total

100

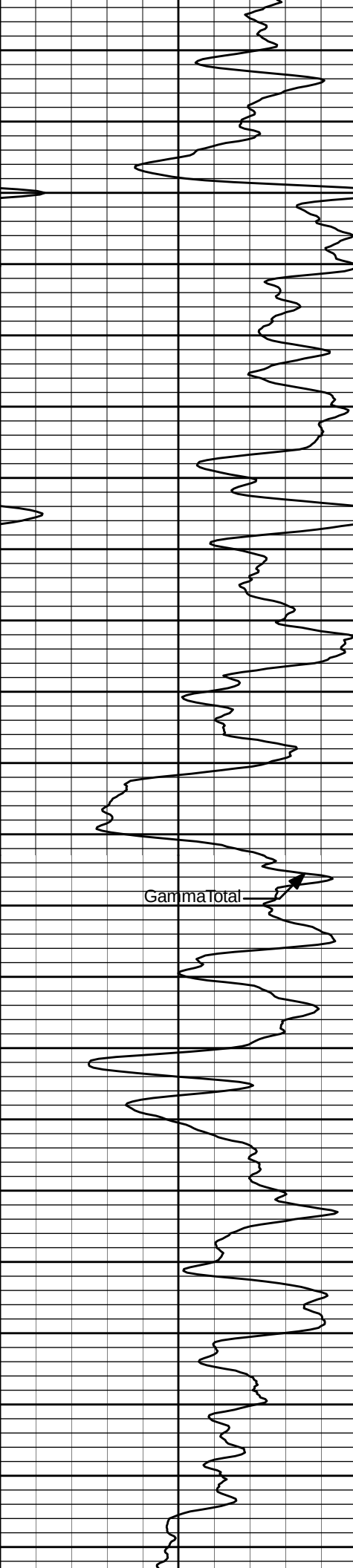
150

200

250



Neutron Porosity



Gamma Total

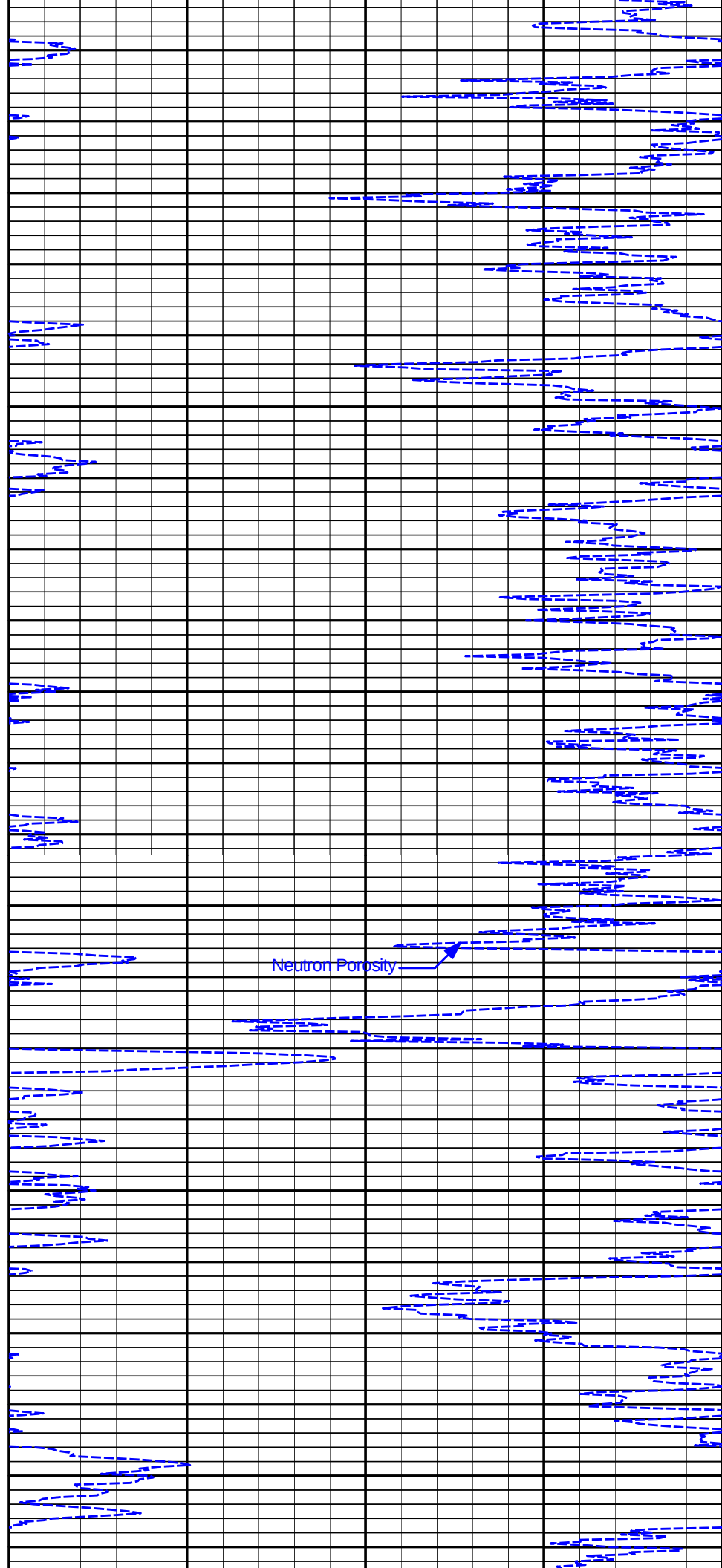
300

350

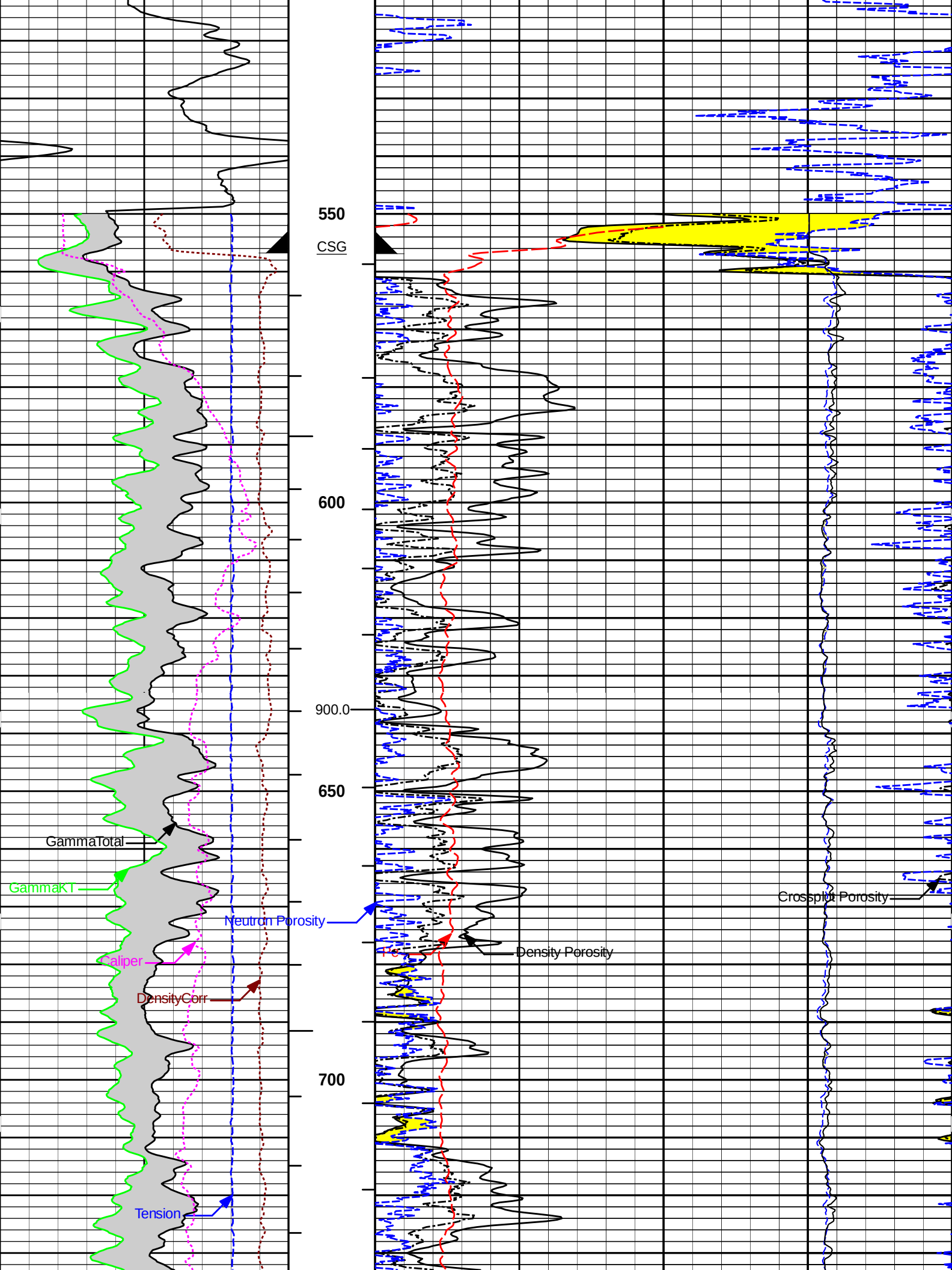
400

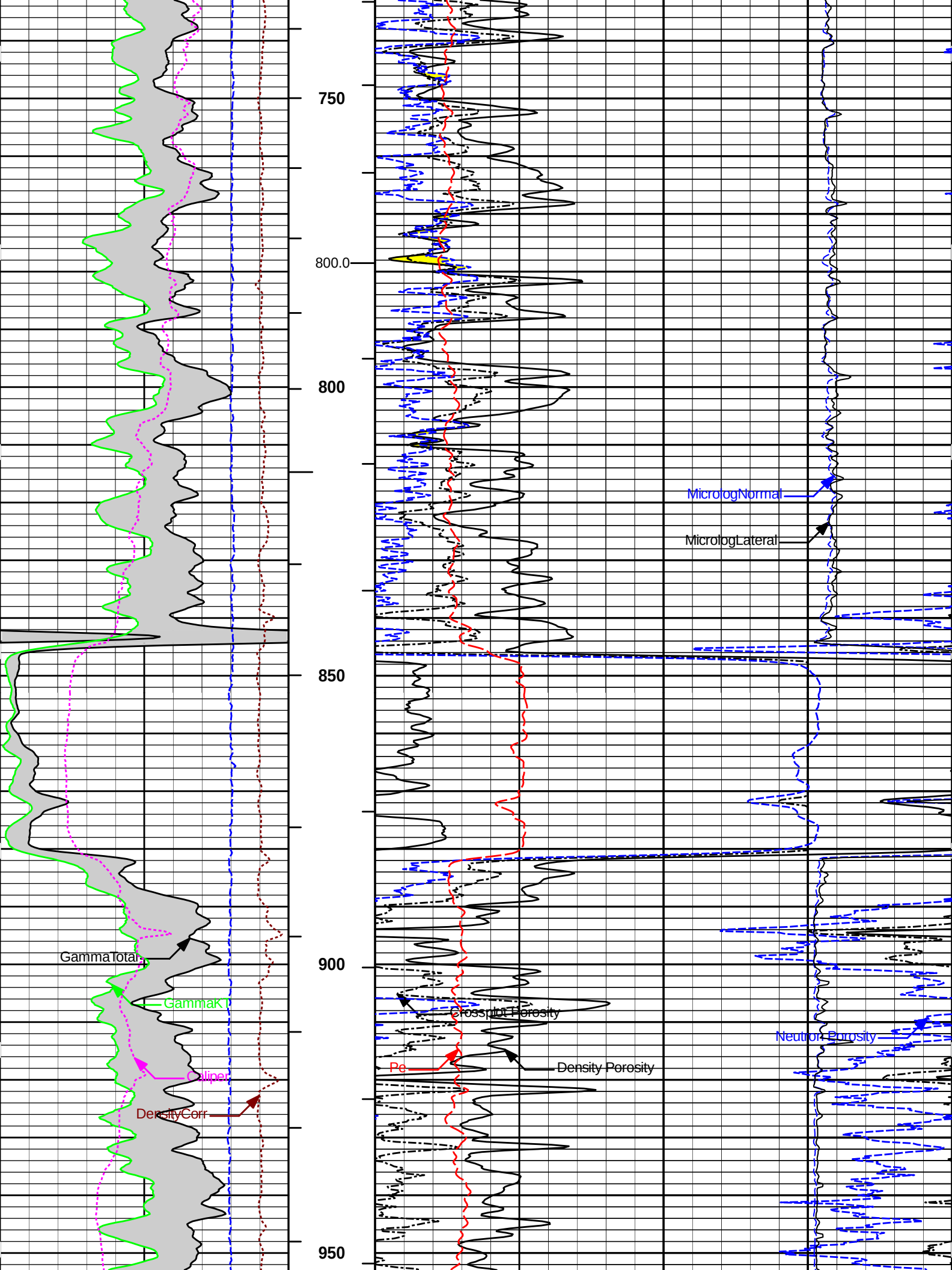
450

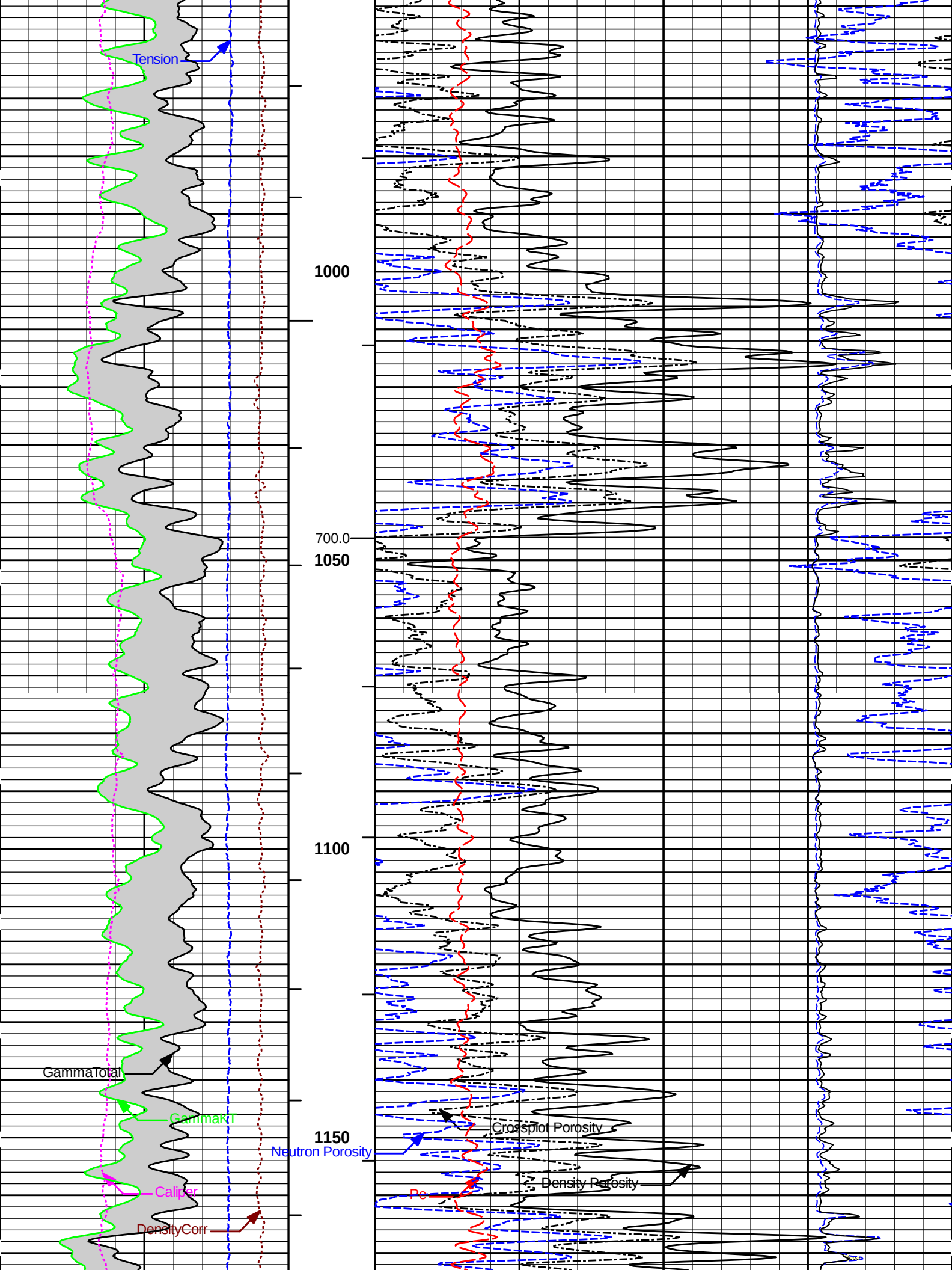
500

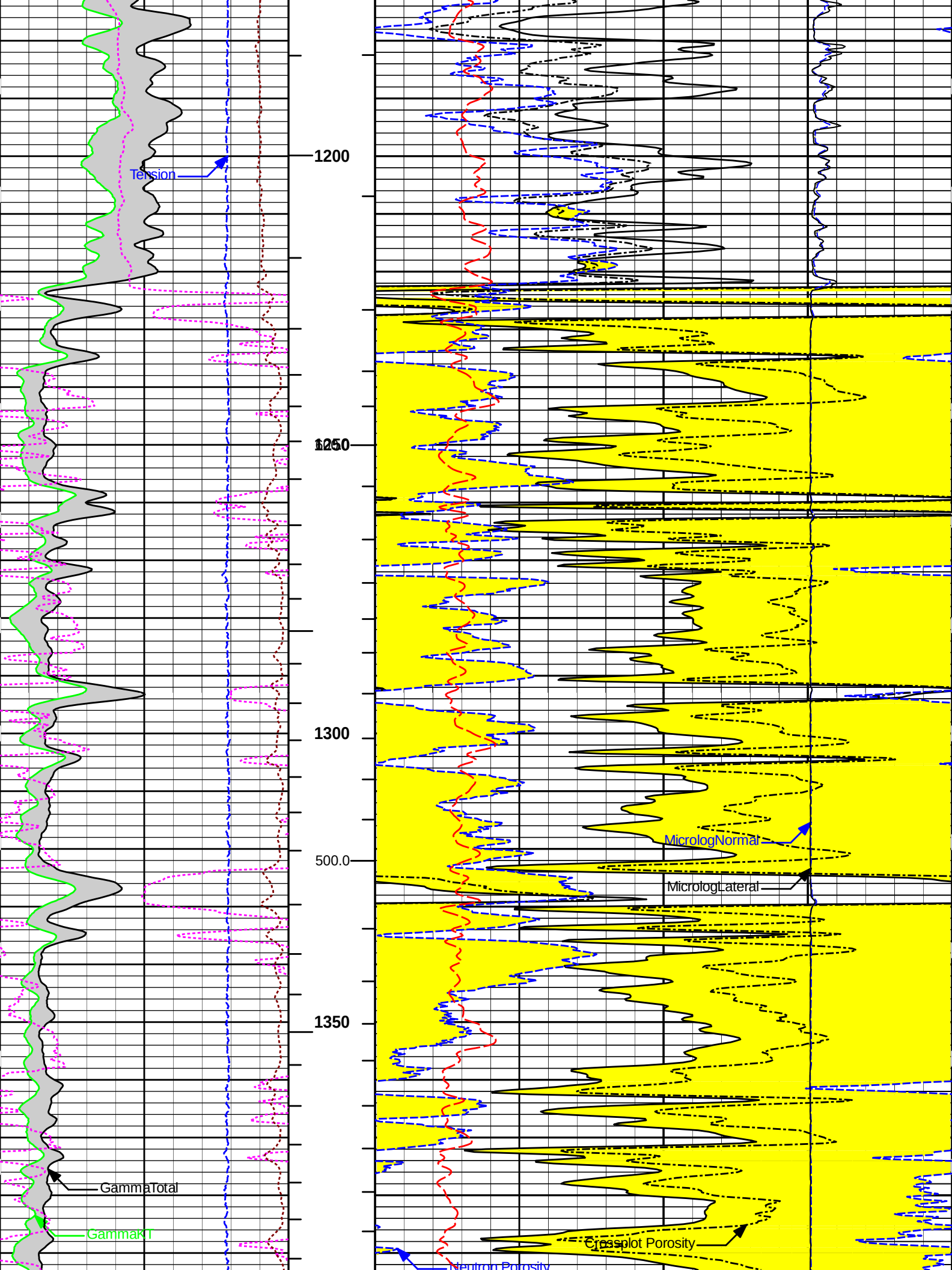


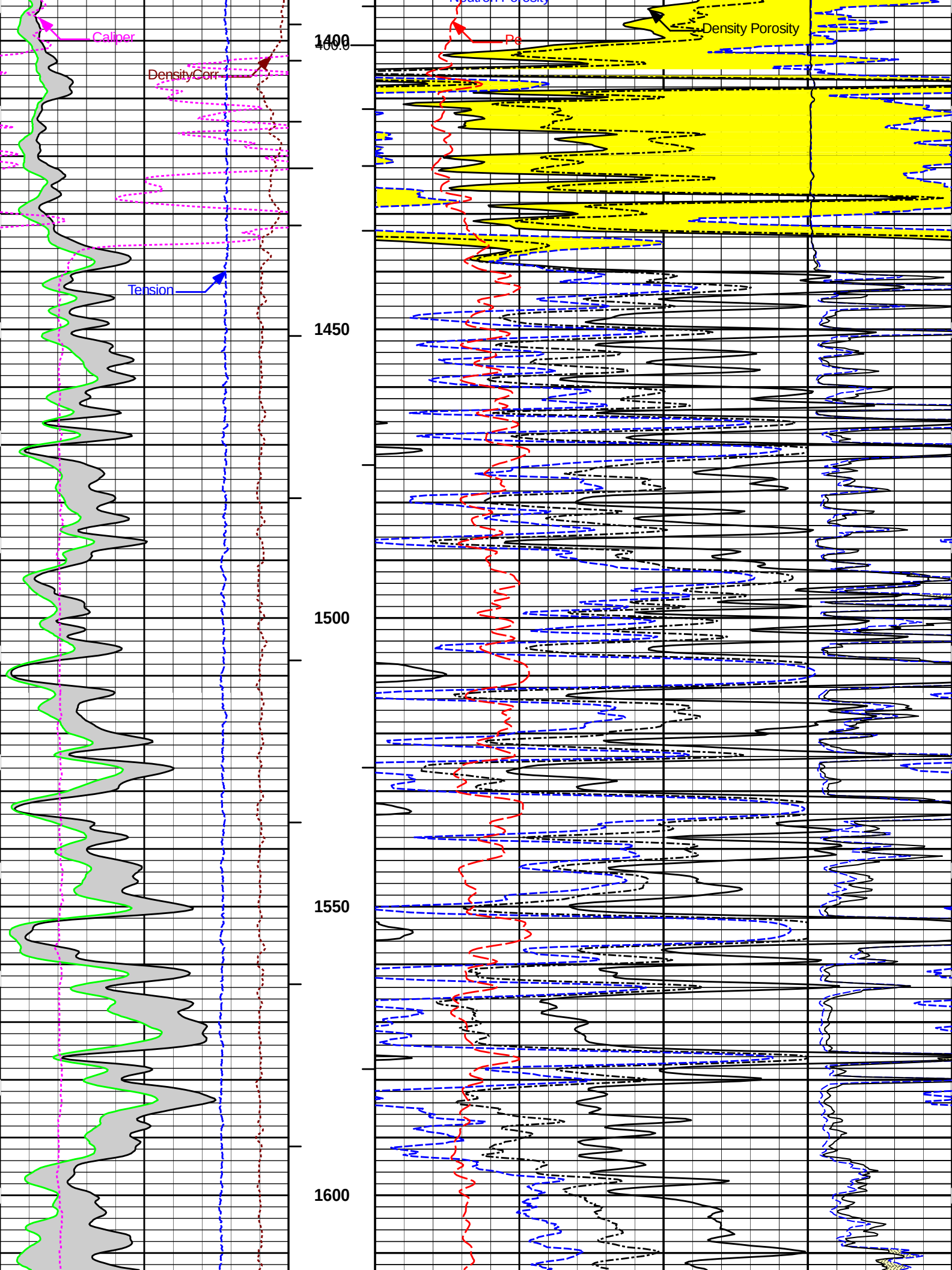
Neutron Porosity

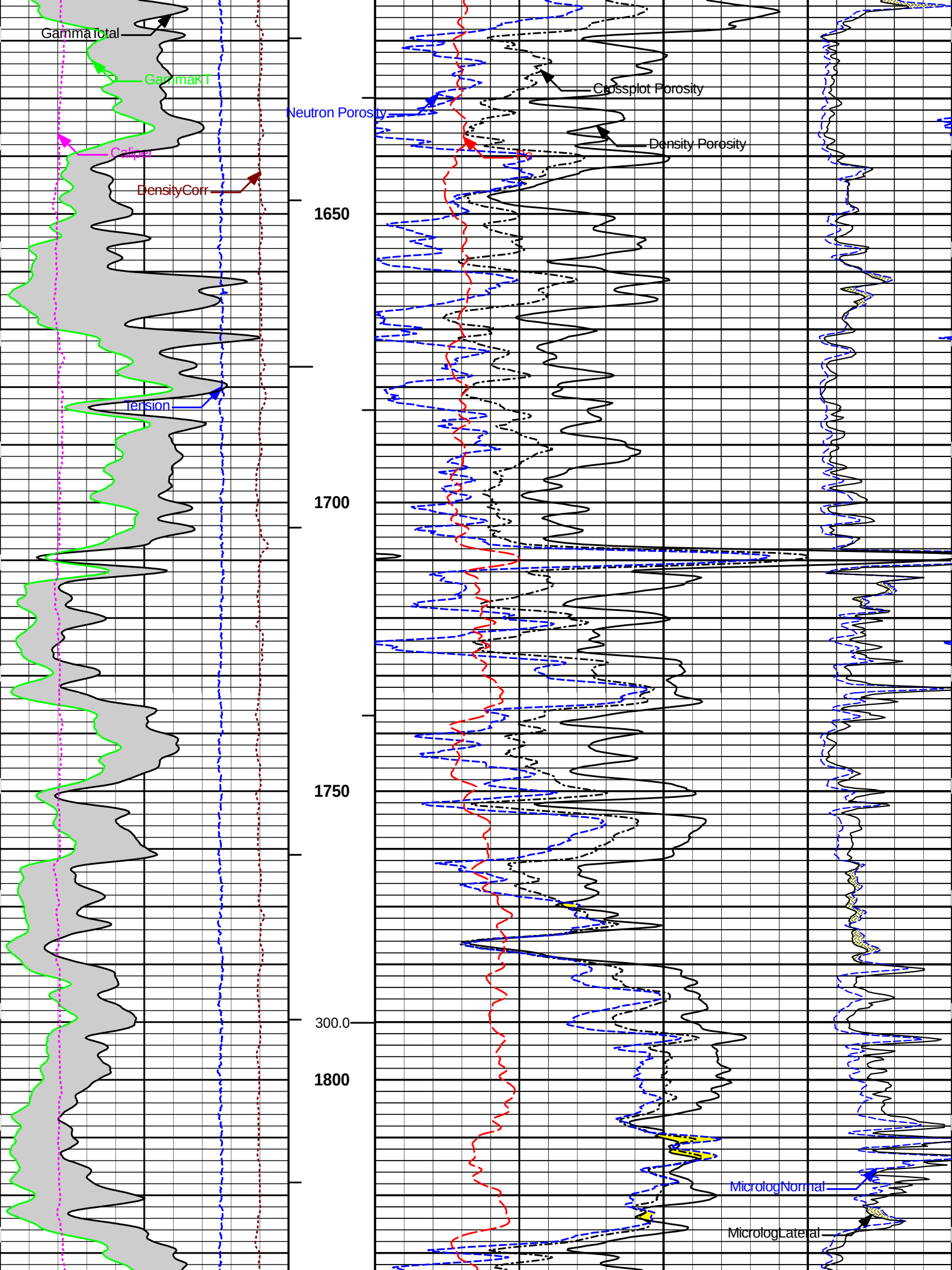


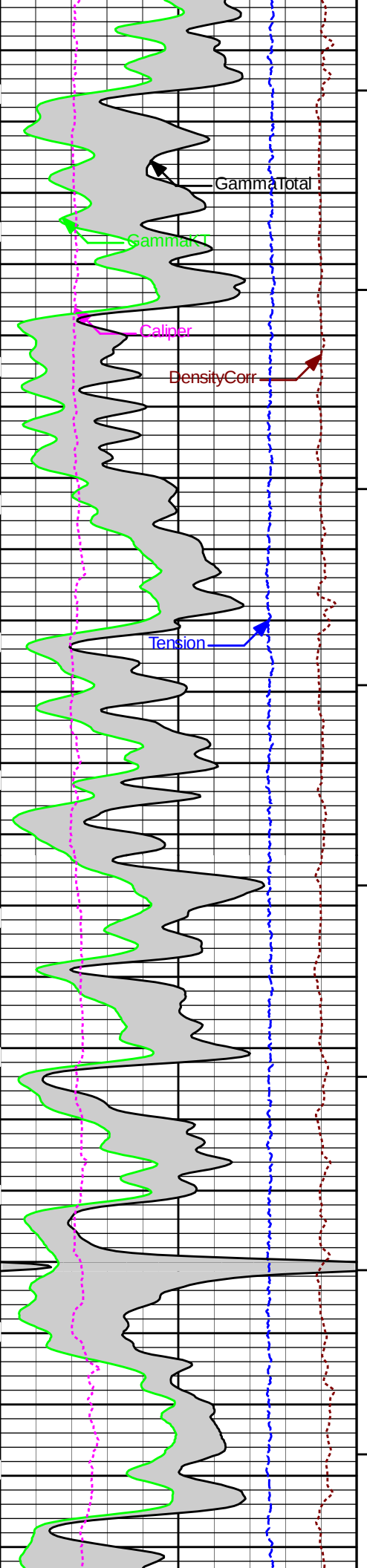












1850

1900

1950

2000

2050

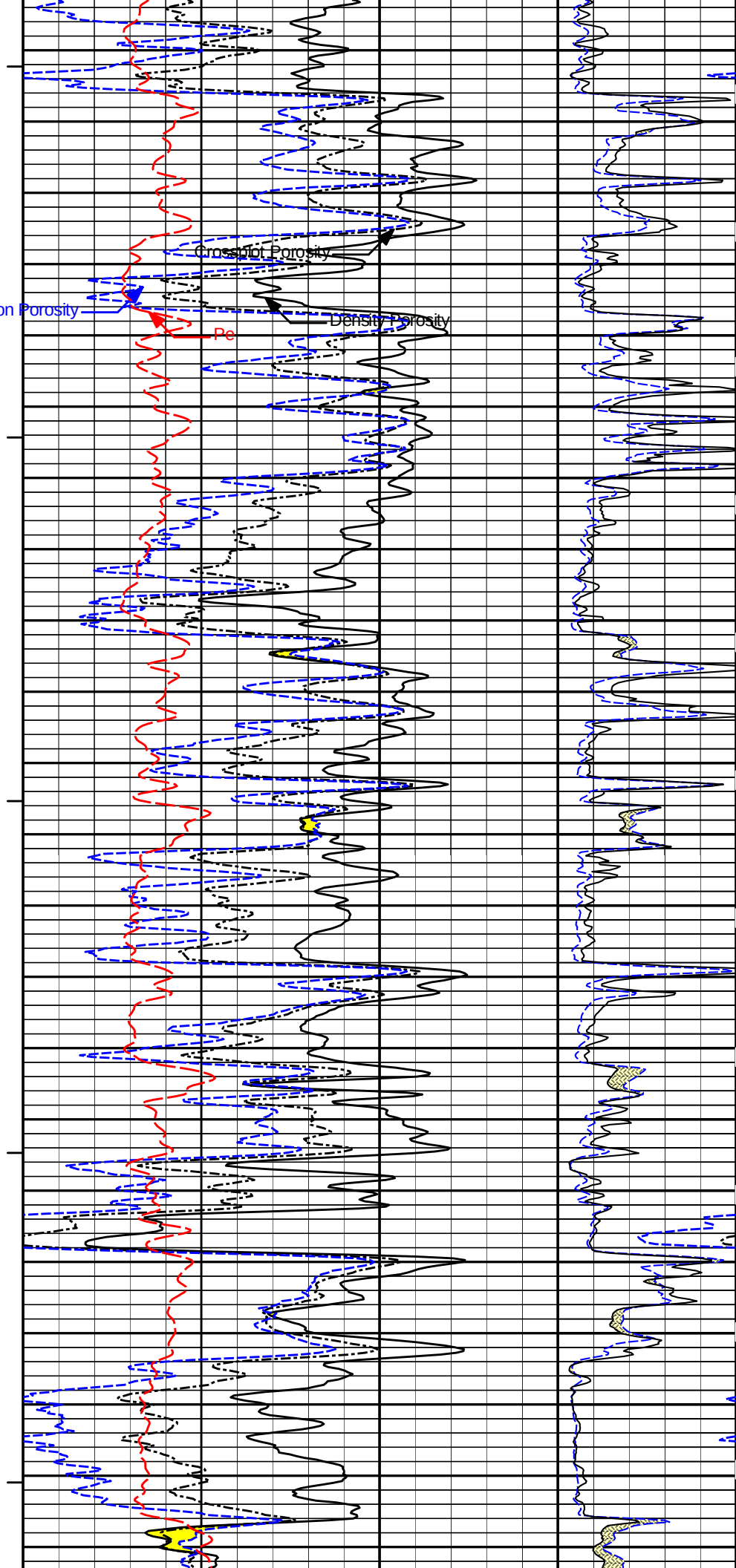
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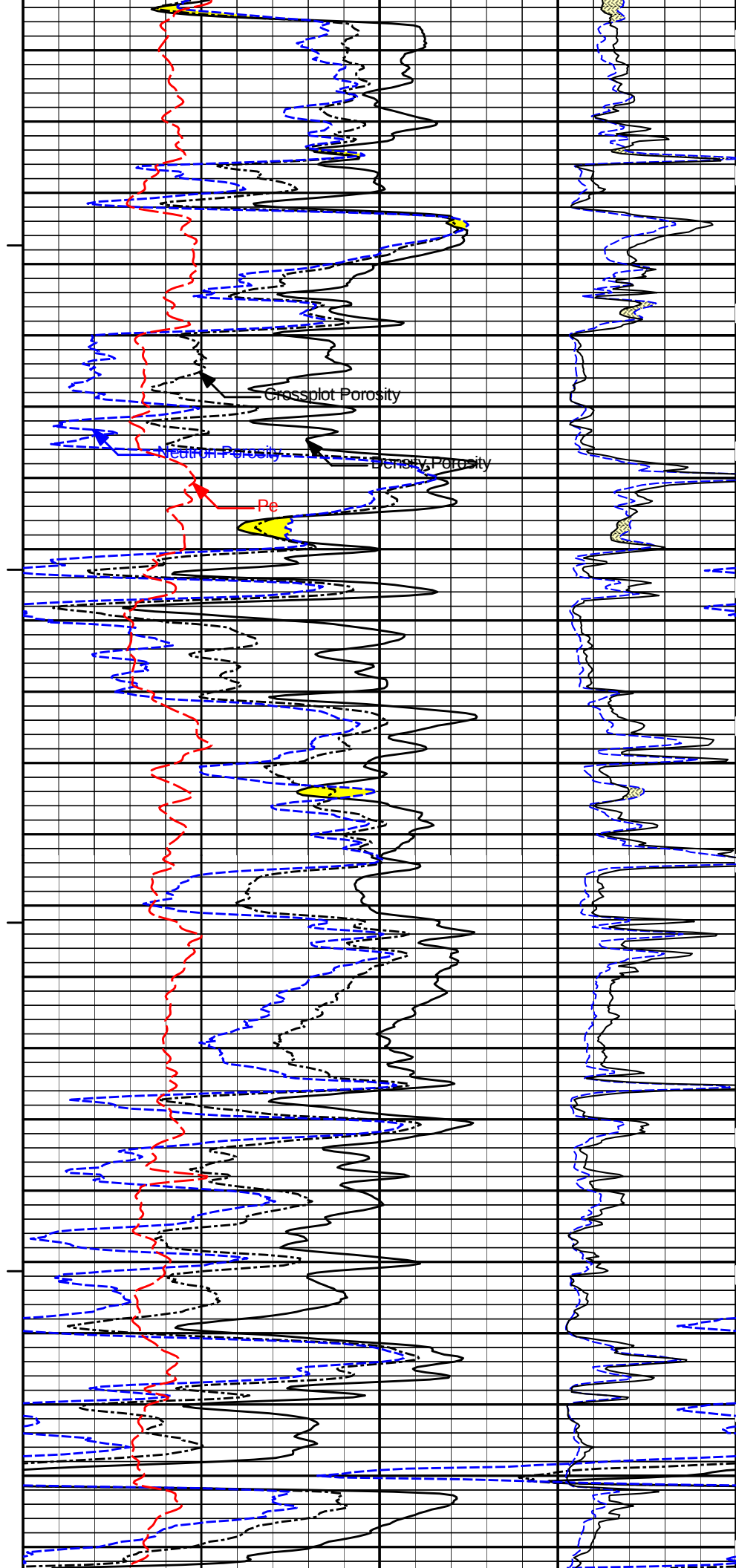
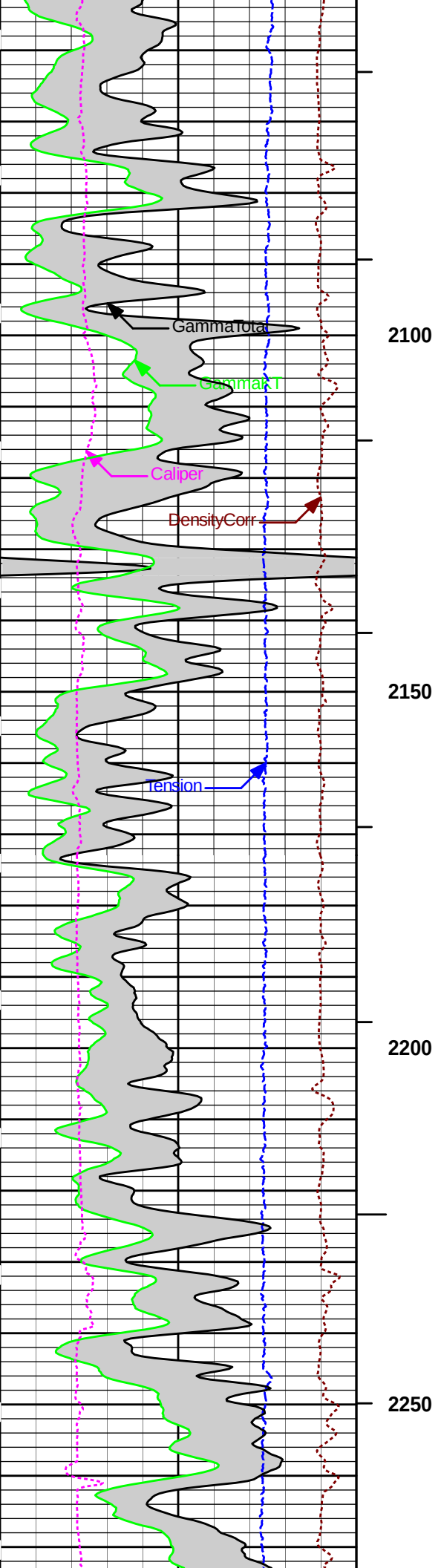
2150

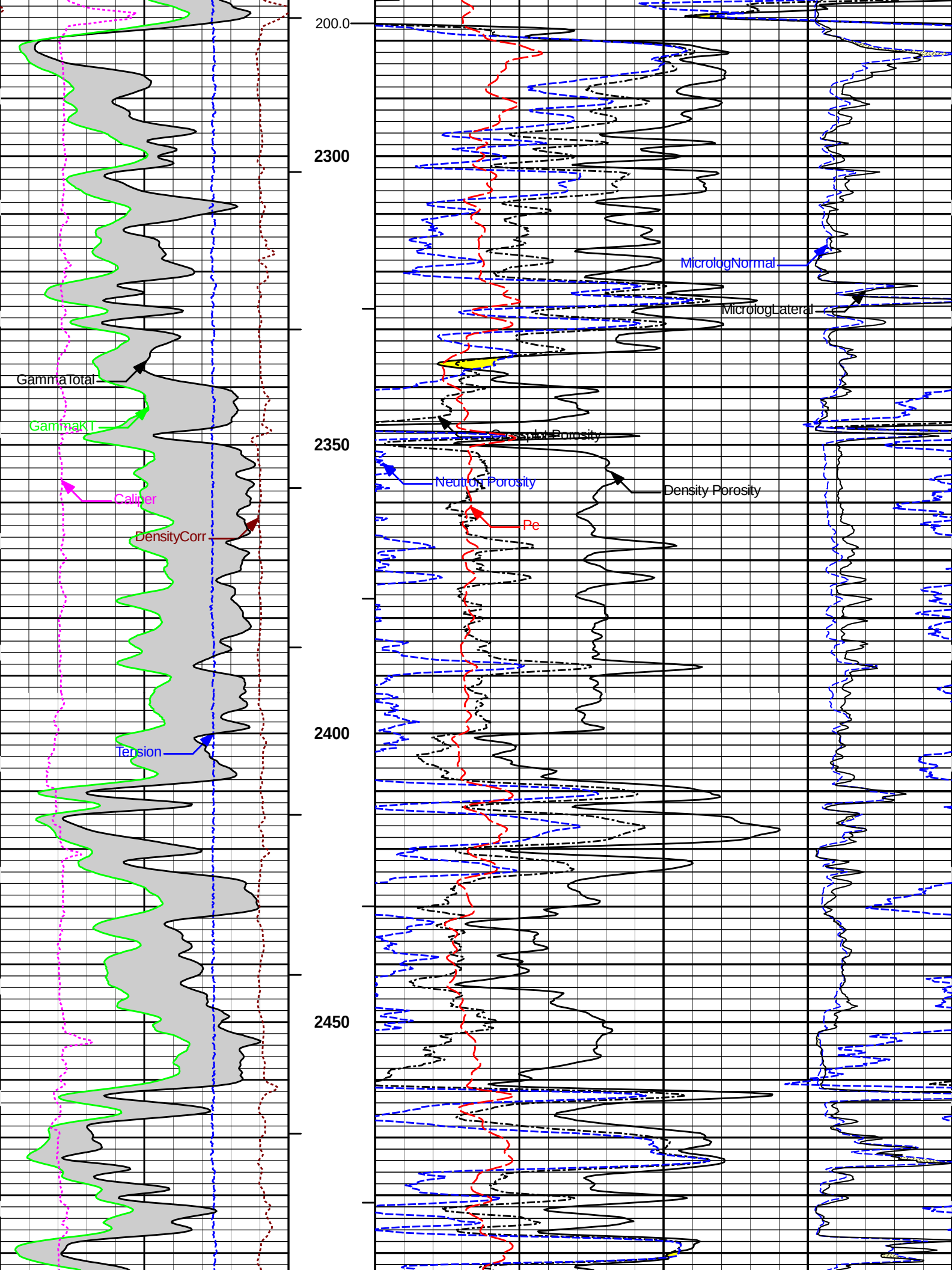
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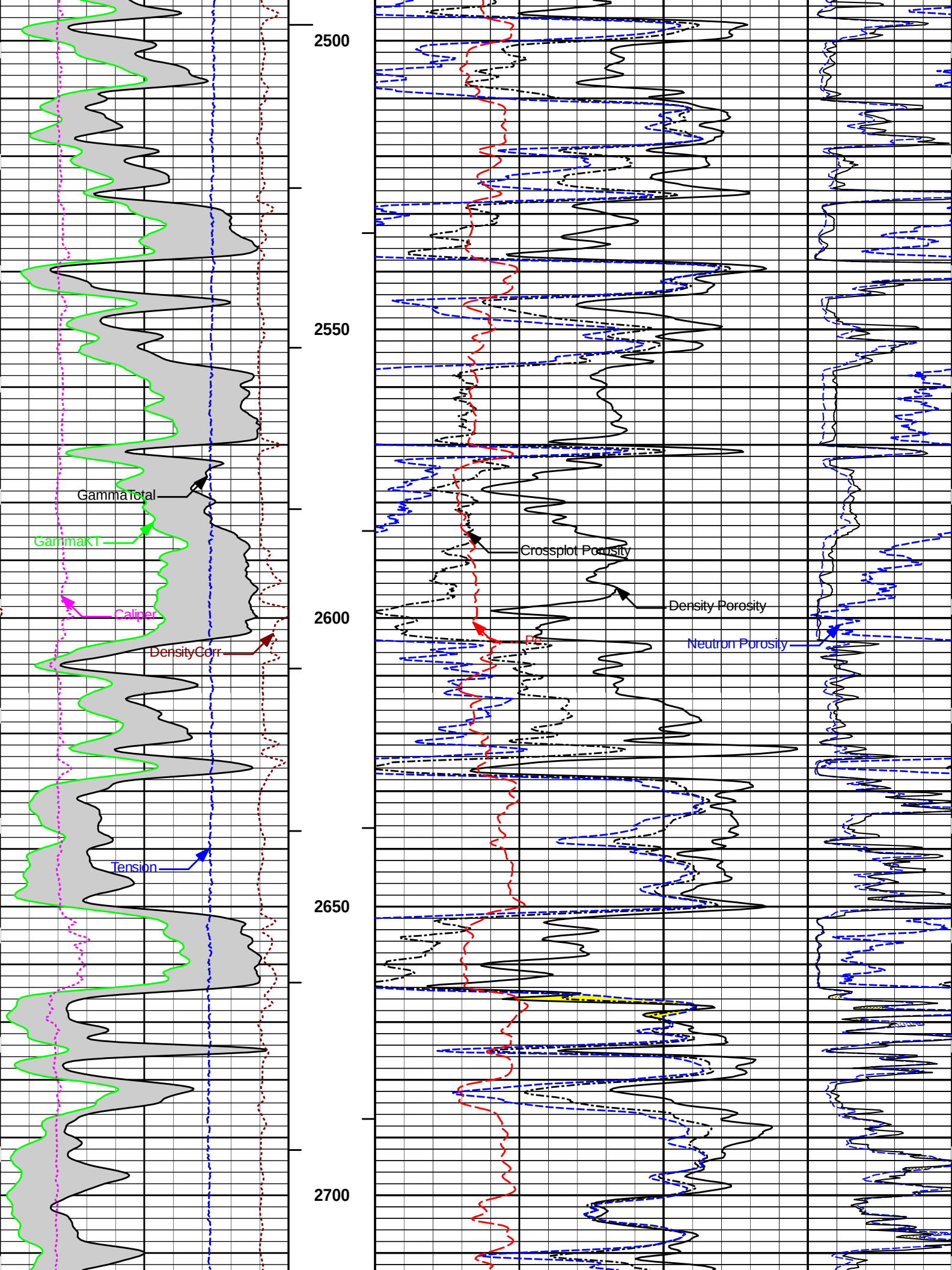
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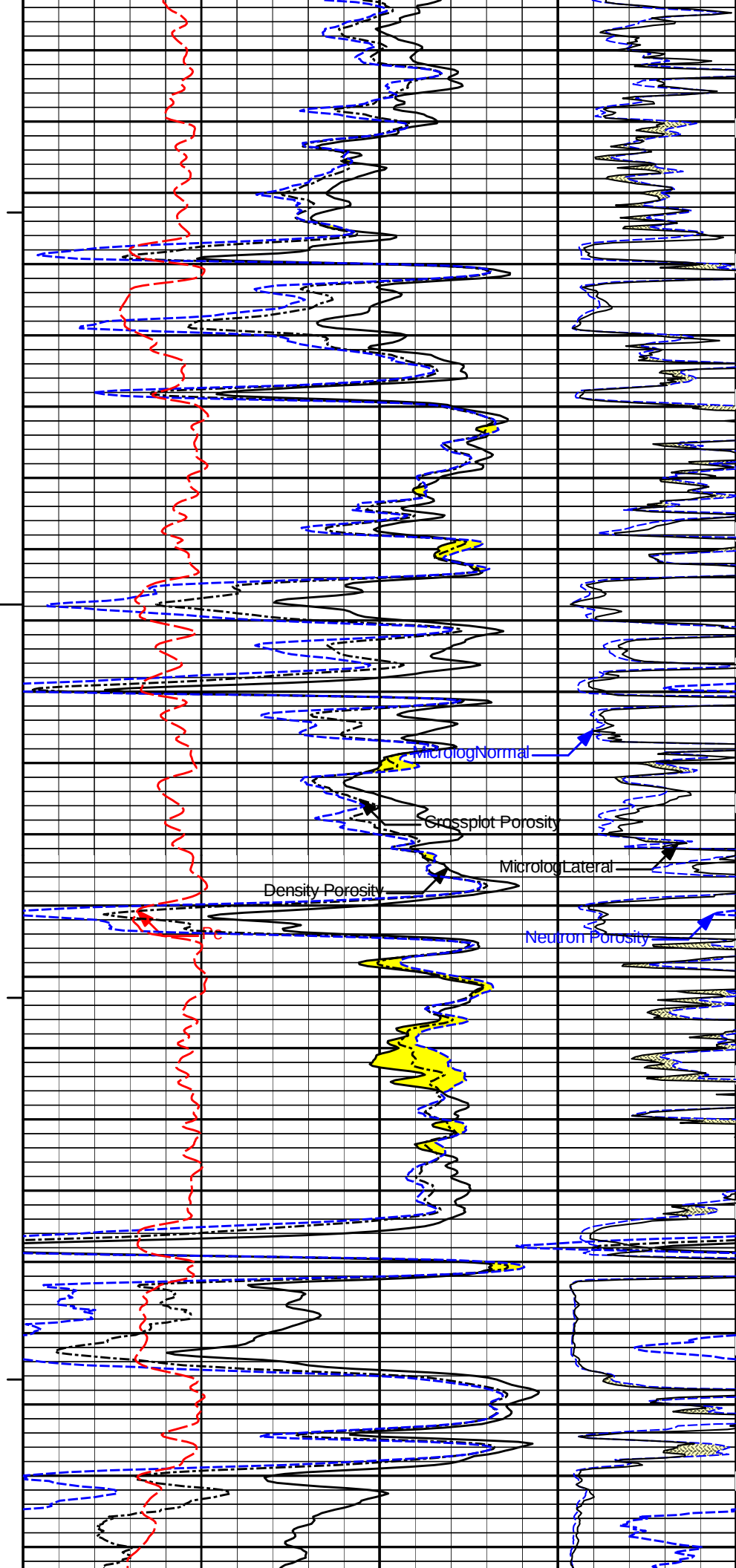
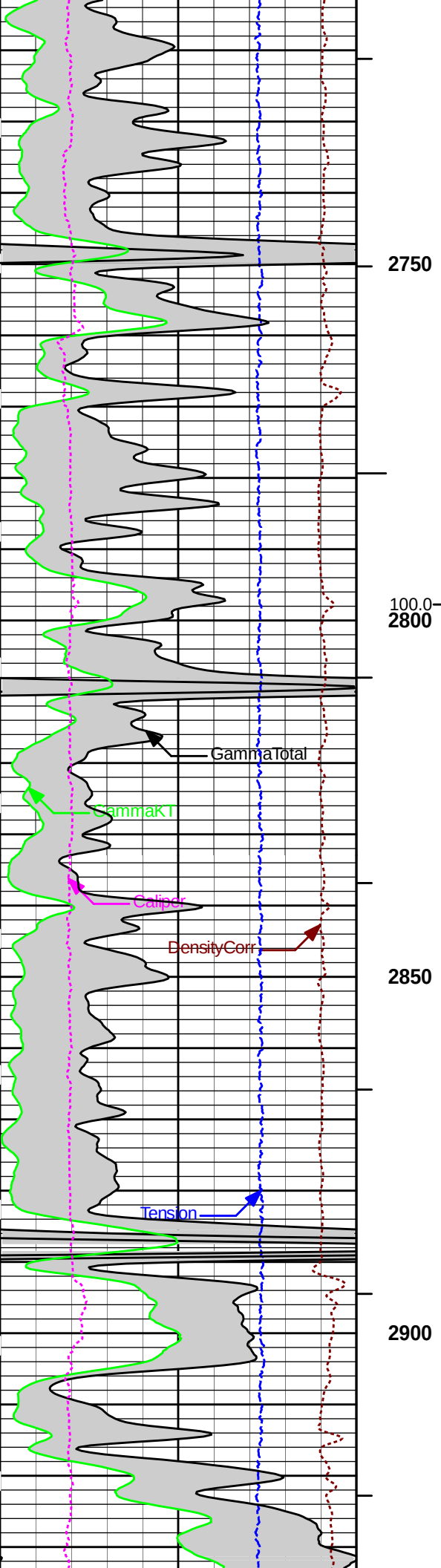
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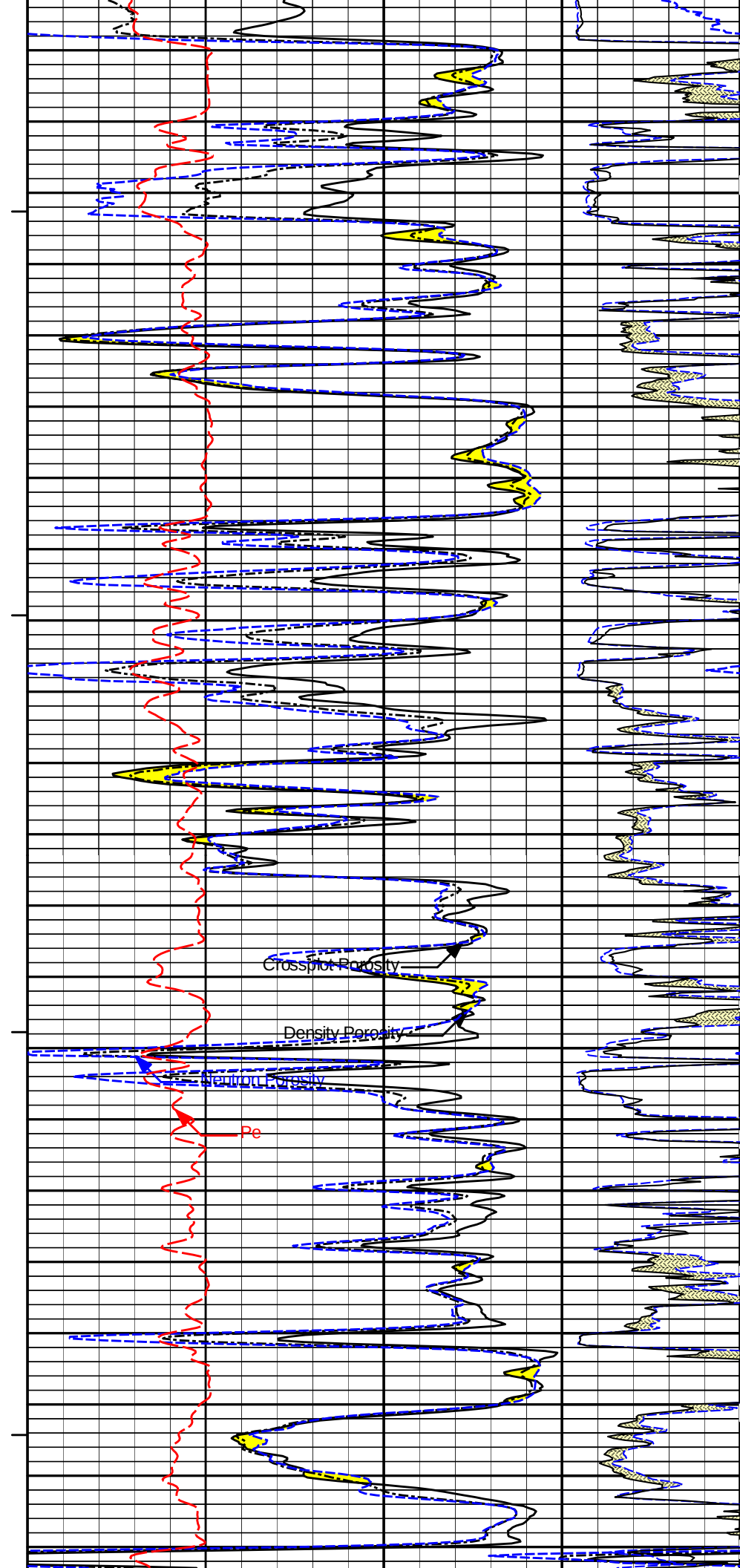
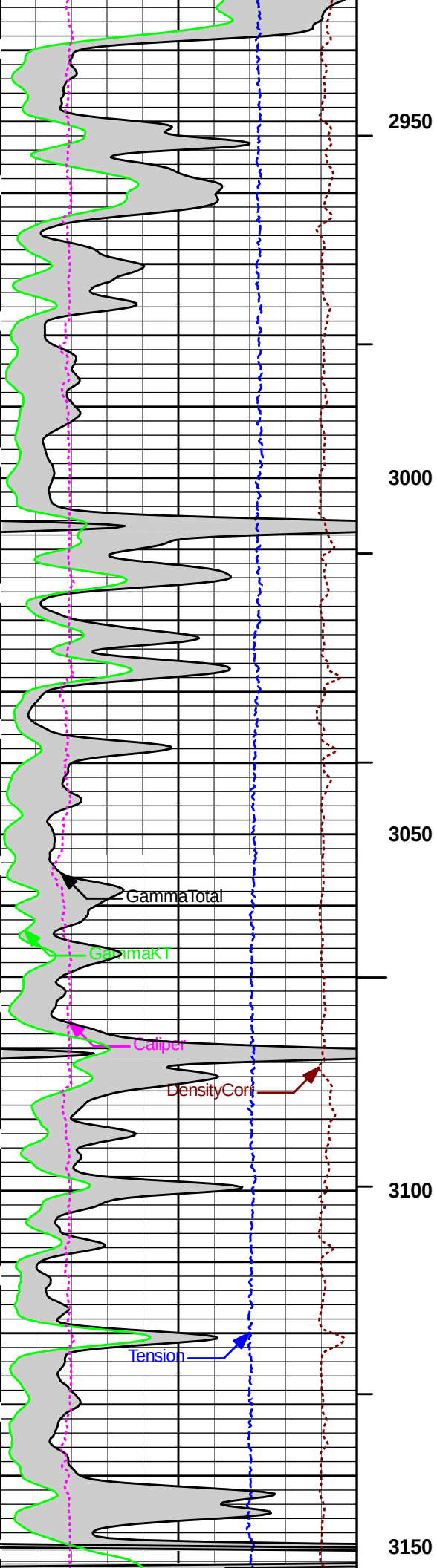


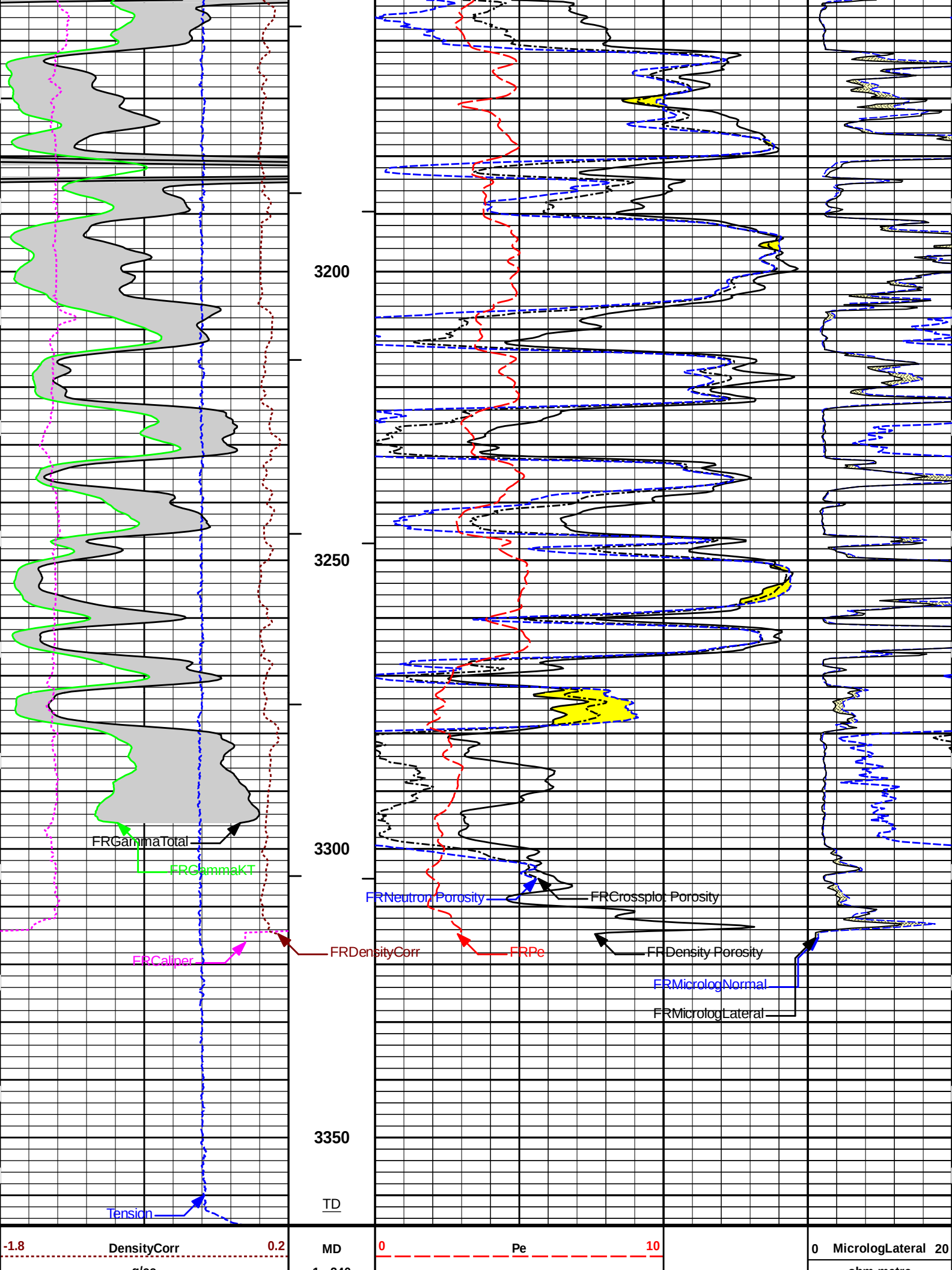












g/cc		1 : 240	ohm-metre	
0	GammaTotal	150	BHVT	
	api			0 MicrologNormal 20
	GammaKT	150	AHVT	ohm-metre
	api			30 Density Porosity -10
	Caliper	16		% Matrix: 2.71 g/cc
	inches			30 Crossplot Porosity -10
	Tension	0		%
10000	pounds			30 Neutron Porosity -10
				% Matrix: Limestone

HALLIBURTON

Plot Time: 19-Oct-21 08:02:09
Plot Range: 48 ft to 3365.08 ft
Data: BK_OAK_STCKL_16\Well Based\DAQ-0001-007\
Plot File: \\PORO\IQ-CSNG-DSNT-SDLT-5in

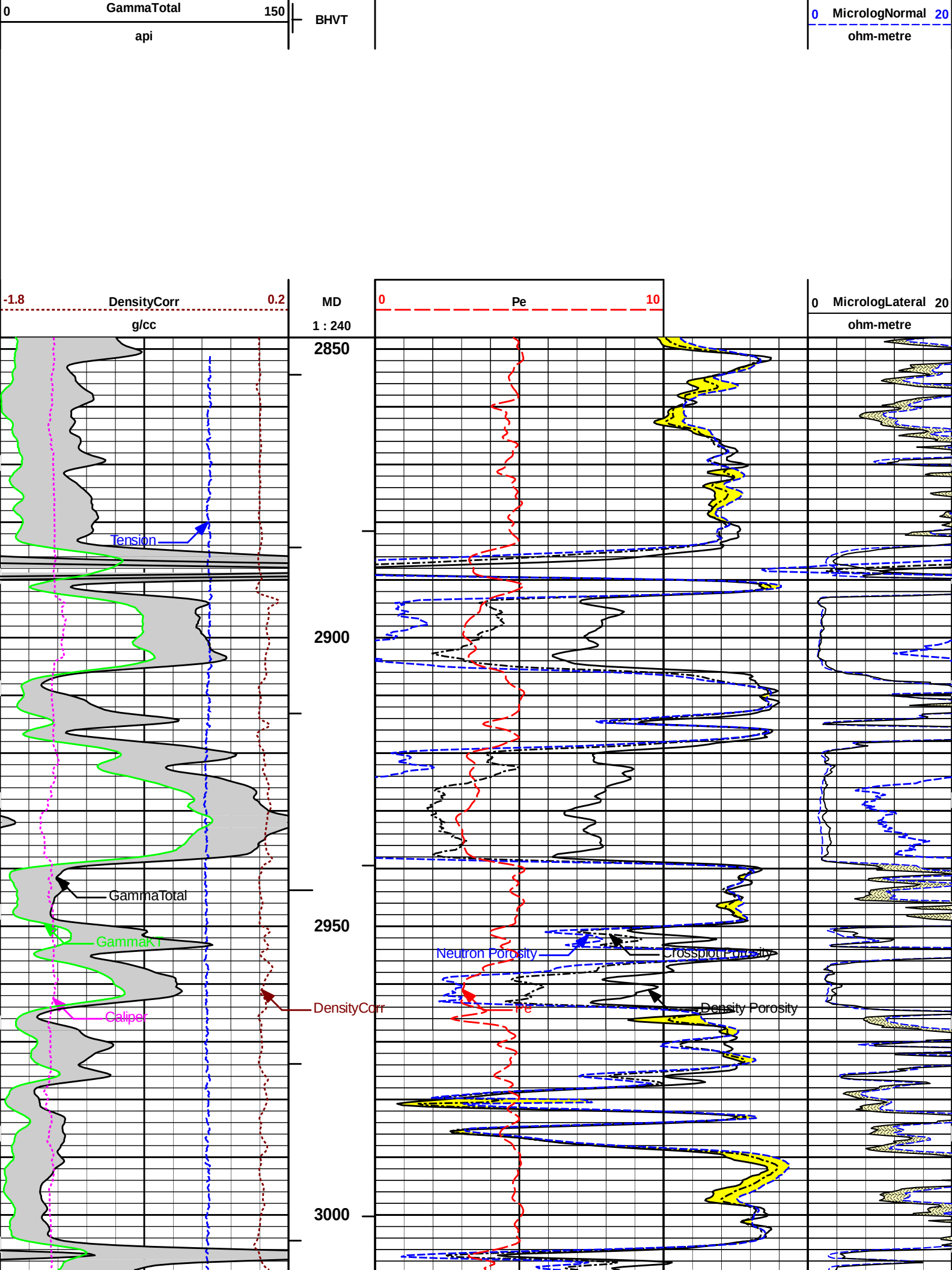
5" = 100' MAIN PASS

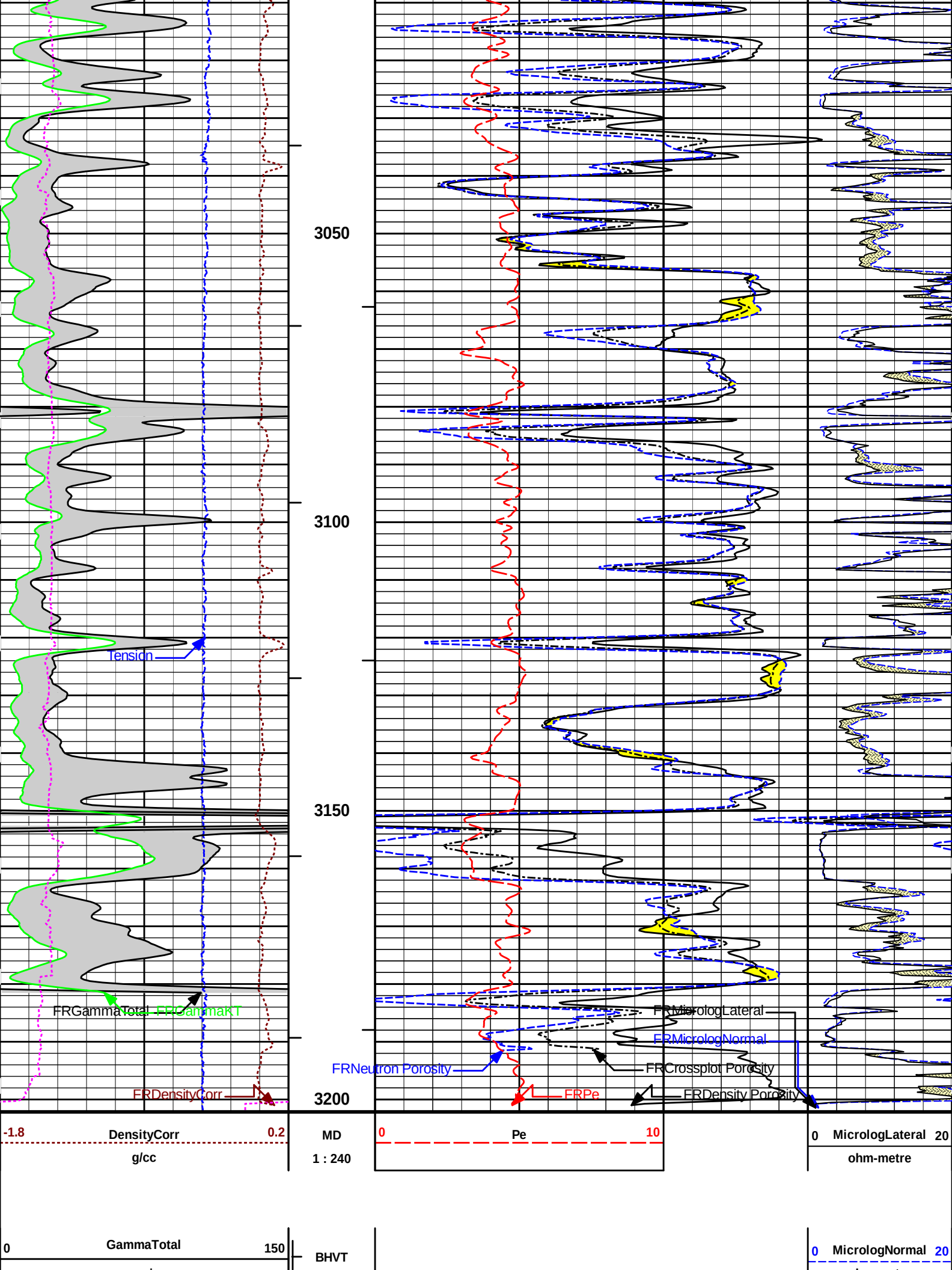
HALLIBURTON

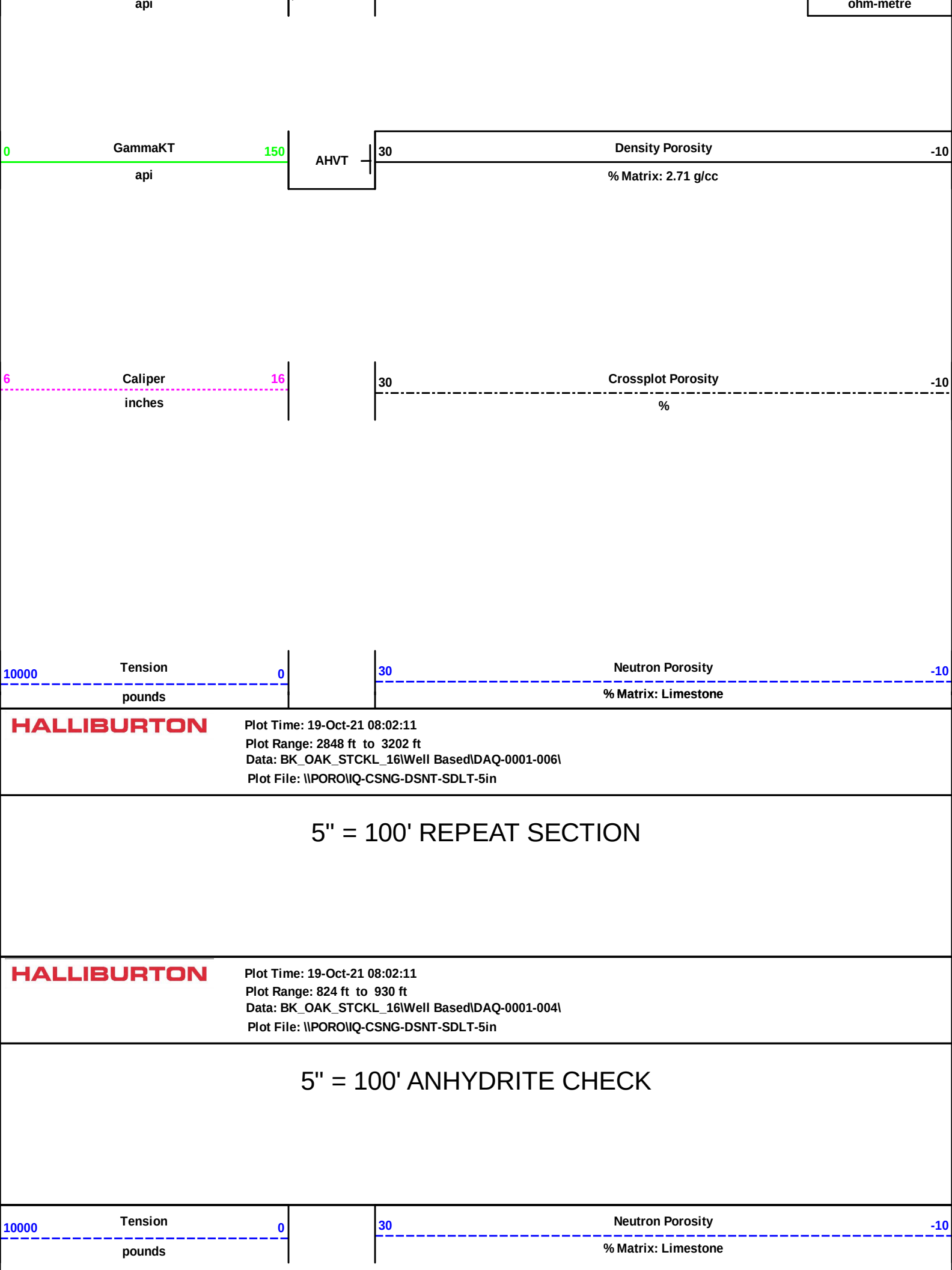
Plot Time: 19-Oct-21 08:02:10
Plot Range: 2848 ft to 3202 ft
Data: BK_OAK_STCKL_16\Well Based\DAQ-0001-006\
Plot File: \\PORO\IQ-CSNG-DSNT-SDLT-5in

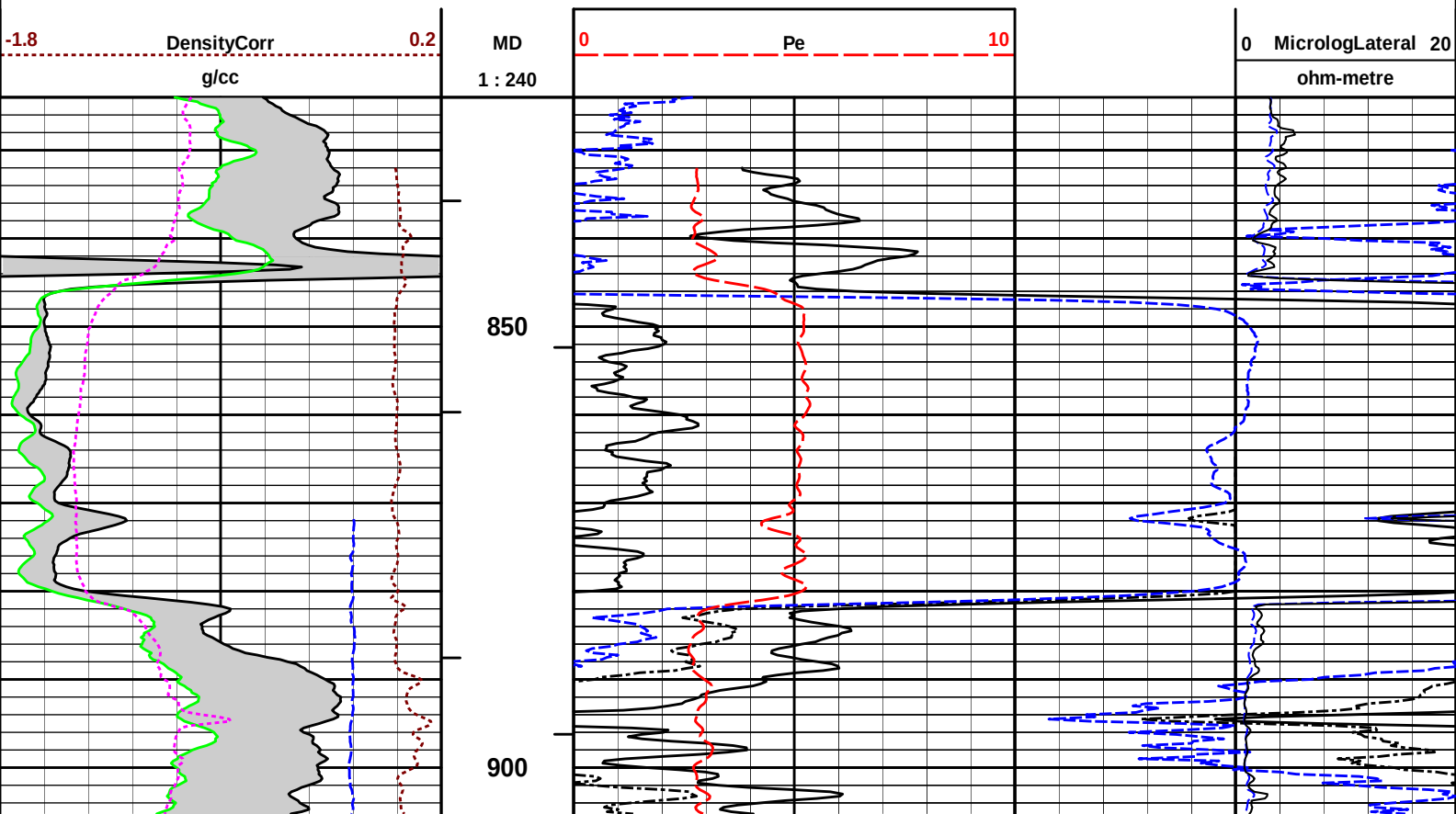
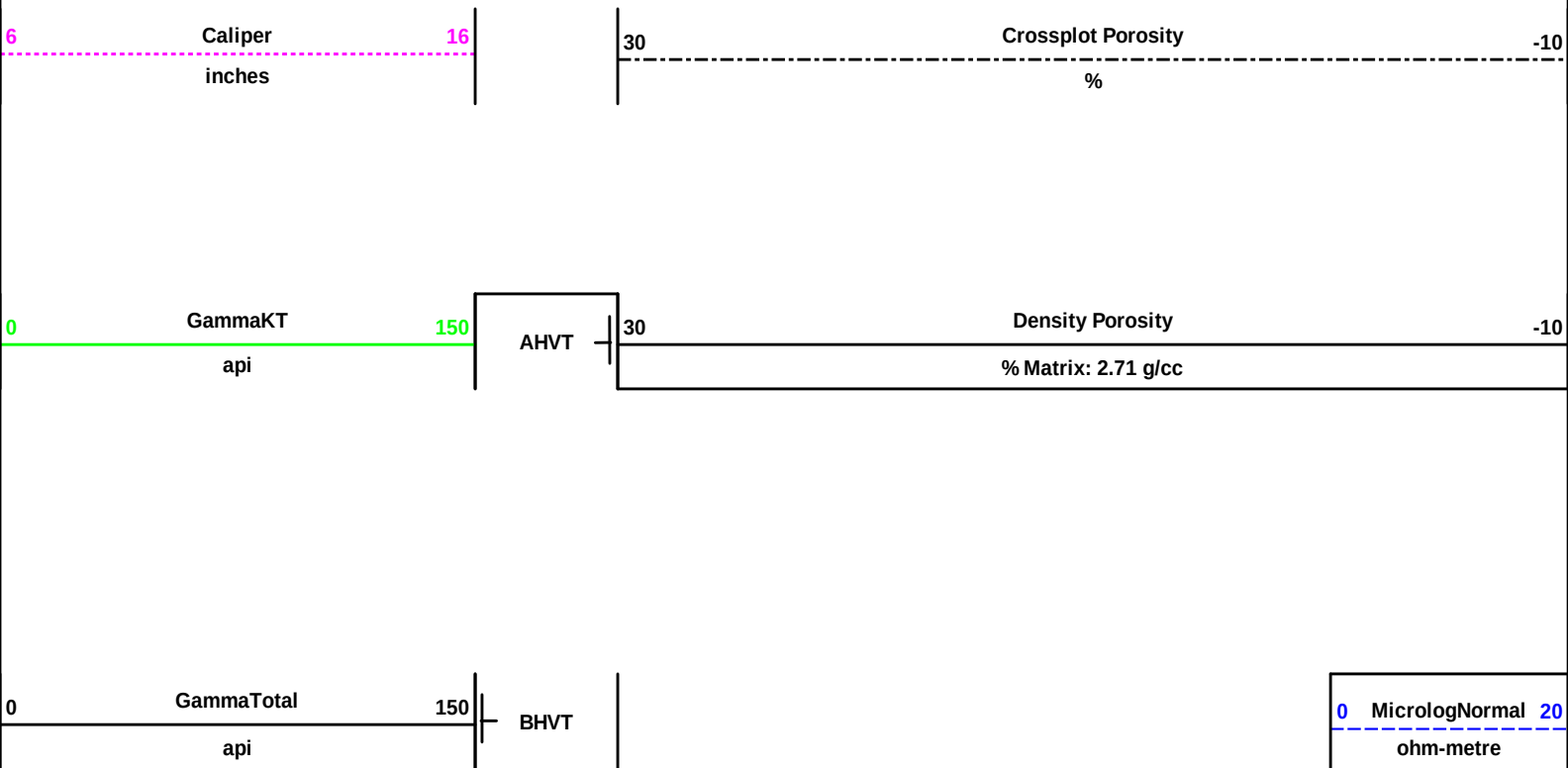
5" = 100' REPEAT SECTION

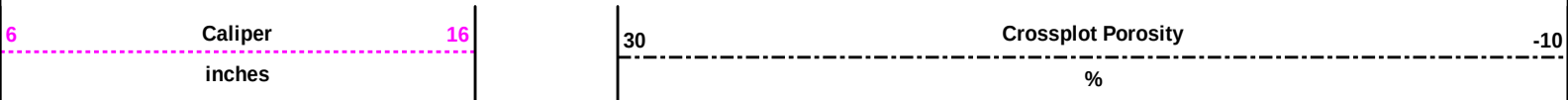
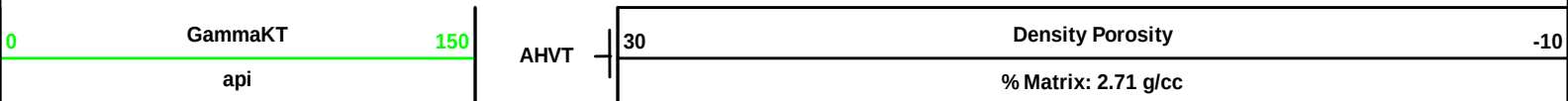
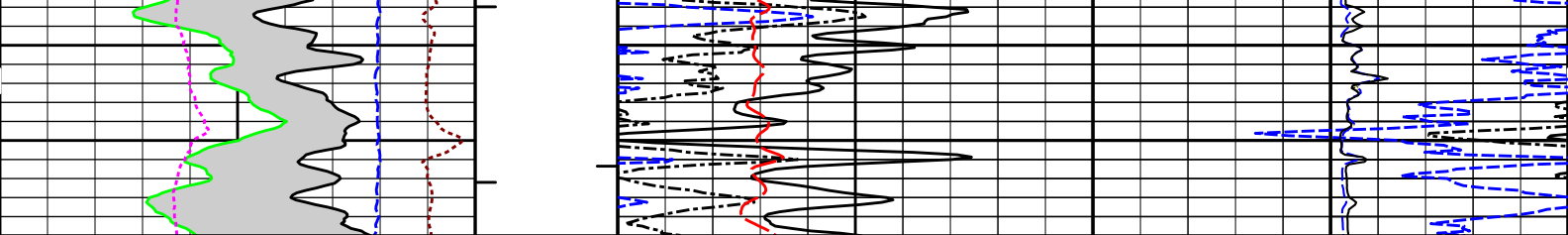
10000	Tension	0	AHVT	30	Neutron Porosity	-10
	pounds				% Matrix: Limestone	
6	Caliper	16		30	Crossplot Porosity	-10
	inches				%	
0	GammaKT	150	AHVT	30	Density Porosity	-10
	api				% Matrix: 2.71 g/cc	











HALLIBURTON

Plot Time: 19-Oct-21 08:02:13
Plot Range: 824 ft to 930 ft
Data: BK_OAK_STCKL_16\Well Based\DAQ-0001-004\
Plot File: \\PORO\IQ-CSNG-DSNT-SDLT-5in

5" = 100' ANHYDRITE CHECK

PARAMETERS REPORT

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	12.250	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	Yes	
	SHARED	CSD	Logging Interval is Cased?	Yes	
	SHARED	CSOD	Casing Outer Diameter	8.625	in
	SHARED	CSWT	Casing Weight	24.00	lbpf
	SHARED	ISOC	Is Outer Casing Present?	No	
	SHARED	CSCM	Casing Cemented	Yes	
	SHARED	CMTY	API Cement Class	H	
	SHARED	CMWT	Cement Weight	16.500	ppg
549.00					
	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	9.500	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	3365.00	ft
	SHARED	BHT	Bottom Hole Temperature	119.0	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	Density	
	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	ACOK	Do ACCZ Calculations?	Yes	
	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	
CSNG	CGOK	Process CSNG Data?	Yes	
CSNG	CENT	Is Tool Centralized?	No	
CSNG	GBOK	Gamma Enviromental Corrections?	Yes	
CSNG	BARF	Barite Correction Factor	1.00	
CSNG	ORDG	Use Fixed Gain	No	
CSNG	ORDO	Use Fixed Offset	No	
CSNG	ORDR	Use Fixed Resolution Degradation Factor	No	
CSNG	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	
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	
Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
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				

CUSTOMER EVENT LOG

Event Type	Time & Date	Depth (ft)	Event Description
	19-Oct-21 00:40:08.507		Alarm cleared.
	19-Oct-21 00:43:46.690		Alarm cleared.
	19-Oct-21 00:50:12.153		Alarm cleared.
	19-Oct-21 01:37:46.563		Alarm cleared.
	19-Oct-21 02:13:10.132		Alarm cleared.
	19-Oct-21 02:32:06.806	28.00	Logging 001 19-Oct-21 02:32 Dn @28.0f
	19-Oct-21 02:32:23.035	147.14	Halting 001 19-Oct-21 02:32 Dn @28.0f
	19-Oct-21 02:32:56.405		Alarm cleared.
	19-Oct-21 02:33:05.971	127.25	Logging 002 19-Oct-21 02:33 Dn @127.3f
	19-Oct-21 02:33:13.056	229.59	Halting 002 19-Oct-21 02:33 Dn @127.3f
	19-Oct-21 02:33:42.052	186.00	Logging 003 19-Oct-21 02:33 Dn @186.0f
	19-Oct-21 02:40:09.950	1053.54	Halting 003 19-Oct-21 02:33 Dn @186.0f
	19-Oct-21 02:40:17.510	1052.50	Logging 004 19-Oct-21 02:40 Up @1052.5f
	19-Oct-21 02:44:12.188	871.69	Halting 004 19-Oct-21 02:40 Up @1052.5f
	19-Oct-21 02:44:50.845	764.75	Logging 005 19-Oct-21 02:44 Dn @764.8f
	19-Oct-21 02:58:28.644	3233.62	Halting 005 19-Oct-21 02:44 Dn @764.8f
	19-Oct-21 02:58:43.498	3251.50	Logging 006 19-Oct-21 02:58 Up @3251.5f
	19-Oct-21 03:19:40.732	2851.19	Halting 006 19-Oct-21 02:58 Up @3251.5f
	19-Oct-21 03:30:08.152	3365.25	Logging 007 19-Oct-21 03:30 Up @3365.3f
	19-Oct-21 06:00:04.533	89.78	Halting 007 19-Oct-21 03:30 Up @3365.3f
	19-Oct-21 06:45:42.647		Alarm cleared.
Data: BK_OAK_STCKL_16\0001 QUAD-BSAT-CSNG\HW12453			Date: 19-Oct-21 07:02:28

CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name:	Depth Panel - 12345678	Reference Calibration Date:	18-Oct-21 08:51:18
Engineer:	J. CABANZO	Calibration Date:	19-Oct-21 00:43:45
Software Version:	WL INSITE R6.4.5 (Build 6)	Calibration Version:	1

SURFACE TENSION LOAD CELL

Measurement	Load Cell Value	Measurement	Calibrated	Units
Low	-15.91	-33.98	0.00	lbs
High	7814.02	7794.05	7830.00	lbs

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name:	RWCH - 12198524	Reference Calibration Date:	13-Oct-21 17:00:00
Engineer:	MOHAMED ABUELGASIM	Calibration Date:	13-Oct-21 23:22:17
Software Version:	WL INSITE R6.4.5 (Build 6)	Calibration Version:	1

DOWNHOLE LOAD CELL

Measurement	Tool Value	Measurement	Calibrated	Units
Low	-731.26	31.33	0.00	lbs
High	4290.76	1888.88	2010.00	lbs

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	GTET - 11958947	Reference Calibration Date:	20-Aug-19 09:32:18
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Engineer:

M. RICHTER

Software Version:

WL INSITE R6.2.7 (Build 7)

Calibration Date:

24-Oct-19 09:31:28

Calibration Version:

1

Calibrator Source S/N: TB-146

Calibrator API Reference:225.00 api

Equivalent Calibrator API Reference:228.9 api

Measurement	Measured	Calibrated	Units
Background	28.5	29.7	api
Background + Calibrator	247.6	258.7	api
Calibrator	219.1	228.9	api

CSNG-FS SHOP CALIBRATION

Tool Name:

CSNG - 11439728

Engineer:

J. CABANZO

Software Version:

WL INSITE R6.4.10 (Build 2)

Source SN:

TB-768

Reference Calibration Date:

24-Jun-21 12:36:42

Calibration Date:

09-Sep-21 11:20:02

Calibration Version:

1

TITANIUM CASE	Measured	Calibrated	Units
60 KEV Peak Channel #	48.0	48.0	Channel #
239 KEV Peak Channel #	23.5	23.4	Channel #
583 KEV Peak Channel #	52.6	52.4	Channel #
2614 KEV Peak Channel #	215.8	214.7	Channel #
Calibrate Temperature	109.2	94.0	degF

Pass/Fail Summary	Centroid
239 KEV Peak	Passed
583 KEV Peak	Passed
2614 KEV Peak	Passed

Blanket Reference Value: 203.00 API

Calibrator Value: 230.6 API

	Counts	Units	Measured	Calibrated	Units
Thorium Blanket	1238.0	CPS	247.2	246.1	API
Background	78.3	CPS	16.7	15.6	API

Gamma Ray Gain: 1.00

Expected Gain Range: 0.85 - 1.15

Gamma Gain Check: Passed

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:

DSNT - 11020487

Engineer:

J. CABANZO

Software Version:

WL INSITE R6.4.10 (Build 2)

Reference Calibration Date:

03-Aug-21 12:59:36

Calibration Date:

03-Aug-21 13:35:41

Calibration Version:

1

Logging Source S/N: DSN-416

Tank Serial Number: 10585331

Reference value assigned to Tank: 54.090

Snow Block S/N: 7665

Calibration Tank Water Temperature: 84 degF

Min. Tool Housing Outside Diameter: 3.625 in

Measurement	Prev. Value	New Value	Control Limit On New Value
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Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.99081	0.99525	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):	0.2231	0.2244	0.0014	+/- 0.0020
Calibrated Ratio:	10.1361	10.1815	0.045	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0816	0.02000 - 0.09000

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

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	SDLT - 12153520	Reference Calibration Date:	03-Aug-21 14:35:17
Engineer:	J. CABANZO	Calibration Date:	03-Aug-21 14:40:10
Software Version:	WL INSITE R6.4.10 (Build 2)	Calibration Version:	1
Host Tool Name:	DSNT - 11020487		

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-5081.34	-5192.41	-7000.00 - -1000.00
Pad Gain	0.0003760	0.0003775	0.0002000 - 0.0006000
Arm Offset	-4464.88	-4614.21	-5000.00 - 3000.00
Arm Gain	0.0004777	0.0005064	0.000300 - 0.000700
Arm Power	-0.000002220	-0.000004262	-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)	2.03	2.00	-0.03	+/- 0.20
Medium Ring (in)	3.78	3.75	-0.03	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.53	6.50	-0.03	+/- 0.20
Medium Ring (in)	8.21	8.25	0.04	+/- 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

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name:	SDLT Pad - 10844781	Reference Calibration Date:	29-Jun-21 18:22:30
Engineer:	1 CABANZO	Calibration Date:	03-Aug-21 14:03:22

Logging Source S/N: 5262GW

Aluminum Block S/N: 10585329

Density: 2.595g/cc

Pe: 3.270

Magnesium Block S/N: 10585330

Density: 1.679g/cc

Pe: 2.580

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0238	1.0460	0.90 - 1.10
Near Dens Gain	1.0077	1.0219	0.90 - 1.10
Near Peak Gain	1.0106	1.0251	0.90 - 1.10
Near Lith Gain	1.0041	1.0041	0.90 - 1.10
Far Bar Gain	1.0111	1.0127	0.90 - 1.10
Far Dens Gain	0.9953	0.9956	0.90 - 1.10
Far Peak Gain	0.9927	0.9900	0.90 - 1.10
Far Lith Gain	0.9613	0.9605	0.90 - 1.10
Near Bar Offset	0.0135	-0.1841	NONE
Near Dens Offset	0.1292	0.0074	NONE
Near Peak Offset	0.0812	-0.0321	NONE
Near Lith Offset	0.1136	0.1205	NONE
Far Bar Offset	0.0778	0.0676	NONE
Far Dens Offset	0.1914	0.1916	NONE
Far Peak Offset	0.1649	0.1899	NONE
Far Lith Offset	0.3417	0.3536	NONE
Near Bar Background	795.74	795.86	700 - 1450
Near Dens Background	260.50	260.85	230 - 480
Near Peak Background	113.74	114.15	100 - 210
Near Lith Background	140.12	139.40	125 - 260
Far Bar Background	626.80	626.03	450 - 900
Far Dens Background	245.95	247.40	175 - 345
Far Peak Background	98.10	97.90	70 - 140
Far Lith Background	100.66	101.20	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.674	1.679	0.005	+/- 0.015
Pe	2.557	2.549	-0.008	+/- 0.150
ALUMINUM				
Density (g/cc)	2.595	2.595	0.001	+/- 0.01500
Pe	3.255	3.224	-0.031	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0002	+/- 0.0110	-0.0026	+/- 0.0140
Magnesium Block	-0.0015	+/- 0.0110	-0.0019	+/- 0.0140
Aluminum Block	-0.0003	+/- 0.0110	0.0004	+/- 0.0140
Resolution	9.60	6.00 - 11.50	8.79	6.00 - 11.50
Internal Verifier(B+D+P+L)	1310	1200 - 2700	1073	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

MICRO LOG SHOP CALIBRATION			
Tool Name:	Microlog Pad - 12153520	Reference Calibration Date:	11-Oct-21 12:31:37
Engineer:	MOHAMED ABUELGASIM	Calibration Date:	11-Oct-21 12:34:27
Software Version:	WL INSITE R6.4.5 (Build 6)	Calibration Version:	1
Host Tool Name:	DSNT - 11020487		

	CALIBRATION COEFFICIENT SUMMARY					
	Measurement	Micro Log Normal		Micro Log Lateral		
		Measured	Calibrated	Measured	Calibrated	Units
	Tool Zero	0.14	0.13	0.21	0.21	ohmm
	Calibration Point #1	0.20	0.20	0.20	0.20	ohmm
	Calibration Point #2	20.01	20.00	20.01	20.00	ohmm
	Internal Reference	19.93	19.92	20.00	19.99	ohmm
	Measurement	Micro Log Normal Tool Value		Micro Log Lateral Tool Value		Units
	Tool Zero	0.10		0.03		V
	Calibration Point #1	17.70		-2.21		V
	Calibration Point #2	5280.13		6909.98		V
	Internal Reference	5258.73		6905.76		V

BSAT FIELD CASING CHECK			
Tool Name:	BSAT - 10747681	Calibration Date:	19-Oct-21 02:33:00
Engineer:	J. CABANZO		
Software Version:	WL INSITE R6.4.5 (Build 6)	Calibration Version:	1

	Pre-Log Check	Check Depth	Shop	Field	Difference	Tolerance	Units
	Delta-T Compensated	208.29	57.00	56.30	0.7000	1.00	uspf

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION			
Tool Name:	ACRt Sonde - 10988480	Reference Calibration Date:	14-Jan-19 12:17:20
Engineer:	M. GALLION	Calibration Date:	22-May-19 15:06:26
Software Version:	WL INSITE R6.2.0 (Build 2)	Calibration Version:	1
Host Tool Name:	ACRt Instrument - 10988483		

TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0108	1.05	0.95	1.0164	1.05	0.95	1.0163	1.05
A2 (50")	0.95	1.0117	1.05	0.95	1.0158	1.05	0.95	1.0128	1.05
A3 (29")	0.95	0.9946	1.05	0.95	0.9978	1.05	0.95	0.9983	1.05
A4 (17")	0.95	1.0070	1.05	0.95	1.0072	1.05	0.95	1.0063	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0004	1.05	0.95	1.0007	1.05

A5 (10")	N/A	N/A	N/A	0.95	1.0234	1.05	0.95	1.0237	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9963	1.05	0.95	0.9974	1.05
SONDE OFFSET									
Subarray	R12KHz			R36KHz			R72KHz		
	(mmho/m)			(mmho/m)			(mmho/m)		
A1 (80")	-1.417			-4.315			-4.952		
A2 (50")	-1.611			-3.564			-4.711		
A3 (29")	-13.519			-6.052			-7.658		
A4 (17")	-111.866			-38.850			-32.228		
A5 (10")	N/A			-109.359			-51.927		
A6 (6")	N/A			319.032			155.329		
TRANSMITTER CURRENT GAIN						R-MUD VERIFICATION			
Signal	Lower	R	Upper			Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K	0.6	0.88	1.3			Mud Cell	0.95	1.00	1.05
36K	1.0	1.25	2.0						
72K	1.0	1.38	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 - 10988480					Reference Calibration Date:	22-May-19 15:08:14		
Engineer:	M. GALLION					Calibration Date:	22-May-19 15:09:40		
Software Version:	WL INSITE R6.2.0 (Build 2)					Calibration Version:	1		
Host Tool Name:	ACRt Instrument - 10988483								

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	-0.007	> -0.500	Pass
A2 (50")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.006	> -0.500	Pass
A3 (29")	-0.000	< 0.500	Pass	-0.002	> -0.500	Pass	-0.009	> -0.500	Pass
A4 (17")	-0.003	> -0.500	Pass	-0.010	> -0.500	Pass	-0.036	> -0.500	Pass
A5 (10")	-0.014	> -0.500	Pass	-0.027	> -0.500	Pass	-0.054	> -0.500	Pass
A6 (6")	0.016	< 0.500	Pass	0.069	< 0.500	Pass	0.147	< 0.500	Pass

GAIN TOLERANCE					
R12KHz					
	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-185366416.000	-185365728.000	688.000	9268286.400	Pass
A2 (50")	-182265712.000	-182268160.000	2448.000	9113408.000	Pass
A3 (29")	-176355456.000	-176354320.000	1136.000	8817716.000	Pass
A4 (17")	-177443808.000	-177438128.000	5680.000	8871906.400	Pass
A5 (10")	-180851408.000	-180850816.000	592.000	9042540.800	Pass
A6 (6")	-175512912.000	-175509616.000	3296.000	8775480.800	Pass
R36KHz					
	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-38495532.000	-38528856.000	33324.000	1926442.800	Pass
A2 (50")	-43426696.000	-43456852.000	30156.000	2172842.600	Pass
A3 (29")	-52660412.000	-52691424.000	31012.000	2634571.200	Pass
A4 (17")	-53805328.000	-53840884.000	35556.000	2692044.200	Pass
A5 (10")	-48115300.000	-48149004.000	33704.000	2407450.200	Pass
A6 (6")	-54292692.000	-54326992.000	34300.000	2716349.600	Pass
R72KHz					
	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-65649960.000	-65621576.000	28384.000	3281078.800	Pass
A2 (50")	-60388720.000	-60361644.000	27076.000	3018082.200	Pass
A3 (29")	-55167488.000	-55140856.000	26632.000	2757042.800	Pass
A4 (17")	-51080396.000	-51049796.000	30600.000	2552489.800	Pass
A5 (10")	-57589748.000	-57564480.000	25268.000	2878224.000	Pass
A6 (6")	-50763624.000	-50735984.000	27640.000	2536799.200	Pass
PASS/FAIL SUMMARY					
Std Deviation Verification				Pass	
Average Verification				Pass	
Gain Tolerance Verification				Pass	

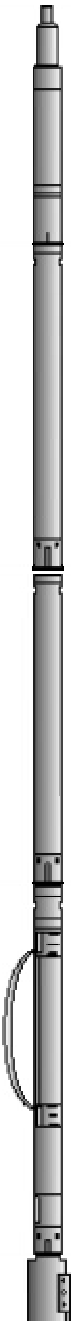
CALIBRATION SUMMARY						
Sensor	Shop	Field	Post	Difference	Tolerance	Units
Depth Panel-12345678						
Tension Zero	0.00	-----	-----	0.00	-----	lbs
Tension Cal	7830.00	-----	-----	0.00	-----	lbs
RWCH-12198524						
DH Tension Zero	0.00	-----	-----	0.00	-----	lbs
DH Tension Cal	2010.00	-----	-----	0.00	-----	lbs
GTET-11958947						
Gamma Ray Calibrator	228.9	-----	-----	0.0	+/- 9.00	api
CSNG-11439728						
60 KEV Peak Channel #	48.0	-----	-----	0.0	-----	Channel #
239 KEV Peak Channel #	23.4	-----	-----	0.0	-----	Channel #
583 KEV Peak Channel #	52.4	-----	-----	0.0	-----	Channel #
2614 KEV Peak Channel #	214.7	-----	-----	0.0	-----	Channel #
DSNT-11020487						
Snow-Block Porosity	0.0816	-----	-----	0.0000	+/- -.-	decp

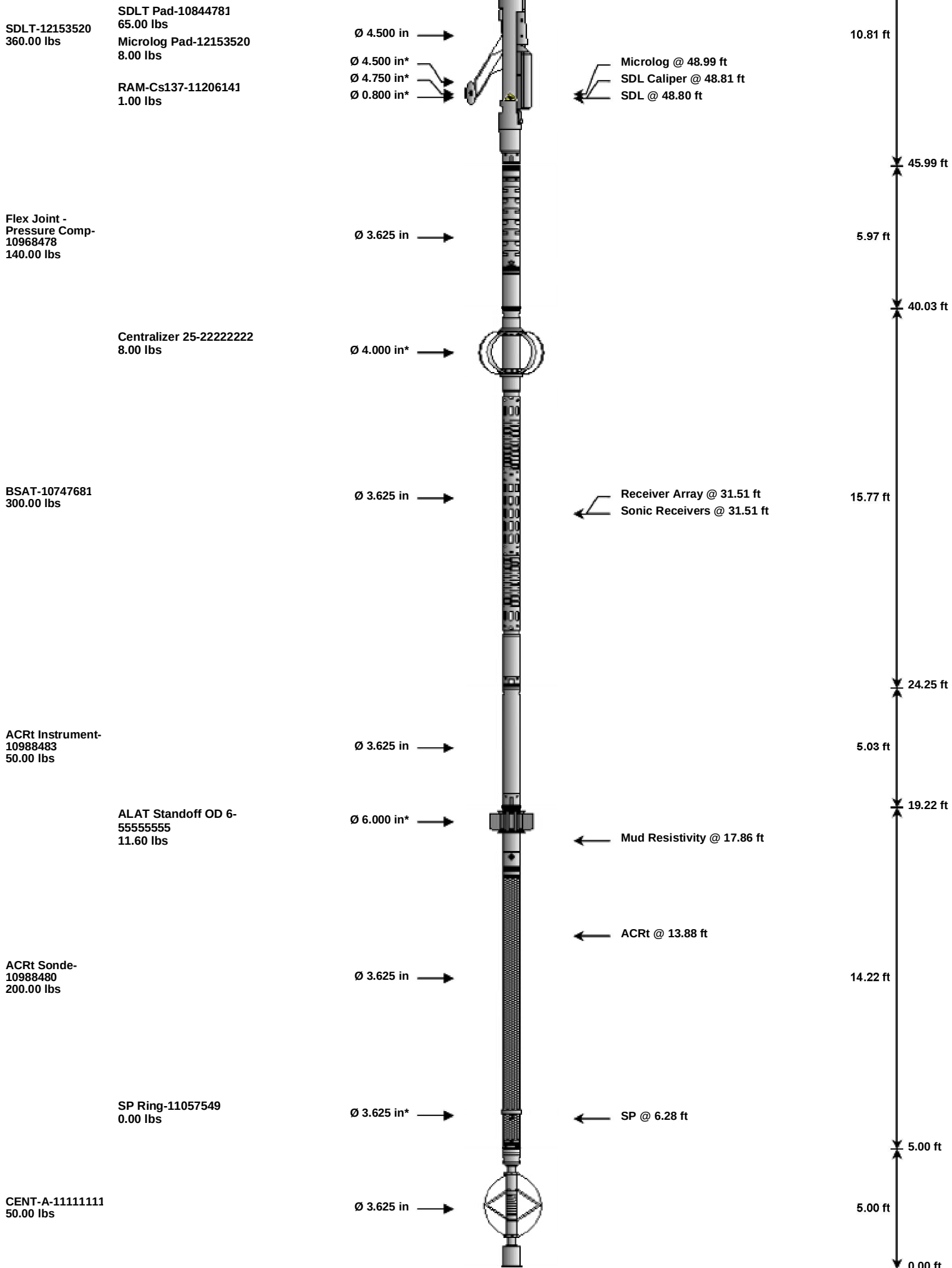
SDLT-12153520

Pad Extension	3.75	-----	-----	0.00	+/-0.20	in
Ring Diameter	8.25	-----	-----	0.00	+/-0.20	in
SDLT Pad-10844781						
Near(B+D+P+L)	1310.272	-----	-----	0.000	+/-12.822	cps
Far(B+D+P+L)	1072.528	-----	-----	0.000	+/-15.696	cps
Microlog Pad-12153520						
MicroLog Normal	19.92	-----	-----	0.00	-----	ohmm
MicroLog Lateral	19.99	-----	-----	0.00	-----	ohmm
ACRt Sonde-10988480						
Mud Cell	1.00	-----	-----	0	-----	ohm-m
Data: BK_OAK_STCKL_1610001 QUAD-BSAT-CSNG1007 19-Oct-21 03:30 Up @3365.3f						
Date: 19-Oct-21 04:00:19						

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-12198524 135.00 lbs	Weak Point 11000 lbs-00000001 0.01 lbs	Ø 2.310 in →		← Fishing Neck @ 88.55 ft		89.43 ft
		Ø 3.625 in →		← Load Cell @ 85.75 ft ← BH Temperature @ 85.18 ft	6.25 ft	
		Ø 0.010 in* →		← Z-Accelerometer @ 82.73 ft		83.18 ft
GTET-11958947 165.00 lbs		Ø 3.625 in →		← GammaRay @ 77.12 ft	8.52 ft	
						74.66 ft
CSNG-11439728 114.00 lbs		Ø 3.625 in →		← CSNG @ 69.03 ft	8.17 ft	
						66.49 ft
DSNT-11020487 174.00 lbs	DSN Decentralizer-11111111 6.60 lbs	Ø 5.000 in* → Ø 3.625 in →		← DSN Far @ 59.56 ft ← DSN Near @ 58.81 ft	9.69 ft	
						56.81 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	12198524	135.00	6.25	83.18	300.00
WP11K	Weak Point 11000 lbs	00000001	0.01	0.01	* 83.98	300.00
GTET	Gamma Telemetry Tool	11958947	165.00	8.52	74.66	60.00
CSNG	Compensated Spectral Natural Gamma	11439728	114.00	8.17	66.49	15.00
DSNT	Dual Spaced Neutron	11020487	174.00	9.69	56.81	60.00
DCNT	DSN Decentralizer	11111111	6.60	5.13	* 60.14	300.00
SDLT	Spectral Density Tool	12153520	360.00	10.81	45.99	60.00
SDLP	Density Insite Pad	10844781	65.00	2.55	* 48.20	60.00
Cs137	Logging Source, SDLT-I, 1.78 Ci - Cs137	11206141	1.00	0.80	* 48.43	300.00
MICP	Microlog Pad	12153520	8.00	1.00	* 48.49	60.00
FLEX	Flex Joint - Pressure Compensated	10968478	140.00	5.97	40.03	300.00
BSAT	Borehole Sonic Array Tool	10747681	300.00	15.77	24.25	60.00
OBCEN	Centralizer - 25 in. Overbody	22222222	8.00	2.08	* 37.15	300.00
ACRt	Array Compensated True Resistivity Instrument Section	10988483	50.00	5.03	19.22	120.00
ACRt	Array Compensated True Resistivity Sonde Section	10988480	200.00	14.22	5.00	120.00
SP	SP Ring	11057549	0.00	0.25	* 6.28	300.00
ALATS	Array Laterolog Tool OD 6 Standoff	55555555	11.60	1.00	* 18.13	60.00
CENT-A	Inline Centralizer	11111111	50.00	5.00	0.00	300.00
Total			1,788.21	89.43		
* Not included in Total Length and Length Accumulation.						
Data: BK_OAK_STCKL_16\0001 QUAD-BSAT-CSNG\IDLE						
Date: 19-Oct-21 04:17:23						

HALLIBURTON DEPTH SUMMARY REPORT			
Depth Measuring System			
Depth Panel Type:	WSDP 3.13	Software Version:	MAR 20 2019 13:30:00
		Serial Number:	1
Encoder 1 Enabled?:	Yes	Encoder 2 Enabled?:	Yes
Encoder 1 Correction Enabled?:	Yes	Encoder 2 Correction Enabled?:	Yes
Encoder 1 Correction Factor:	0.000 ft / 1000 ft	Encoder 2 Correction Factor:	0.000 ft / 1000 ft
Logging Cable Information			
Cable Type:	7H47RTZ-EHS		
Cable Weight:	392.00 lbsp1000ft	Stretch Coefficient:	0.061 ft/100ft/1000lb
Breaking Strength:	23,600 lbs	Cable Maximum Safe Pull:	11,800 lbs
Tool String Weight in Fluid:	1550.00 lbs	Mechanical Weakpoint:	11,000 lbs
Depth Control - Logging Up			
Conveyance:	Wireline		
Cable Stretch Correction Applied?	Standard	Magnetic Mark Correction Applied?	Yes
Corrected to:	Absolute Depth	Magnetic Mark Interval:	100 ft
Bottom Depth:	3,364.89 ft	Top Depth:	89.78 ft
Stretch Applied:	2.21 ft	Stretch Applied:	0.03 ft
Mark Information			
No FIRST MARK Found			
Deepest Mark found at:	3173.47 ft	Shallowest Mark found at:	171.40 ft
Tension at Mark Depth:	2948.3 lbs	Tension at Mark Depth:	1850.1 lbs
Stretch Applied at Mark Depth:	2.0 ft	Stretch Applied at Mark Depth:	0.1 ft
Data: BK_OAK_STCKL_16\0001 QUAD-BSAT-CSNG\007 19-Oct-21 03:30 Up @3365.3f			Date: 19-Oct-21 07:02:40

COMPANY	BLACK OAK EXPLORATION, LLC.
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WELL	STECKEL TRUST #1-16		
FIELD	WILDCAT		
COUNTY	RUSSELL	STATE	KS
HALLIBURTON		SPECTRAL DENSITY DUAL SPACED NEUTRON GAMMA RAY	