HALLIBURTON

DUAL SPACED NEUTRON SPECTRAL DENSITY LOG

COMPANY HERMAN L LOEB
WELL CANTON C #3-20
FIELD GLICK
COUNTY KIOWA
STATE KANSAS

COMPANY **HERMAN L LOEB**

WELL **CANTON C #3-20**

FIELD **GLICK**

COUNTY **KIOWA** STATE **KANSAS**

API No. 15-097-21724

Location SE-SE-NW-NW
1300' FNL & 1135' FWL

Other Services:
ACRT
MICROLOG

Permanent Datum	GL	Elev. 2038.0 ft	Elev.: K.B. 2049.0 ft
Log measured from	KB	, 11.0 ft above perm. Datum	D.F. 2049.0 ft
Drilling measured from	KB		G.L. 2038.0 ft

Date		08-May-12					
Run No.		ONE					
Depth - Driller		5180.00 ft					
Depth - Logger		5177.0 ft					
Bottom - Logged Interval		5175 ft					
Top - Logged Interval		565 ft					
Casing - Driller		8.625 in @ 568.0 ft		@		@	
Casing - Logger		565.0 ft					
Bit Size		7.785 in		@		@	
Type Fluid in Hole		WATER BASED MUD					
Density	Viscosity	9.3 ppg	56.00 s/qt				
PH	Fluid Loss	9.00 pH	9.0 cptm				
Source of Sample		FLOWLINE					
Rm @ Meas. Temperature		0.300 ohmm @ 75.00 degF		@		@	
Rmf @ Meas. Temperature		0.23 ohmm @ 75.00 degF		@		@	
Rmc @ Meas. Temperature		0.400 ohmm @ 75.00 degF		@		@	
Source Rmf	Rmc	CALC	CALC				
Rm @ BHT		0.21 ohmm @ 111.0 degF		@		@	
Time Since Circulation		8.0 hr					
Time on Bottom		08-May-12 19:53					
Max. Rec. Temperature		111.0 degF @ 5177.0 ft		@		@	
Equipment	Location	592	PV OK				
Recorded By		CORY HANSON		RAMIRO GONZALEZ			
Witnessed By		J. CHRISTENSEN					

Fold here

Service Ticket No.: 9499188 API Serial No.: 15-097-21724 PGM Version: WL INSITE R3.4.4 (Build 2)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

RESISTIVITY SCALE CHANGES

	Sample No.	Type Log	Depth	Scale Up Hole	Scale Down Hole
Date					
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 EQUIPMENT DATA

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

EQUIPMENT DATA

	GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.		Run No.	ONE	Run No.	ONE	
Serial No.	11013114	Serial No.		Serial No.	772	Serial No.	10993115	
Model No.	GTET	Model No.		Model No.	SDLT-I	Model No.	DSNT-I	
Diameter	3.625"	No. of Cent.		Diameter	4.5"	Diameter	3.625"	
Detector Model No.	GTET	Spacing		Log Type	GAM-GAM	Log Type	NEU-NEU	
Type	SCINT			Source Type	CS137	Source Type	AM241BE	
Length	8"	LSA [Y/N]		Serial No.	20791B	Serial No.	DSN382	
Distance to Source	10'	FWDA [Y/N]		Strength	1.5 CI	Strength	15 CI	

LOGGING DATA

GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
No.	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	5177	CSG	REC	0	150				30	-10	2.71	30	-10	LIME

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

Remarks: THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES

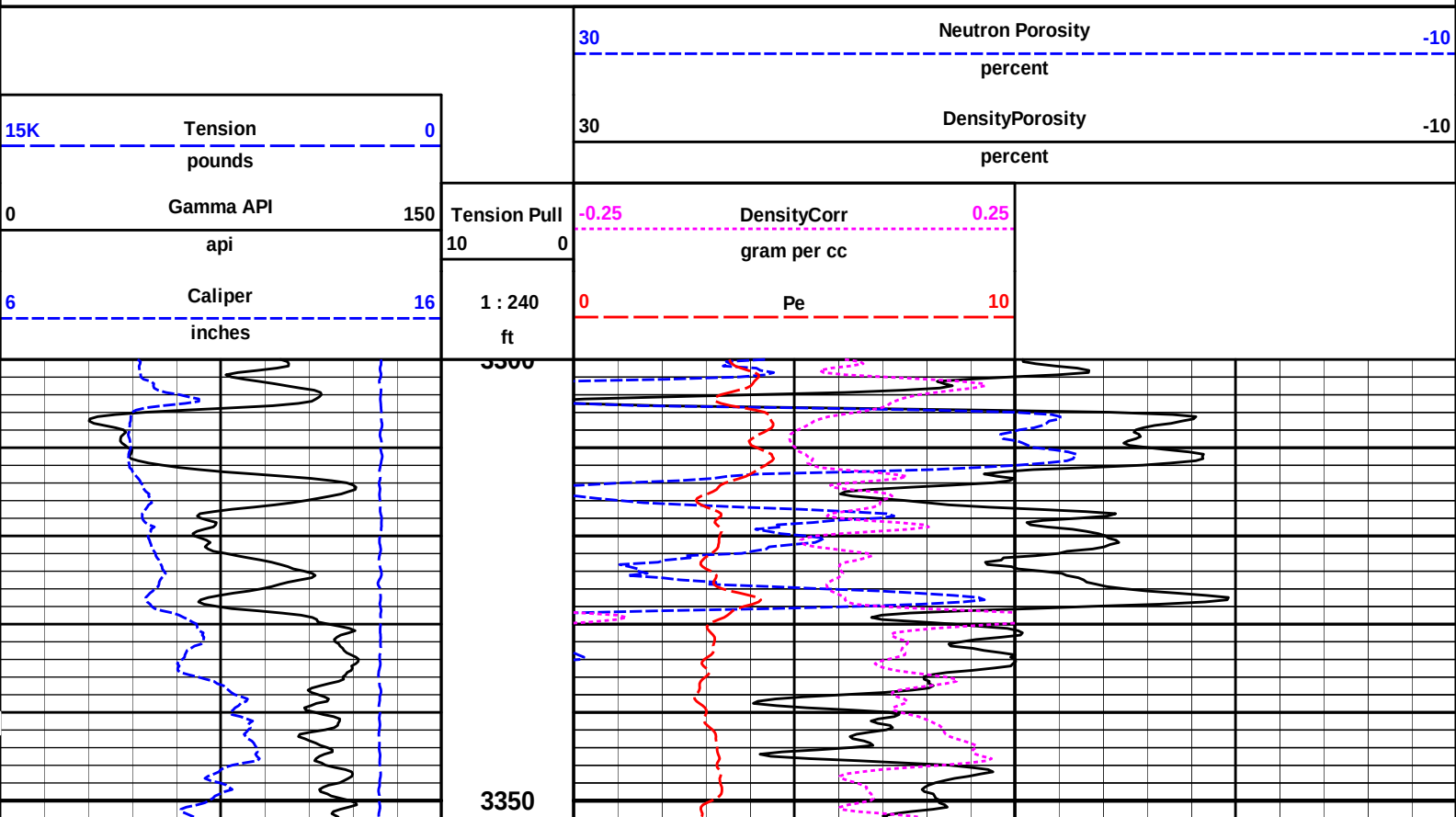
ANNULAR HOLE VOLUME CALCULATED USING 5.5-IN CASING

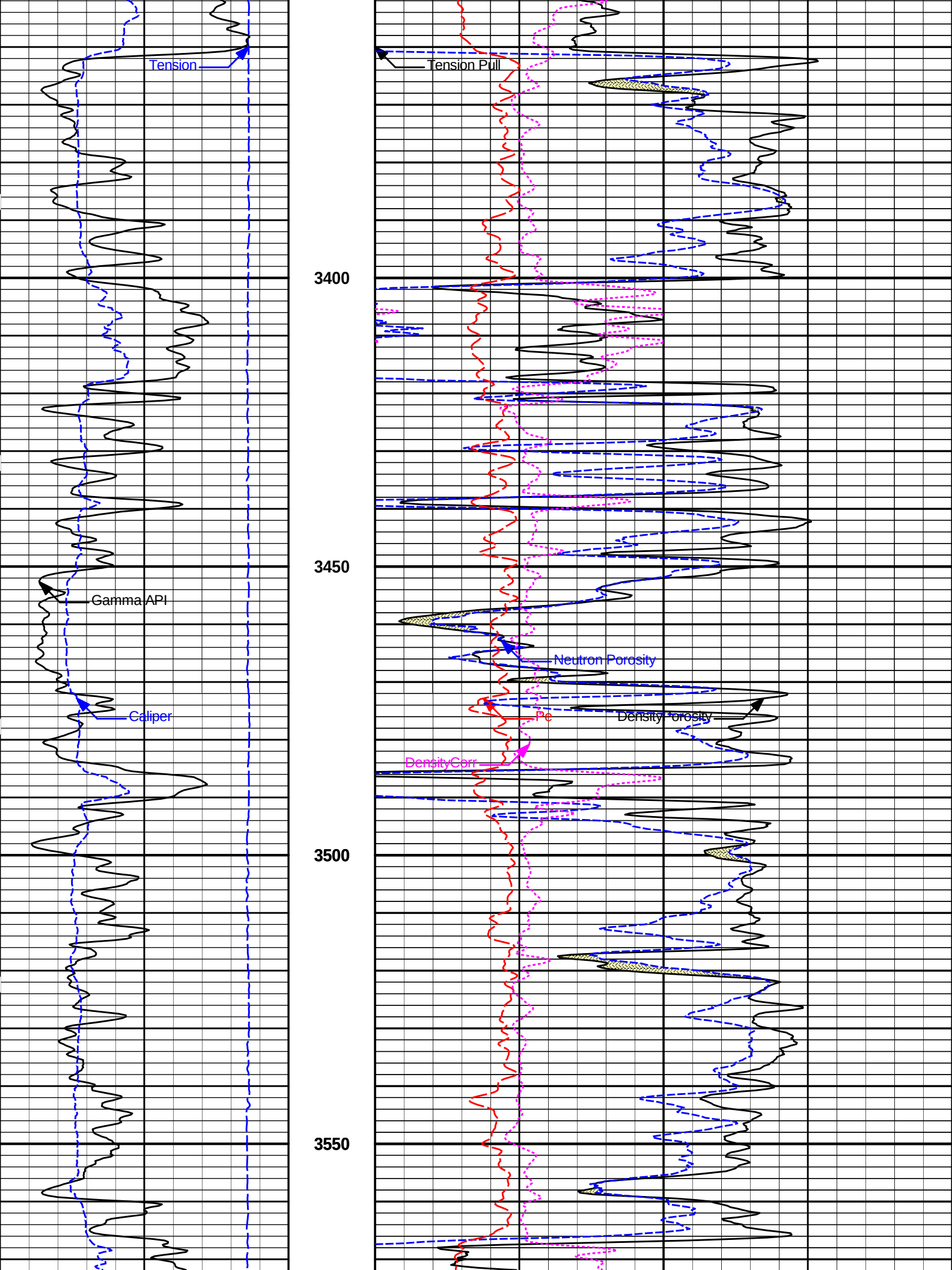
REPEAT SECTION RAN AT 3500' AT CUSTOMERS REQUEST

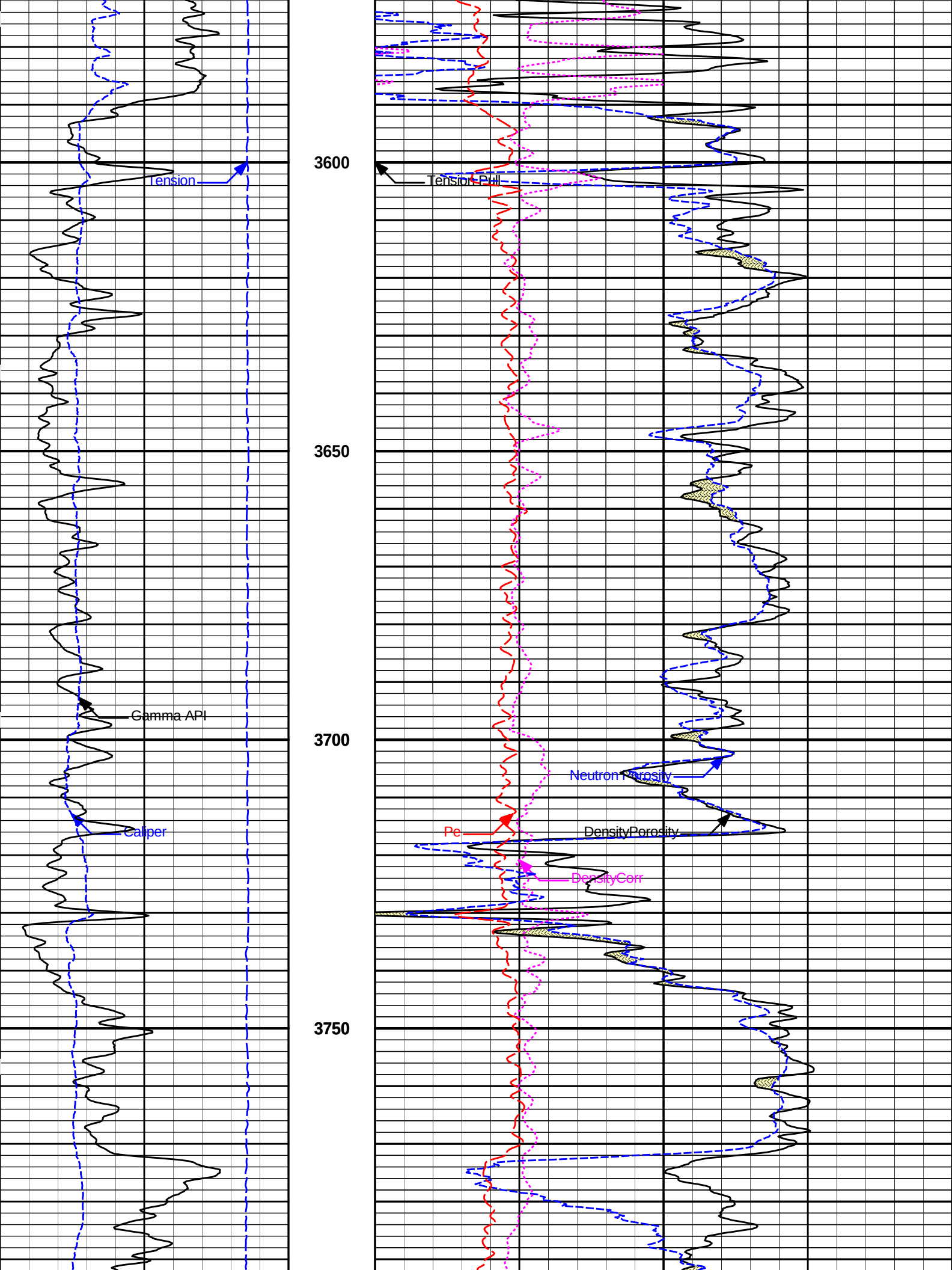
HALLIBURTON

Plot Time: 09-May-12 00:18:35
Plot Range: 3300 ft to 5179.5 ft
Data: CANTON_C_3_20\Well Based\POROSITY MAIN
Plot File: \\PORO\1_PoroMicro_5_mainx

5 INCH MAIN LOG




Tension
Tension Pull
3400
3450
Gamma API
Neutron Porosity
Caliper
Pe
Density Porosity
DensityCorr
3500
3550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Tension Pull
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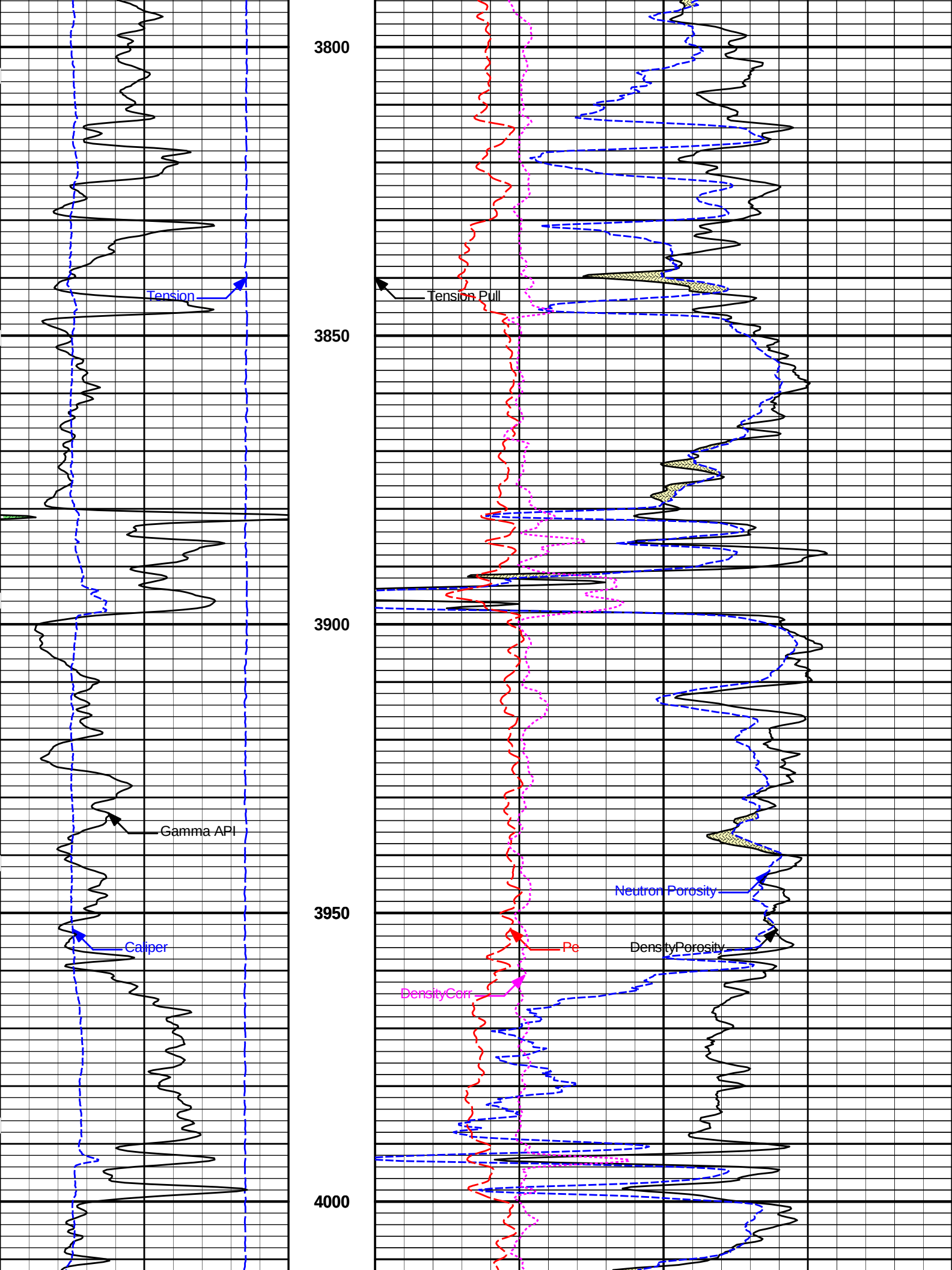
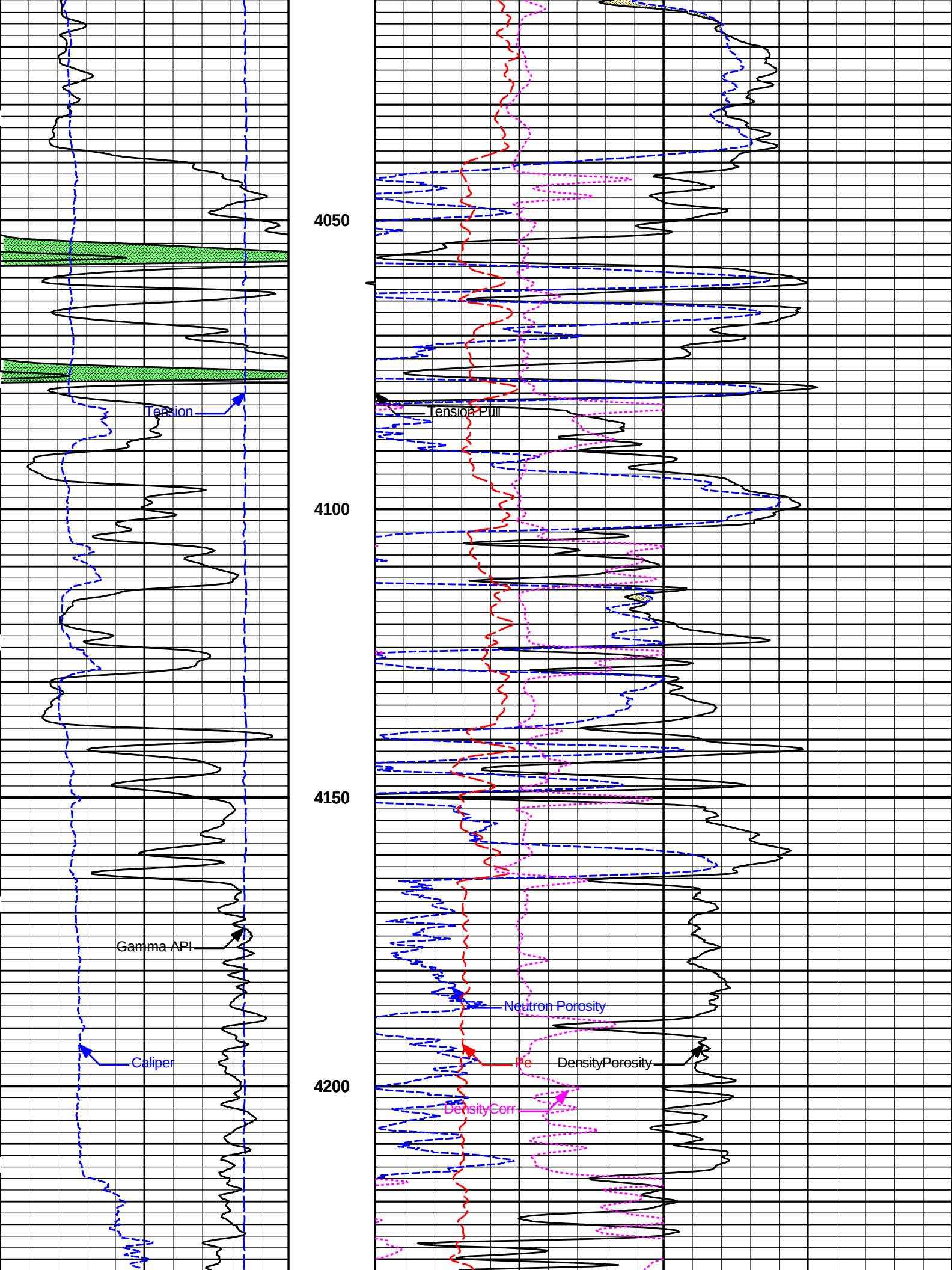
Gamma API
3700
Neutron Porosity
Caliper
Pe
DensityPorosity
DensityCorr
3750


3800
3850
3900
3950
4000
Tension
Tension Pull
Gamma API
Caliper
Neutron Porosity
Pe
DensityPorosity
DensityCorr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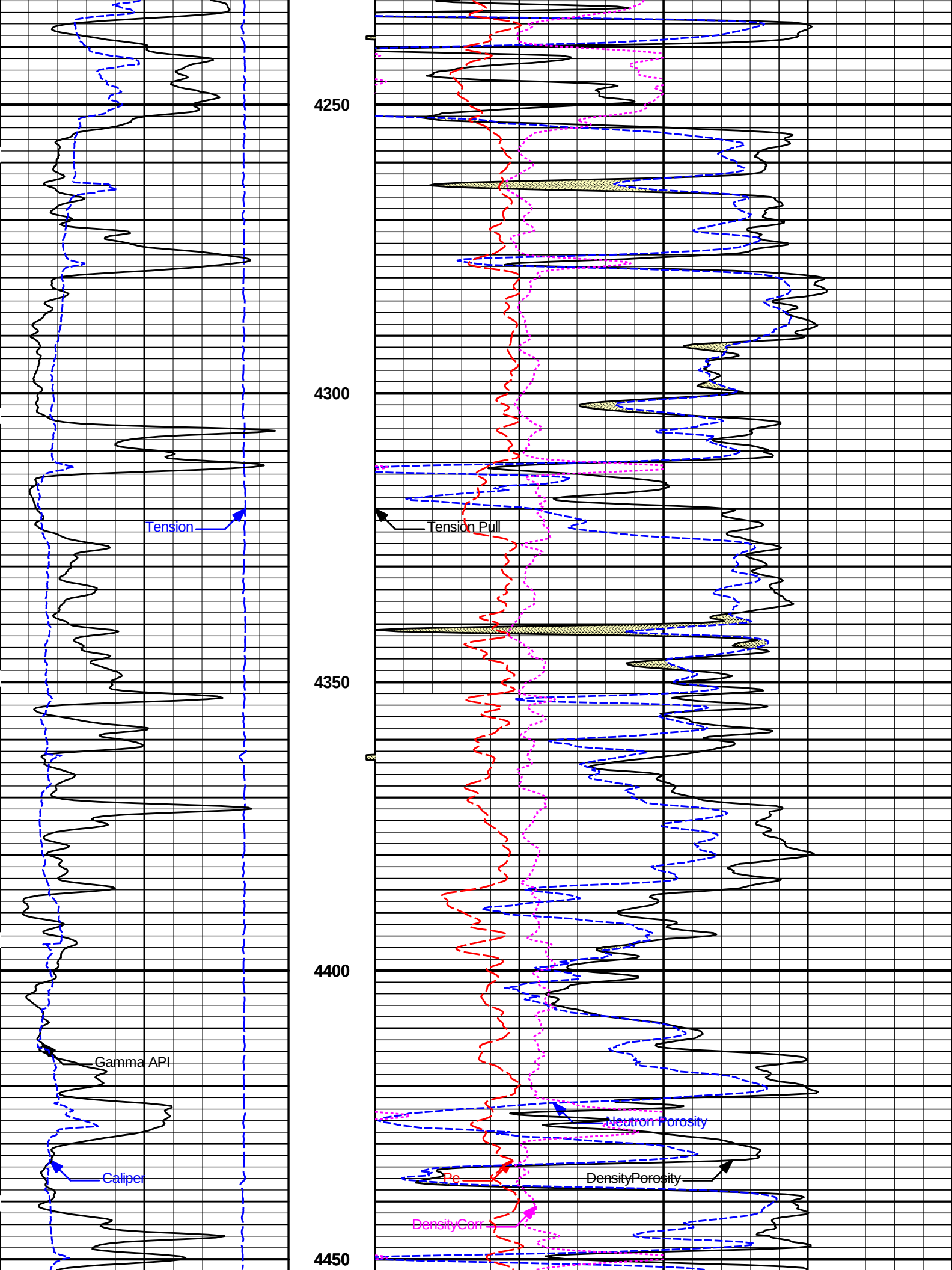
4100
4150
4200
Tension
Tension Pull
Gamma API
Caliper
Neutron Porosity
Pe
DensityPorosity
DensityCorr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4350
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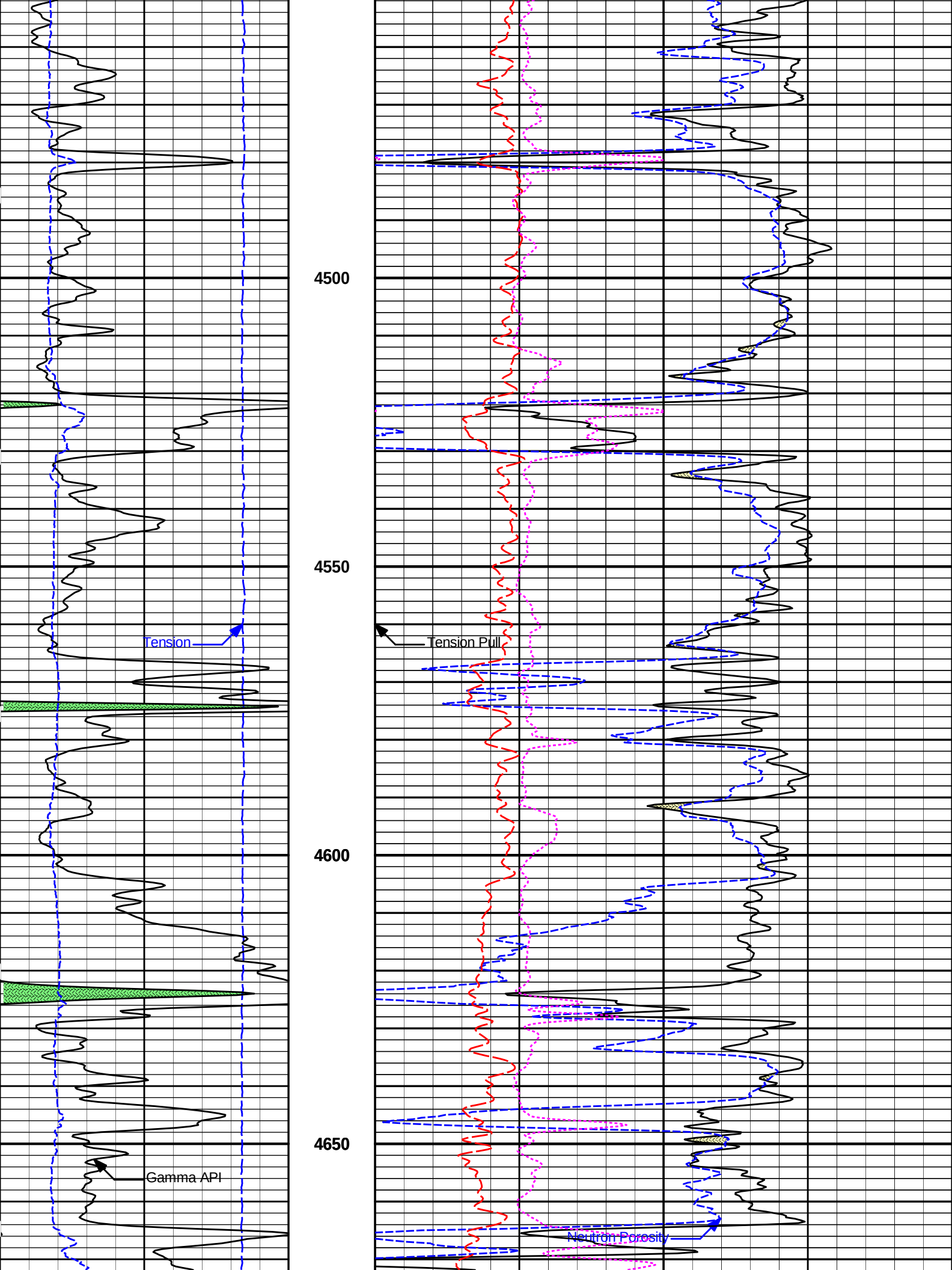
4450
Tension
Tension Pull
Gamma API
Caliper
Neutron Porosity
Pe
DensityPorosity
DensityCorr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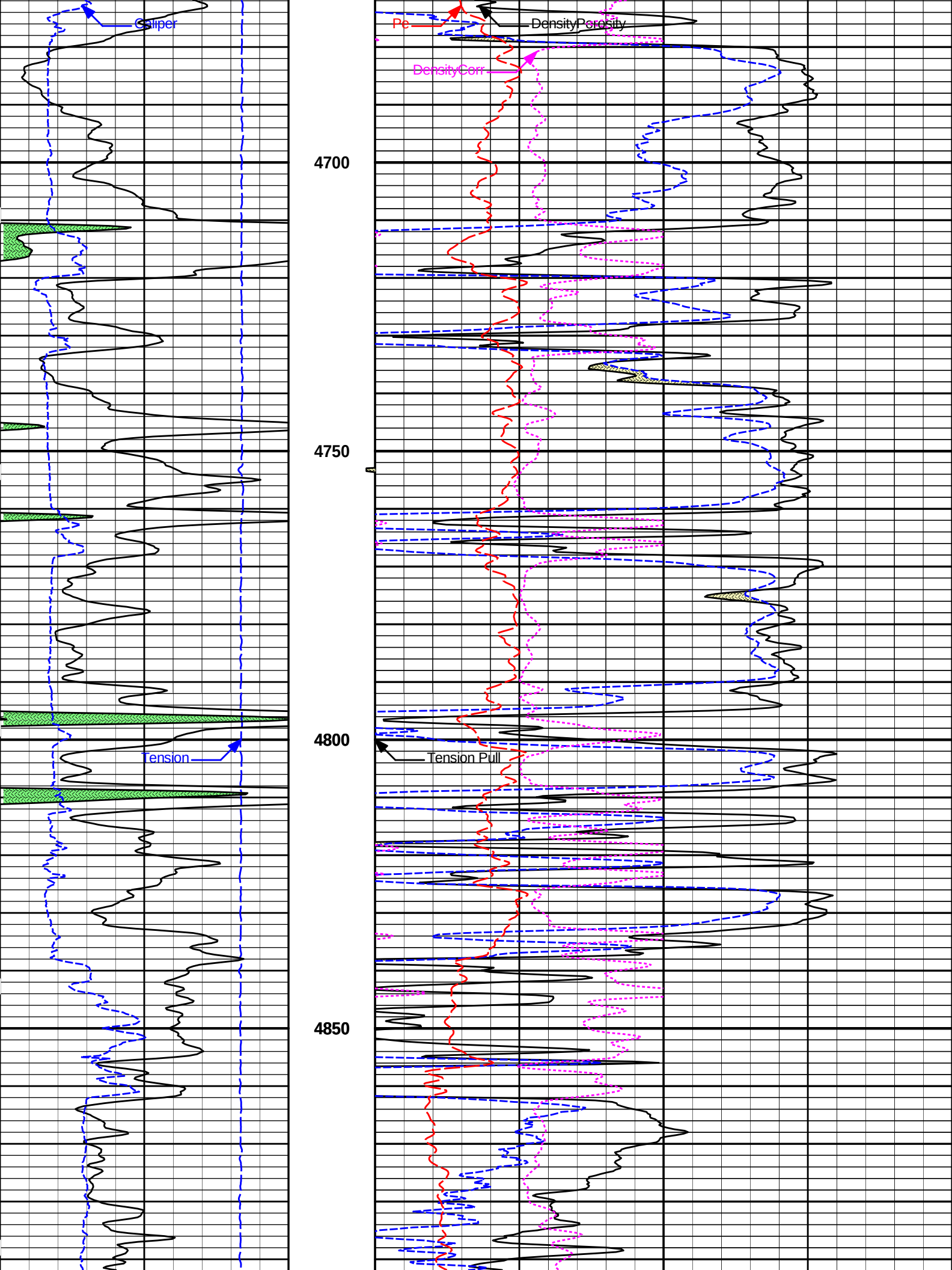
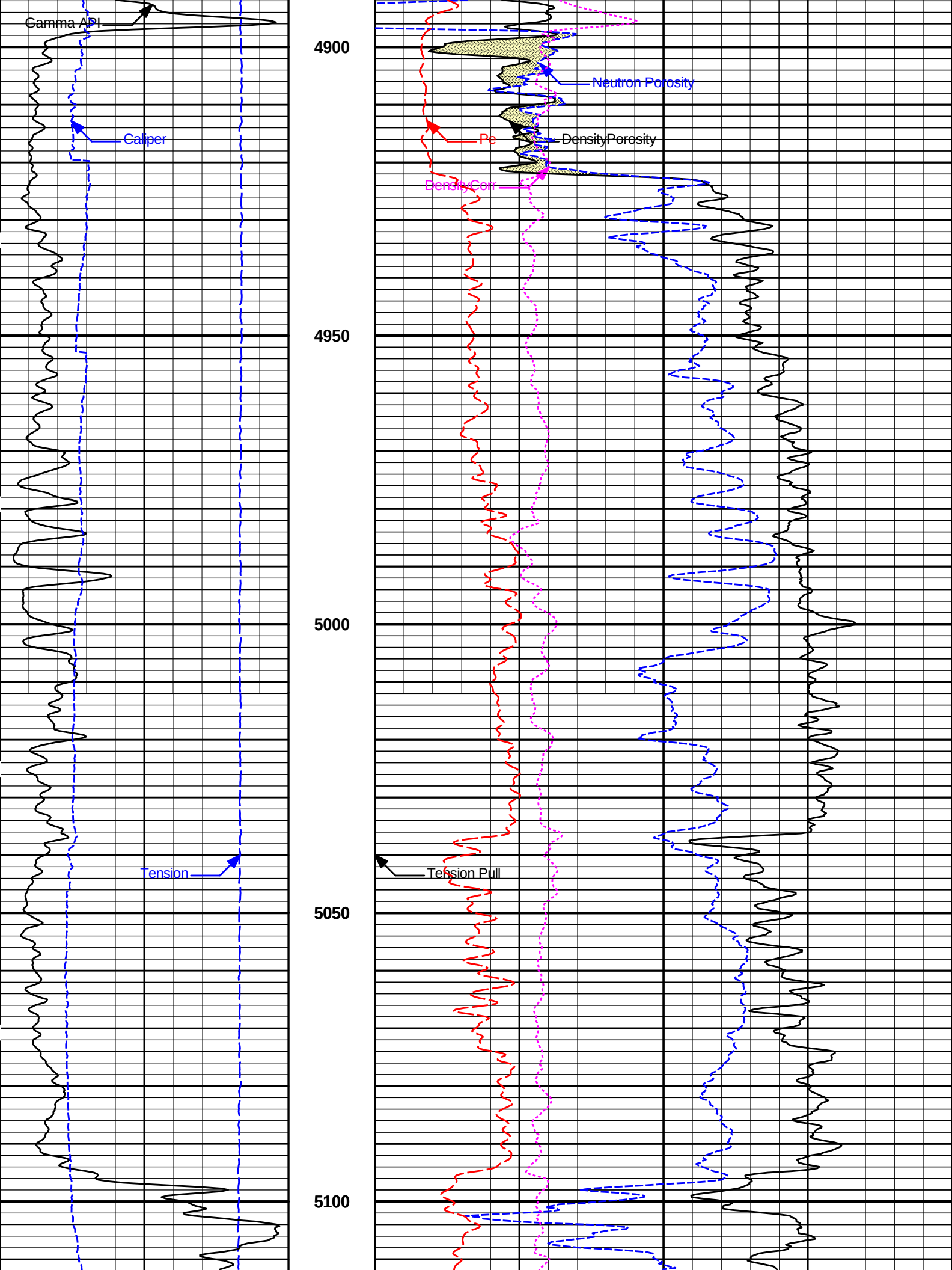
4550
4600
4650
Tension
Tension Pull
Gamma API
Neutron Porosity


Caliper
Pe
DensityPorosity
DensityCorr
4700
4750
4800
4850
Tension
Tension Pull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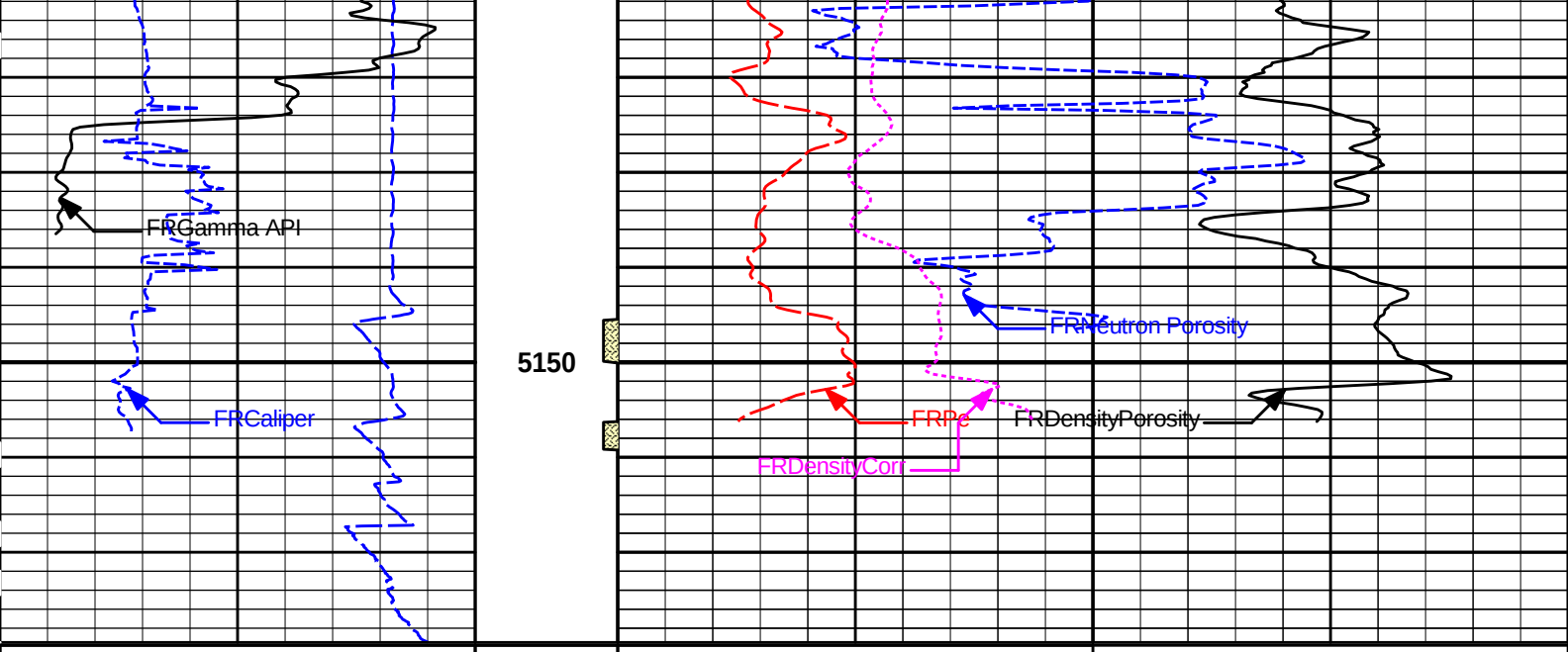
Caliper
Tension
4900
4950
5000
5050
5100
Neutron Porosity
Pe
DensityPorosity
DensityCorr
Tension Pull



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

HALLIBURTON

Plot Time: 09-May-12 00:18:47
Plot Range: 3300 ft to 5179.5 ft
Data: CANTON_C_3_20\Well Based\POROSITY MAIN\
Plot File: \\PORO\1_PoroMicro_5_mainx

5 INCH MAIN LOG

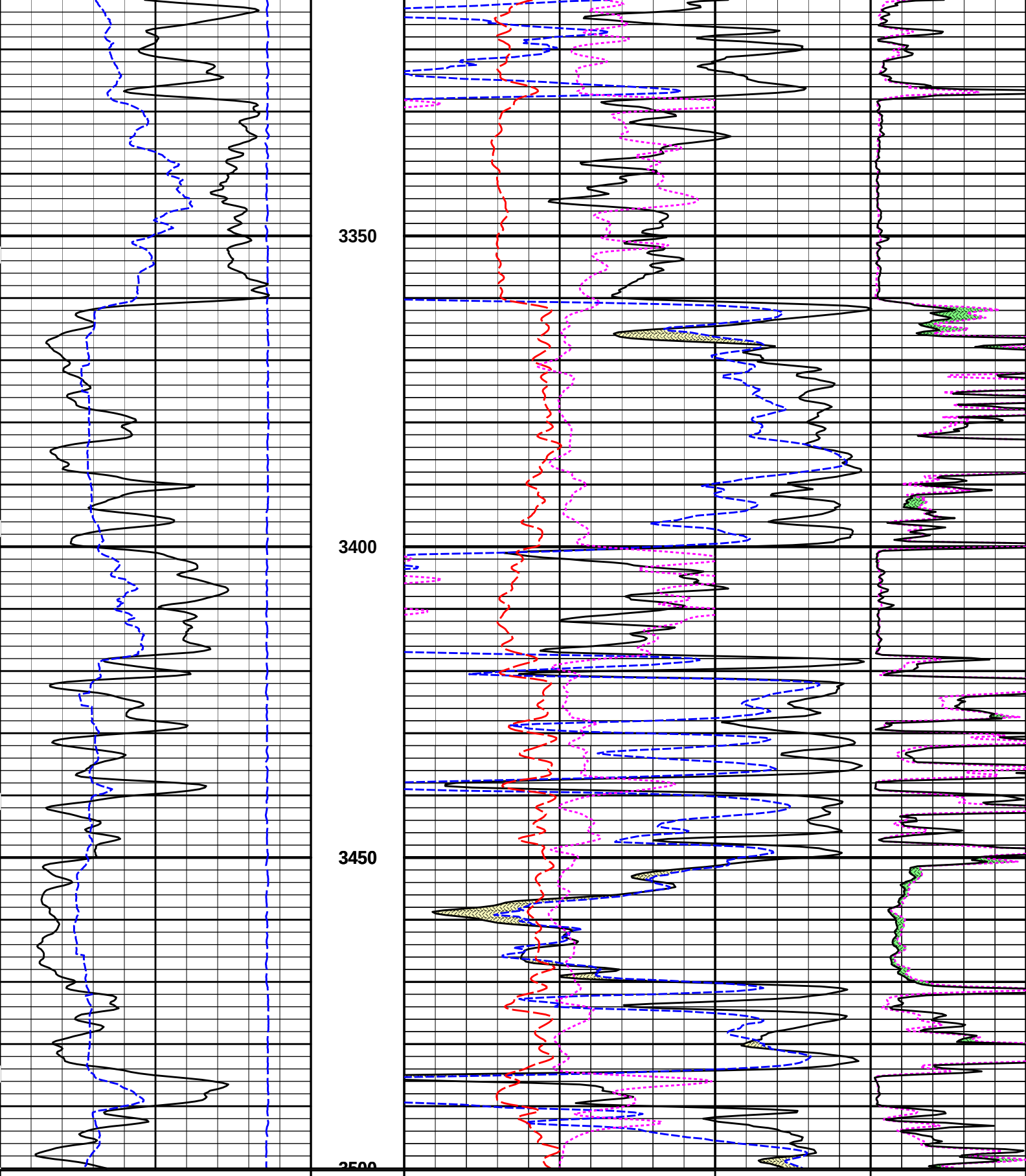
HALLIBURTON

Plot Time: 09-May-12 00:18:47
Plot Range: 3300 ft to 3500 ft
Data: CANTON_C_3_20\Well Based*\
Plot File: \\PORO\1_PoroMicro_5_rptx

REPEAT SECTION

		30 Neutron Porosity -10 percent	
15K Tension 0 pounds		30 DensityPorosity -10 percent	
0 Gamma API 150 api	Tension Pull 10 0	-0.25 DensityCorr 0.25 gram per cc	0 MicrologNormal 20 ohm-metre
6 Caliper 16 inches	1 : 240 ft	0 Pe 10	0 MicrologLateral 20 ohm-metre

3300



6 Caliper 16	1 : 240	0 Pe 10
inches	ft	
0 Gamma API 150	Tension Pull	-0.25 DensityCorr 0.25
api	10 0	gram per cc
15K Tension 0		30 DensityPorosity -10
pounds		percent

0 MicrologLateral 20
ohm-metre
0 MicrologNormal 20
ohm-metre

30 Neutron Porosity -10
percent

HALLIBURTON

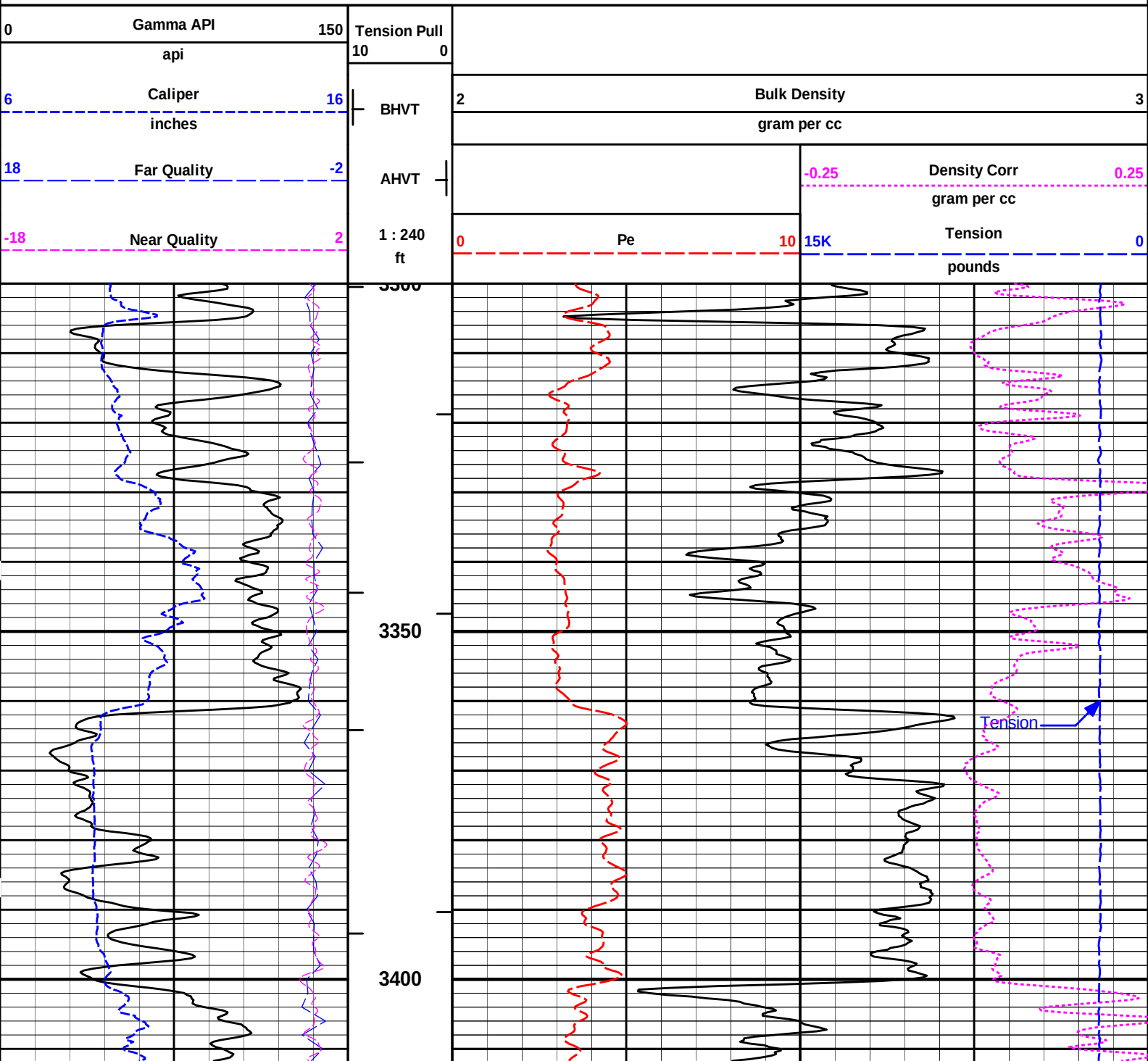
Plot Time: 09-May-12 00:18:52
Plot Range: 3300 ft to 3500 ft
Data: CANTON_C_3_20\Well Based*\
Plot File: \\PORO\1_PoroMicro_5_rptx

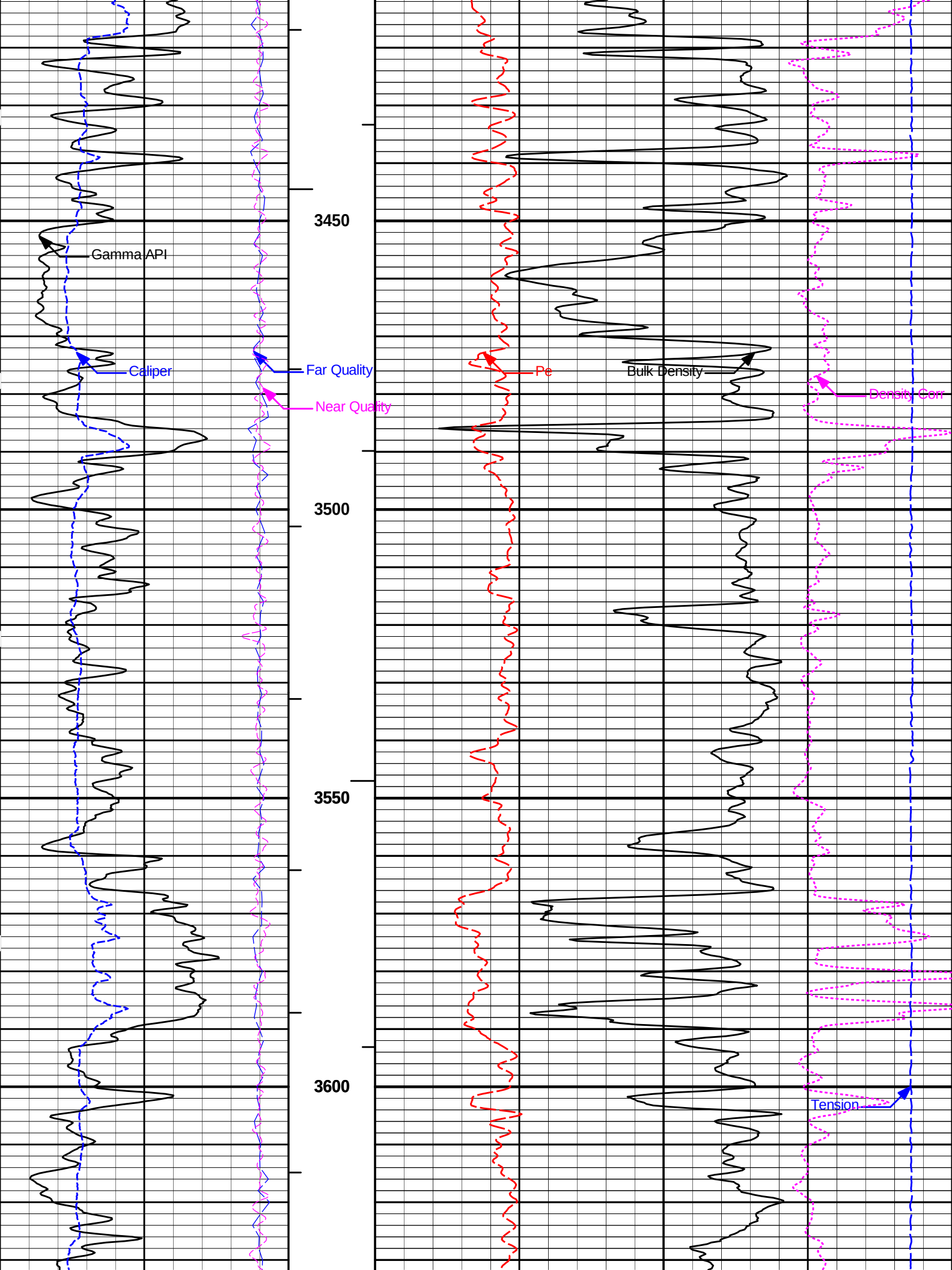
REPEAT SECTION

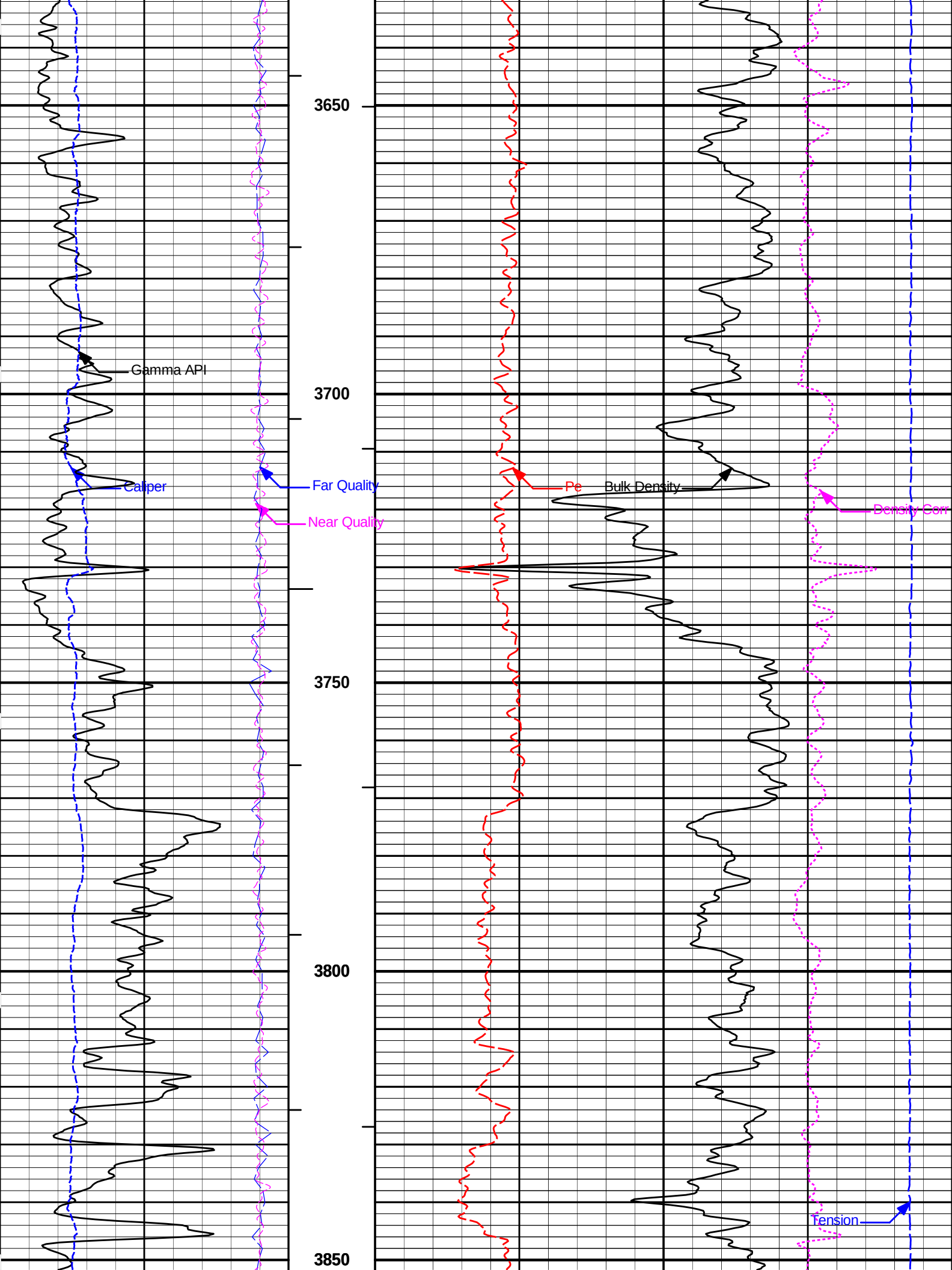
HALLIBURTON

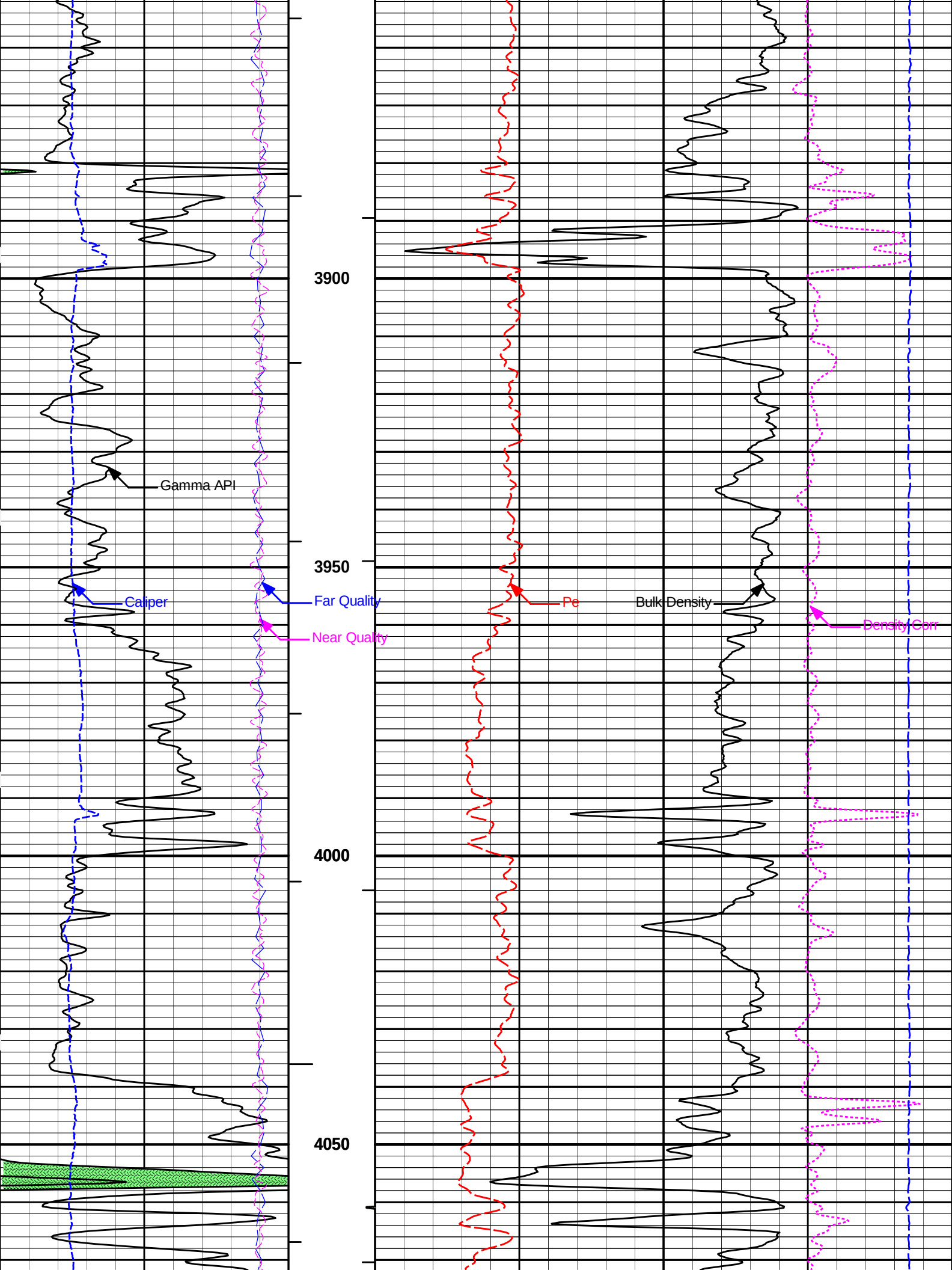
Plot Time: 09-May-12 00:18:53
Plot Range: 3300 ft to 5179.5 ft
Data: CANTON_C_3_20\Well Based\POROSITY MAIN\
Plot File: \\PORO\1_Bulk_5_mainx

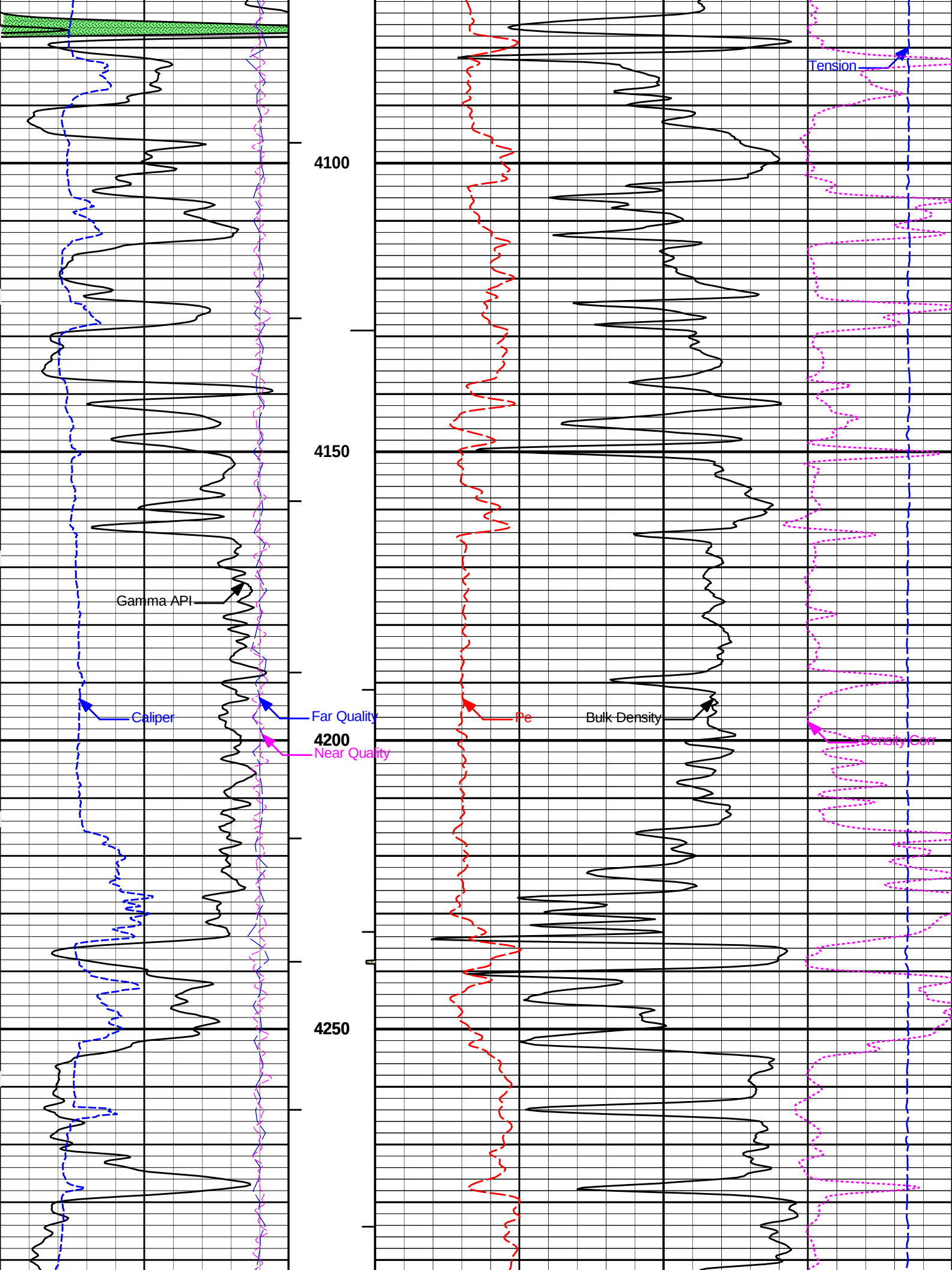
5 INCH MAIN LOG

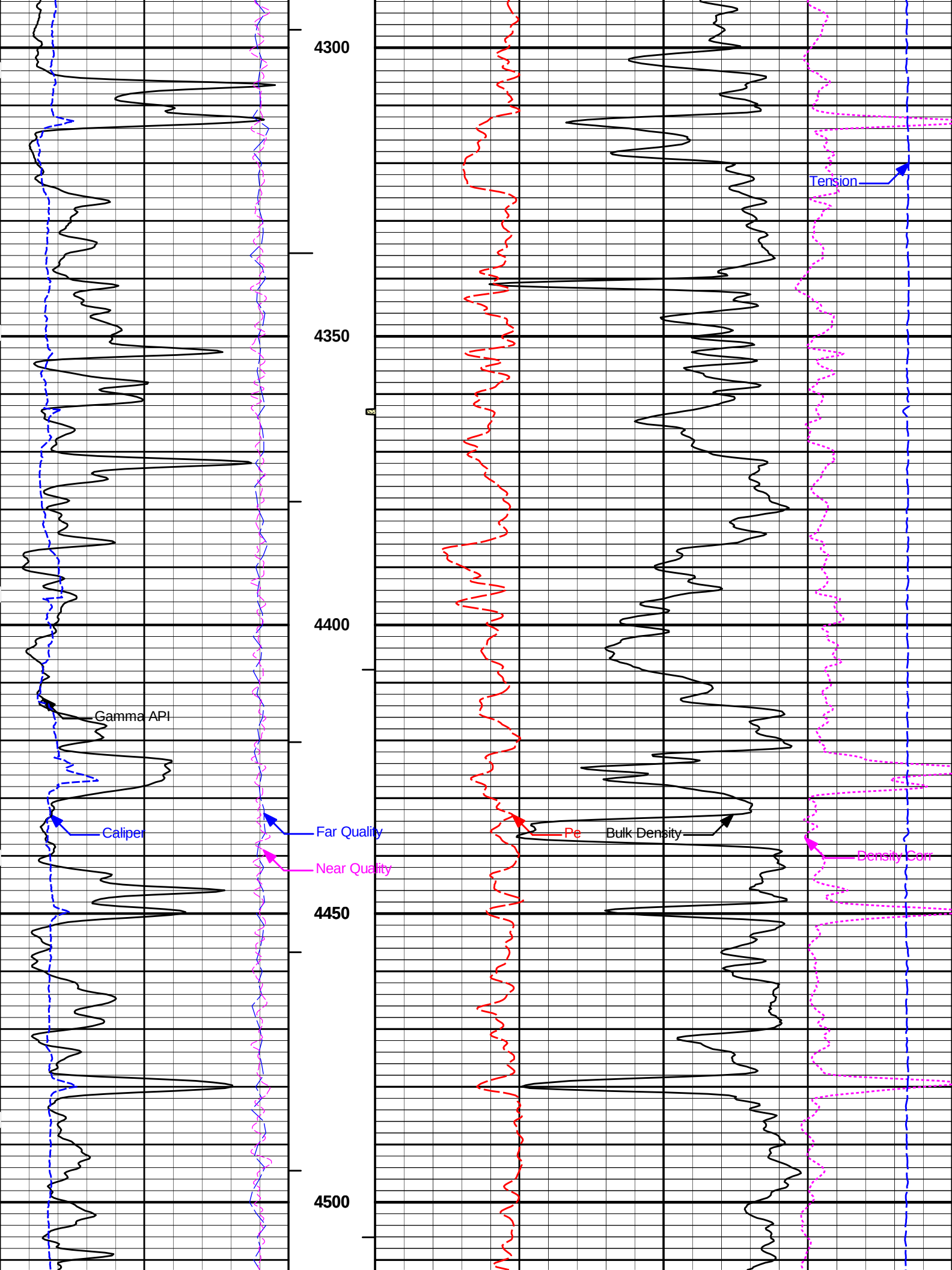


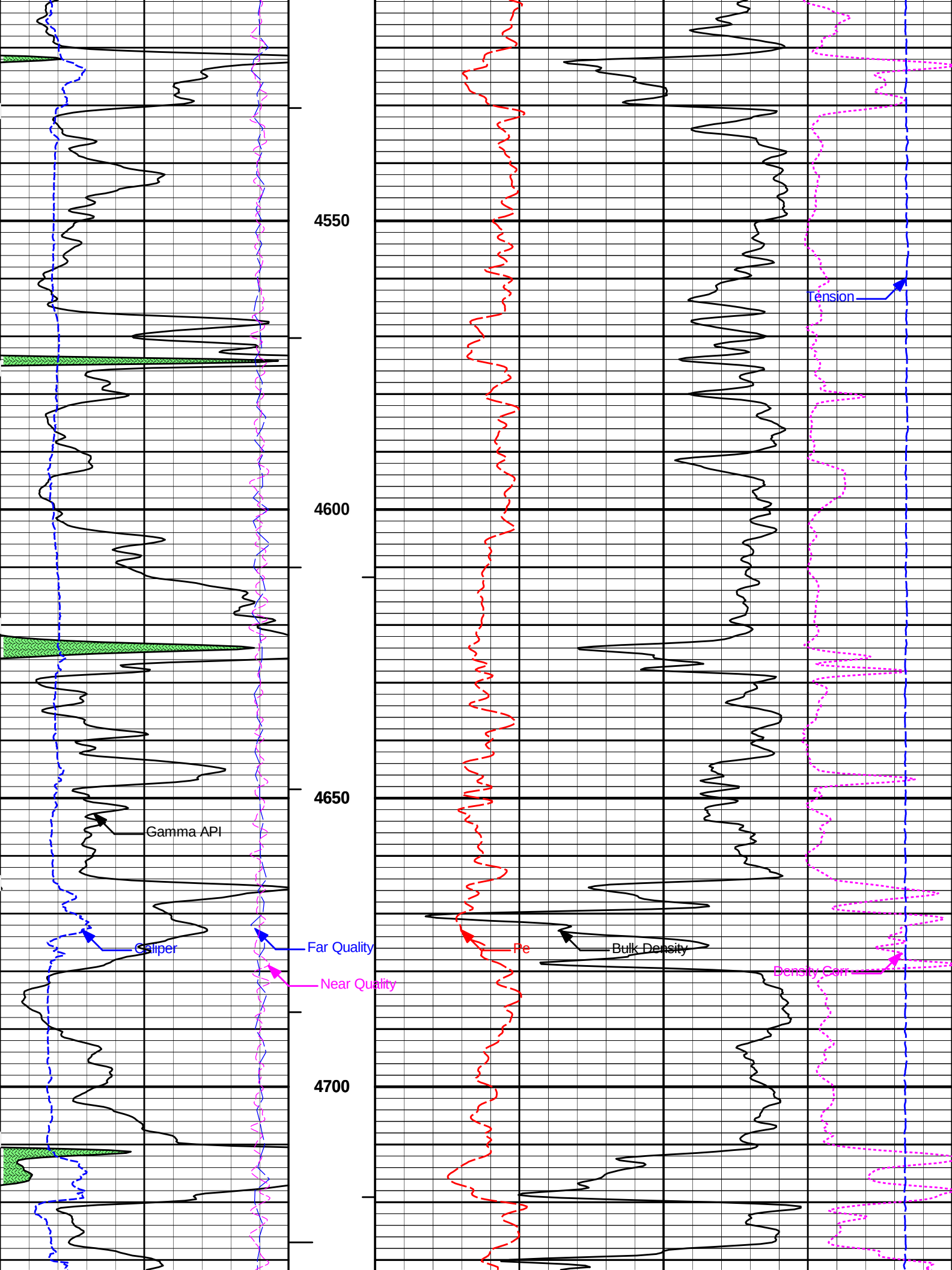

3450
3500
3550
3600
Gamma API
Caliper
Far Quality
Near Quality
Pe
Bulk Density
Density Corr
Tension

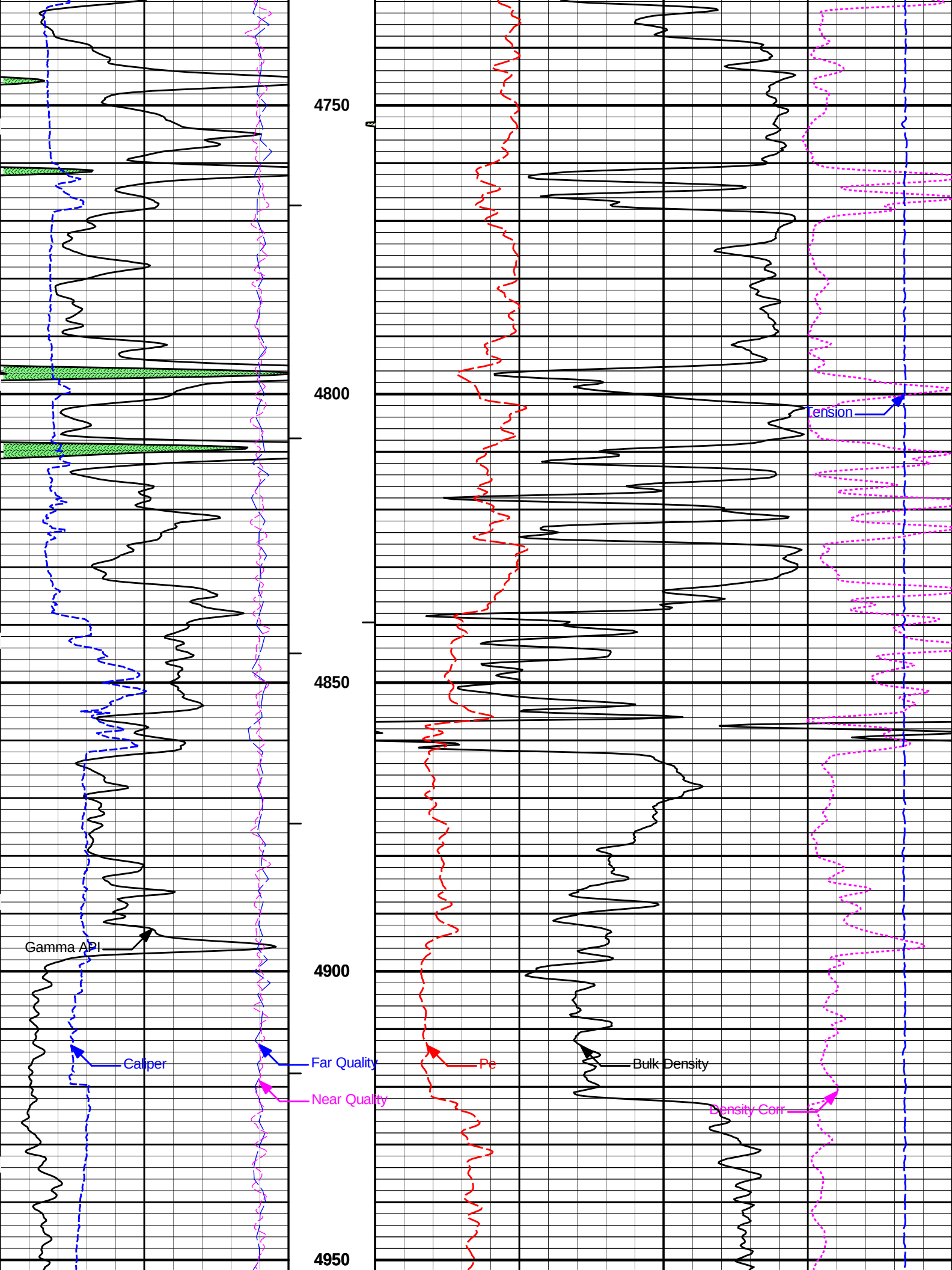

3650
3700
3750
3800
3850
Gamma API
Caliper
Far Quality
Near Quality
Pe
Bulk Density
Density Corr
Tension

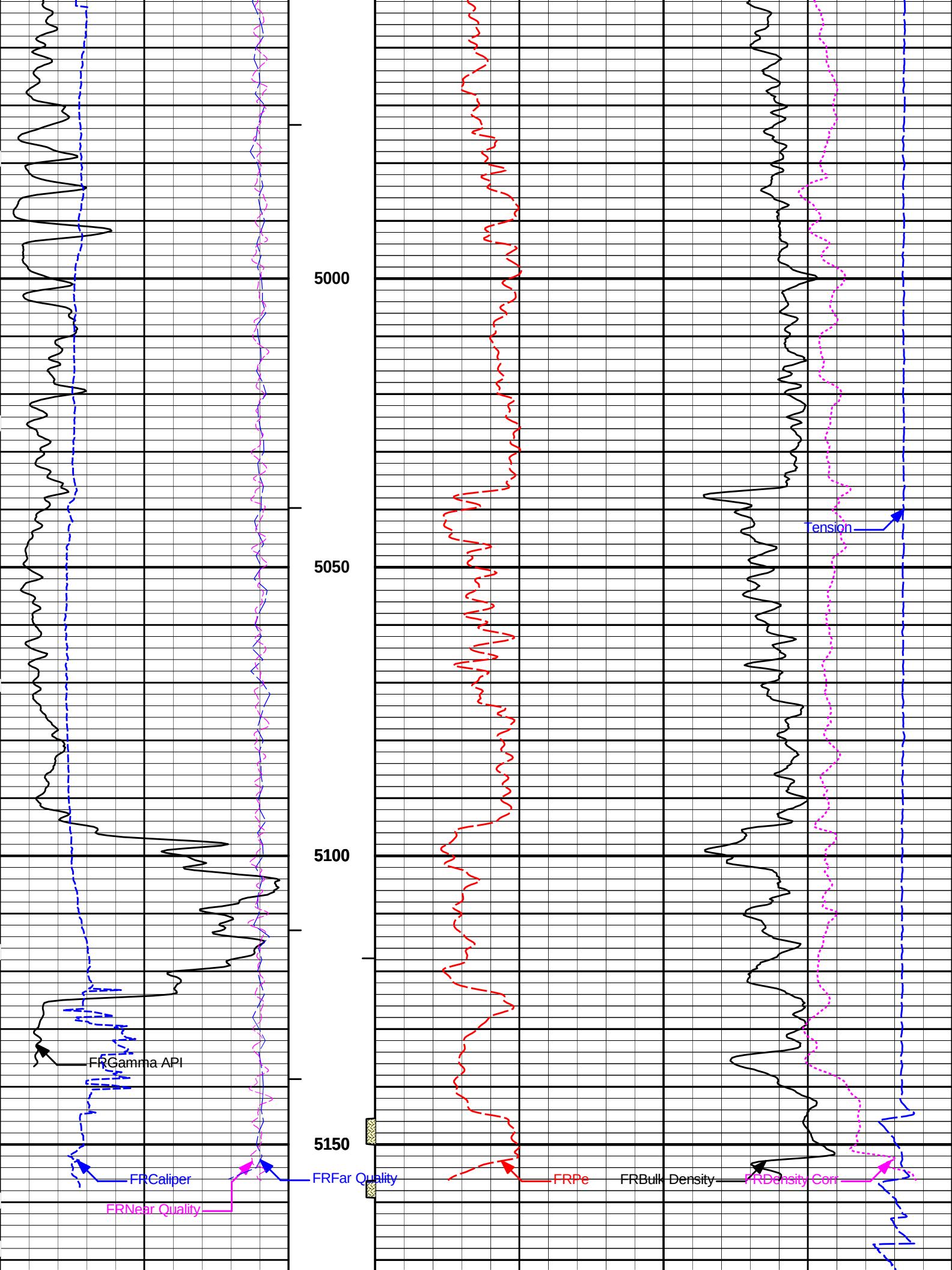

3900
3950
4000
4050
Gamma API
Caliper
Far Quality
Near Quality
Pe
Bulk Density
Density Corr


Tension
4100
4150
Gamma API
Caliper
Far Quality
Near Quality
Pe
Bulk Density
4200
DensityCorr
4250


4300
4350
4400
4450
4500
Gamma API
Caliper
Far Quality
Near Quality
Pe
Bulk Density
Tension
Density Corr


4550
4600
4650
4700
Gamma API
Caliper
Far Quality
Near Quality
Pe
Bulk Density
Tension
Density Corr


4750
4800
4850
4900
4950
Tension
Gamma API
Caliper
Far Quality
Near Quality
Pe
Bulk Density
Density Corr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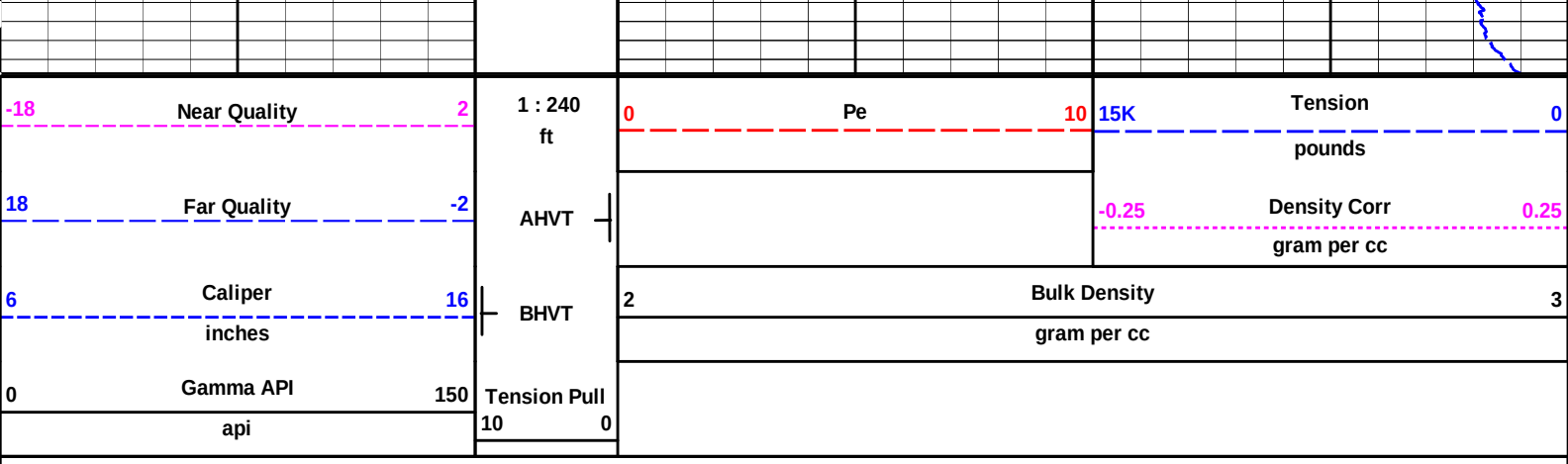
5050
5100
5150
FRGamma API
FRCaliper
FRNear Quality
FRFar Quality
FRPe
FRBulk Density
FRDensity Corr
Tension



HALLIBURTON

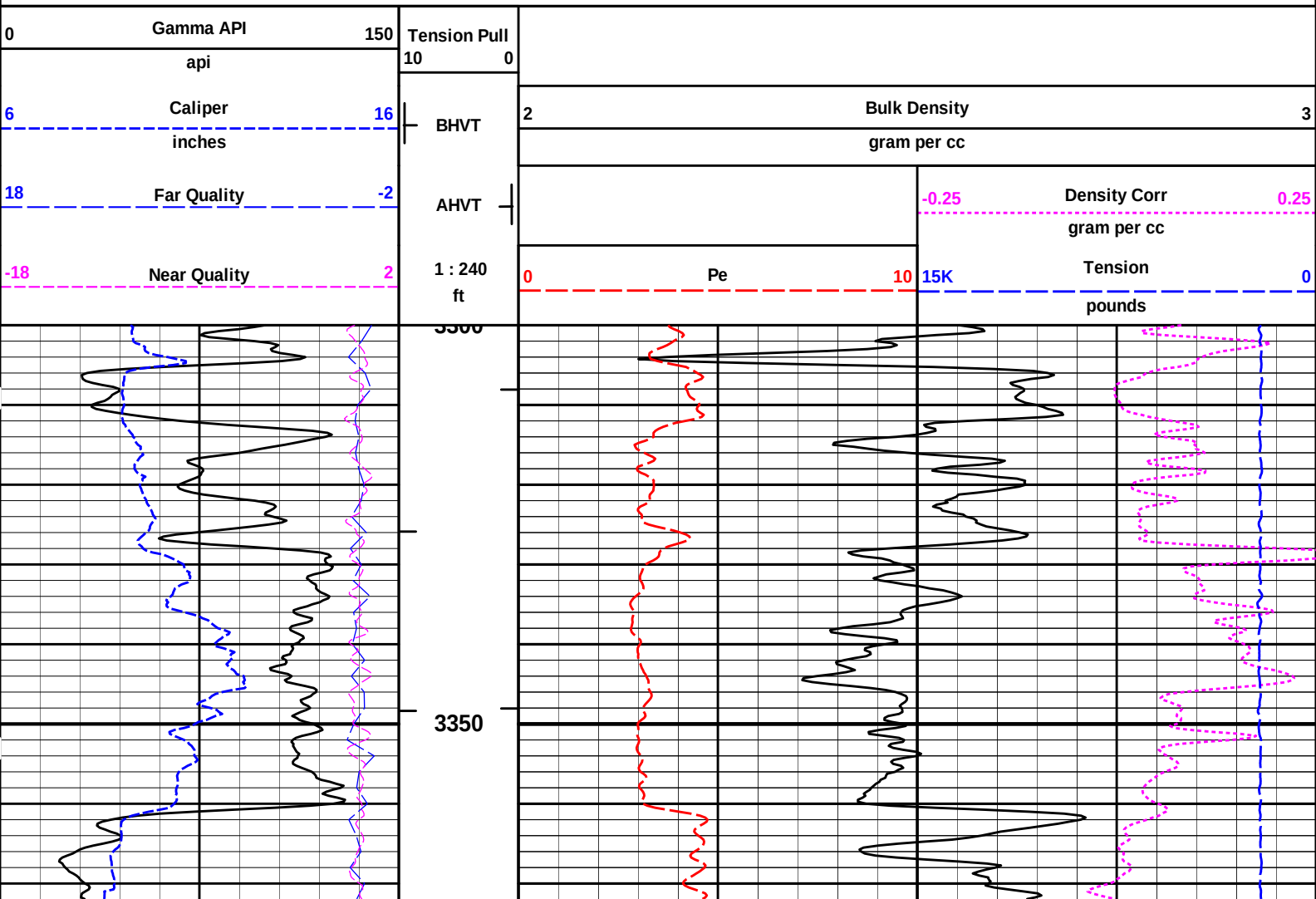
Plot Time: 09-May-12 00:18:55
Plot Range: 3300 ft to 5179.5 ft
Data: CANTON_C_3_20\Well Based\POROSITY MAIN\
Plot File: \\PORO\1_Bulk_5_mainx

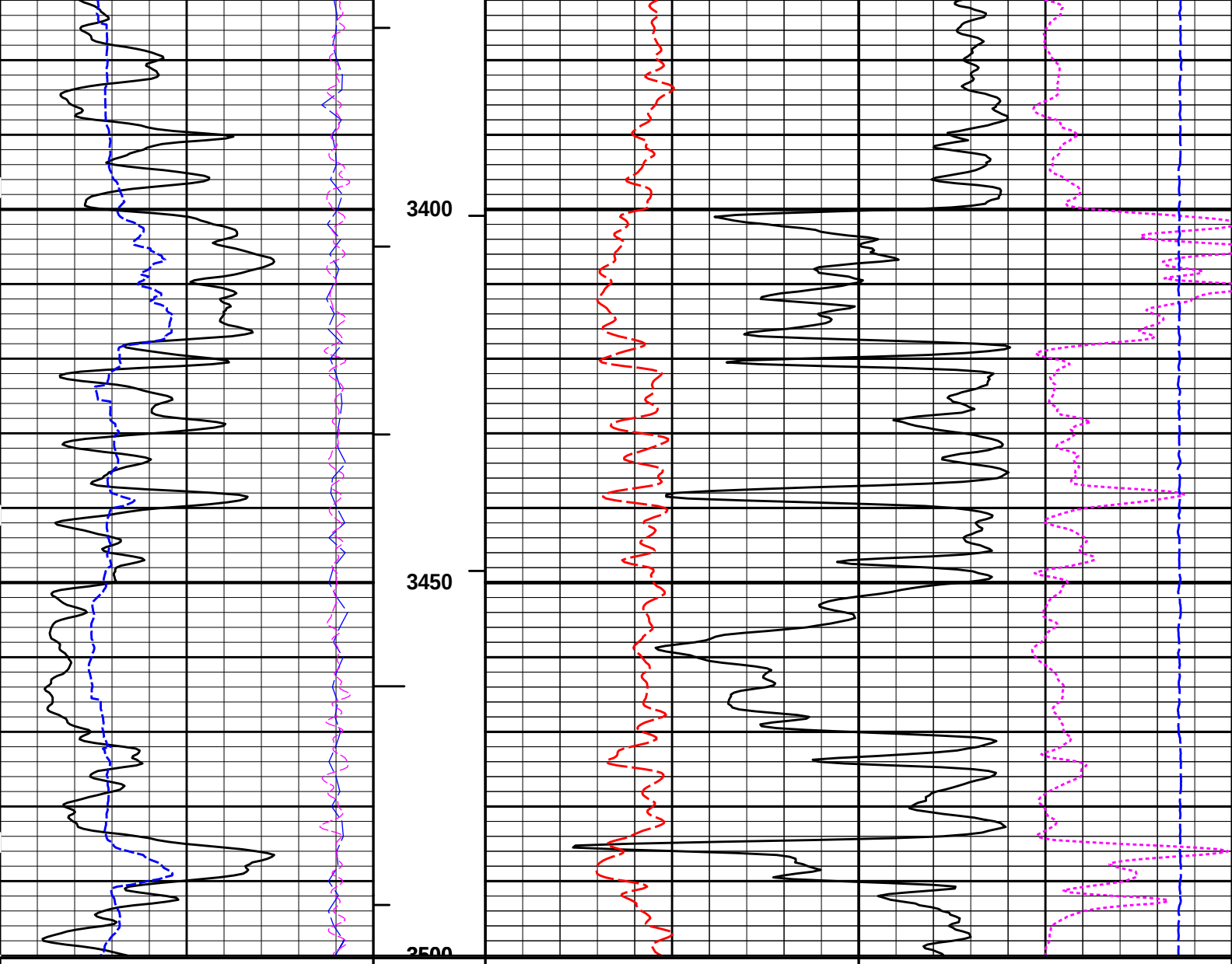
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 09-May-12 00:18:56
Plot Range: 3300 ft to 3500 ft
Data: CANTON_C_3_20\Well Based*\
Plot File: \\PORO\1_Bulk_5_rptx

REPEAT SECTION





-18 Near Quality 2	1 : 240 ft	0 Pe 10	15K Tension 0	
			pounds	
18 Far Quality -2	AHVT		-0.25 Density Corr 0.25	
			gram per cc	
6 Caliper 16	BHVT	2 Bulk Density 3		
inches		gram per cc		
0 Gamma API 150	Tension Pull			
api	10 0			

HALLIBURTON

Plot Time: 09-May-12 00:18:58
Plot Range: 3300 ft to 3500 ft
Data: CANTON_C_3_20\Well Based*\
Plot File: \\PORO\1_Bulk_5_rptx

REPEAT SECTION

HALLIBURTON

PARAMETERS REPORT

Depth ((ft))	Tool Name	Mnemonic	Description	Value	Units

((ft))

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	9.300	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	1.200	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	ST	Surface Temperature	75.0	degF
SHARED	TD	Total Well Depth	5180.00	ft
SHARED	BHT	Bottom Hole Temperature	200.0	degF
SHARED	SVTM	Navigation and Survey Master Tool	NONE	
SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
SHARED	TEMM	Temperature Master Tool	NONE	
SHARED	BHSM	Borehole Size Master Tool	NONE	
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	
GTET	GROK	Process Gamma Ray?	Yes	
GTET	GRSO	Gamma Tool Standoff	0.000	in
GTET	GEOK	Process Gamma Ray EVR?	No	
GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
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	DNTP	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	
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
Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
ACRt Sonde	RTOK	Process ACRt?	Yes	

ACRt Sonde	RTOR	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	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	

BOTTOM

Data: CANTON_C_3_20\0002 RED_BLACK_SDL\003 08-May-12 20:02 Up @5180.5f **Date: 08-May-12 22:50:48**

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11013113**	**Reference Calibration Date:**	**17-Nov-11 17:56:53**
Engineer:	**RAMIRO GONZALEZ**	**Calibration Date:**	**27-Apr-12 07:01:57**
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB 150

Calibrator API Reference:225.00 api

Equivalent Calibrator API Reference:228.9 api

Measurement	Measured	Calibrated	Units
Background	15.3	15.4	api
Background + Calibrator	242.6	244.4	api
Calibrator	227.3	228.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11013113**	**Reference Calibration Date:**	**27-Apr-12 07:01:57**
Engineer:	**CORY HANSON**	**Calibration Date:**	**08-May-12 18:10:33**
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB 150

Calibrator API Reference:225.00 api

Equivalent Calibrator API Reference:228.9 api

Field Verification	Shop	Field	Units
Background	15.4	32.9	api
Background + Calibrator	244.4	253.8	api
Calibrator	228.9	220.8	api

Shop	Field	Difference	Tolerance
228.9	220.8	8.1	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	**DSNT - 10993115**	**Reference Calibration Date:**	**03-Nov-11 15:14:03**
Engineer:	**RAMIRO GONZALEZ**	**Calibration Date:**	**11-Jan-12 11:59:51**
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**

Logging Source S/N: DSN_382

Tank Serial Number: PV_TANK

Reference value assigned to Tank: 56.100

Snow Block S/N: 01

Calibration Tank Water Temperature: 45 degF

Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	1.001	1.000	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):	0.2363	0.2358	0.0006	+/- 0.0020
Calibrated Ratio:	10.58	10.56	0.019	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0524	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 - I15M94P73**	**Reference Calibration Date:**	**07-Dec-11 13:40:36**
Engineer:	**RAMIRO GONZALEZ**	**Calibration Date:**	**12-Jan-12 12:18:47**
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-3032.47	-2970.52	-7000.00 - -1000.00
Pad Gain	0.0003825	0.0003711	0.000200 - 0.000600
Arm Offset	-570.33	-141.91	-5000.00 - 3000.00
Arm Gain	0.0005102	0.0004732	0.000300 - 0.000700
Arm Power	-0.000005115	-0.000002773	-0.000010 - 0.000010

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)	2.04	2.00	-0.04	+/- 0.20
Medium Ring (in)	3.84	3.75	-0.09	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.41	6.50	0.09	+/- 0.20
Medium Ring (in)	8.24	8.25	0.01	+/- 0.20
Large Ring (in)	14.95	15.00	0.05	+/- 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 - I87M06P72**	**Reference Calibration Date:**	**20-Feb-12 12:44:22**
Engineer:	**CORY HANSON**	**Calibration Date:**	**20-Feb-12 13:03:33**
Software Version:	**WL INSITE R3.4.4 (Build 2)**	**Calibration Version:**	**1**

Logging Source S/N: PV_20791B

Aluminum Block S/N: PV_63074 Density: 2.589g/cc Pe: 3.140

Magnesium Block S/N: PV_63386 Density: 1.683g/cc Pe: 2.594

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0817	1.0027	0.90 - 1.10
Near Dens Gain	1.0632	1.0068	0.90 - 1.10
Near Peak Gain	1.0746	0.9942	0.90 - 1.10
Near Lith Gain	1.0545	0.9802	0.90 - 1.10
Far Bar Gain	1.0114	1.0067	0.90 - 1.10
Far Dens Gain	0.9994	0.9944	0.90 - 1.10
Far Peak Gain	0.9949	0.9893	0.90 - 1.10
Far Lith Gain	0.9794	0.9745	0.90 - 1.10
Near Bar Offset	-0.6323	0.1044	NONE
Near Dens Offset	-0.4623	0.0453	NONE
Near Peak Offset	-0.5325	0.1505	NONE
Near Lith Offset	-0.3766	0.2543	NONE
Far Bar Offset	-0.0242	0.0204	NONE
Far Dens Offset	0.0762	0.1212	NONE
Far Peak Offset	0.1101	0.1579	NONE
Far Lith Offset	0.1984	0.2391	NONE
Near Bar Background	911.58	911.01	700 - 1450
Near Dens Background	298.23	297.49	230 - 480
Near Peak Background	128.45	128.19	100 - 210
Near Lith Background	160.14	160.02	125 - 260
Far Bar Background	545.05	544.11	450 - 900
Far Dens Background	214.04	212.30	175 - 345
Far Peak Background	83.73	82.75	70 - 140
Far Lith Background	86.48	87.96	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.684	1.683	-0.001	+/- 0.015
Pe	2.541	2.547	0.006	+/- 0.150
ALUMINUM				
Density (g/cc)	2.575	2.589	0.015	+/- 0.01500
Pe	3.082	3.091	0.009	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0007	+/- 0.0110	0.0005	+/- 0.0140
Magnesium Block	-0.0003	+/- 0.0110	-0.0004	+/- 0.0140

Aluminum Block	-0.0007	+/- 0.0110	0.0007	+/- 0.0140
Resolution	9.61	6.00 - 11.50	9.83	6.00 - 11.50
Internal Verifier(B+D+P+L)	1497	1200 - 2700	927	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 - I87M06P72 **Reference Calibration Date:** 20-Feb-12 13:03:33

Engineer: CORY HANSON **Calibration Date:** 08-May-12 18:08:57

Software Version: WL INSITE R3.4.4 (Build 2) **Calibration Version:** 1

Pad Temperature: 81.9 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1496.704	1494.856	-1.848	15.590
Far (B+D+P+L) cps	927.120	929.436	2.316	16.483
Near Resolution	9.61	9.77	0.160	0.50
Far Resolution	9.83	10.46	0.630	1.00

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

MICRO LOG SHOP CALIBRATION

Tool Name: Microlog Pad - I15M94P73 **Reference Calibration Date:** 07-Dec-11 13:57:35

Engineer: RAMIRO GONZALEZ **Calibration Date:** 18-Jan-12 11:12:23

Software Version: WL INSITE R3.4.4 (Build 2) **Calibration Version:** 1

CALIBRATION COEFFICIENT SUMMARY					
Measurement	Micro Log Normal		Micro Log Lateral		
	Measured	Calibrated	Measured	Calibrated	Units
Tool Zero	0.01	-0.08	-0.47	0.00	ohmm
Calibration Point #1	0.09	0.00	-0.47	0.00	ohmm
Calibration Point #2	19.99	20.00	20.04	20.00	ohmm
Internal Reference	19.92	19.93	19.99	19.95	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	0.05	0.04	V
Calibration Point #1	21.79	0.03	V
Calibration Point #2	5297.60	6889.98	V
Internal Reference	5279.03	6873.94	V

MICRO LOG FIELD CHECK

Tool Name: Microlog Pad - I15M94P73 **Reference Calibration Date:** 18-Jan-12 11:12:23

Tool Name:	Microlog Pad - I15M94P73	Reference Calibration Date:	18-Jan-12 11:12:23
Engineer:	CORY HANSON	Calibration Date:	08-May-12 18:07:19
Software Version:	WL INSITE R3.4.4 (Build 2)	Calibration Version:	1

Measurement	Micro Log Normal		Micro Log Lateral		
	Shop	Field	Shop	Field	Units
Tool Zero	-0.08	-0.08	0.00	-0.00	ohmm
Internal Reference	19.93	20.01	19.95	20.05	ohmm

Summary

Signal	Shop	Field	Difference	Tolerence
Microlog Normal	19.93	20.01	-0.08	+/- 0.80
Microlog Lateral	19.95	20.05	-0.10	+/- 0.80

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11013113						
Gamma Ray Calibrator	228.9	220.8	----------	8.1	+/- 9.00	api
DSNT-10993115						
Snow-Block Porosity	0.0524	----------	----------	0.0000	+/- -.--	decp
SDLT-I15M94P73						
Pad Extension	3.75	----------	----------	0.00	+/-0.20	in
Ring Diameter	8.25	----------	----------	0.00	+/-0.20	in
SDLT Pad-I87M06P72						
Near(B+D+P+L)	1496.704	1494.856	----------	1.848	+/-15.590	cps
Far(B+D+P+L)	927.120	929.436	----------	-2.316	+/-16.483	cps
Microlog Pad-I15M94P73						
MicroLog Normal	19.93	20.01	----------	-0.08	+/-0.80	ohmm
MicroLog Lateral	19.95	20.05	----------	-0.10	+/-0.80	ohmm

Data: CANTON_C_3_20\0002 RED_BLACK_SDL\003 08-May-12 20:02 Up @5180.5f **Date: 09-May-12 00:11:01**

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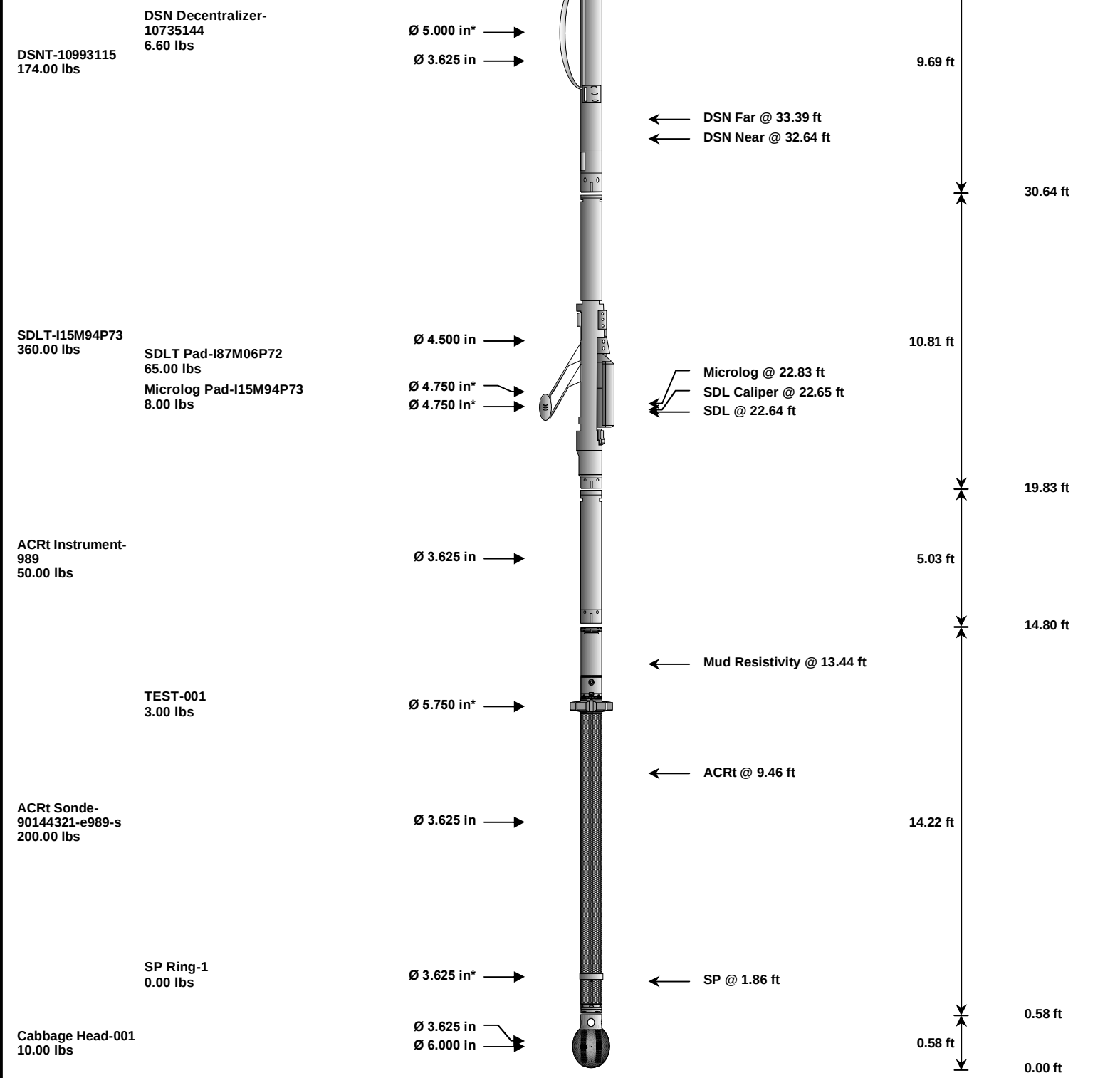
TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						52.83 ft
CH_HOS-590_RED 37.50 lbs		Ø 2.750 in		Temperature @ 51.80 ft	3.03 ft	
						49.80 ft
XOHD-92 20.00 lbs		Ø 2.750 in Ø 3.625 in			0.95 ft	
						48.85 ft
GTET-11013113 165.00 lbs		Ø 3.625 in		GammaRay @ 42.79 ft	8.52 ft	
						40.33 ft



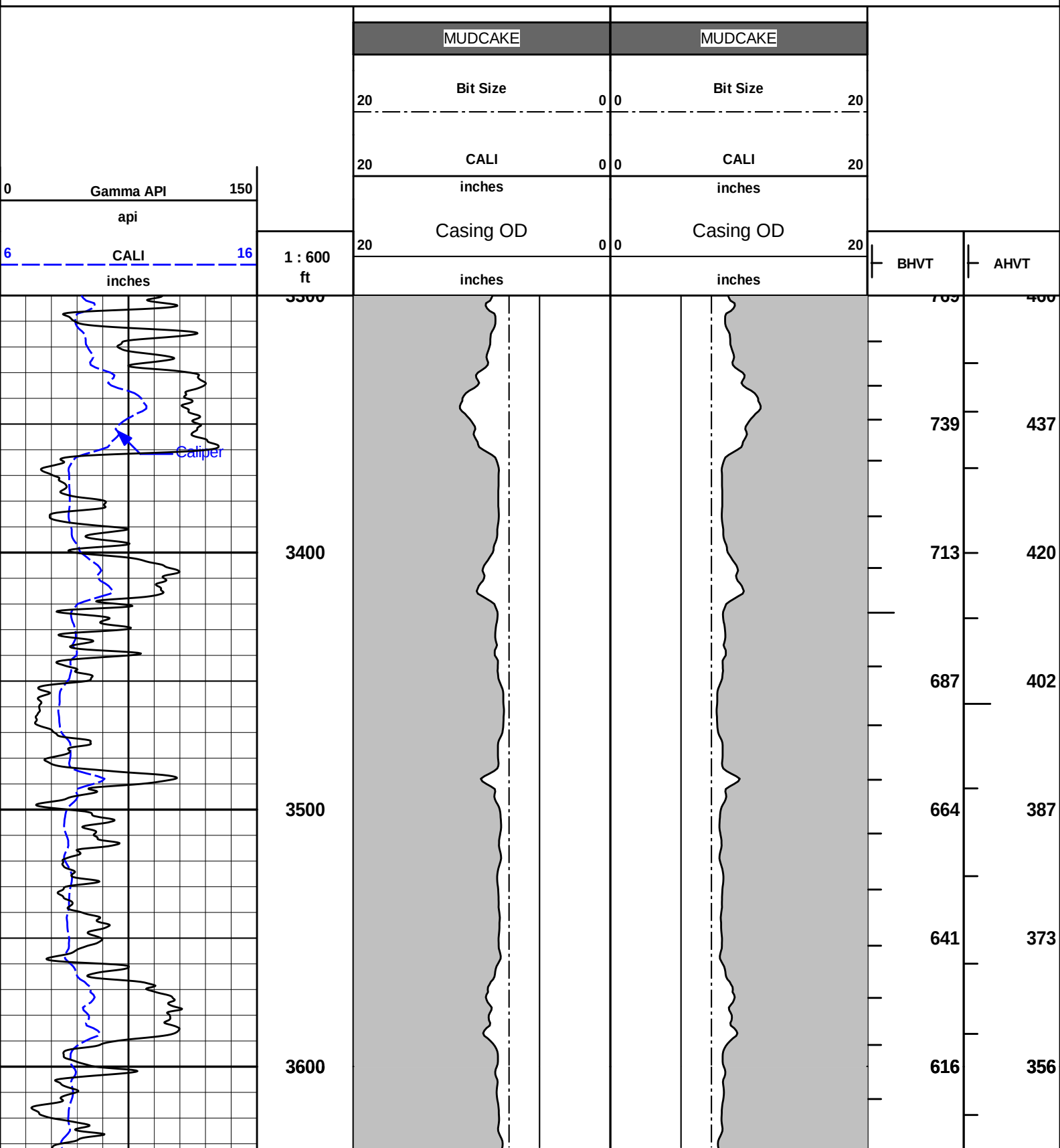
Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
CH_HOS	Hostile Cable Head with Load Cell	590_RED	37.50	3.03		49.80	300.00
XOHD	Hostile to Dits Cross Over	92	20.00	0.95		48.85	300.00
GTET	Gamma Telemetry Tool	11013113	165.00	8.52		40.33	60.00
DSNT	Dual Spaced Neutron	10993115	174.00	9.69		30.64	60.00
DCNT	DSN Decentralizer	10735144	6.60	5.13	*	33.97	300.00
SDLT	Spectral Density Tool	I15M94P73	360.00	10.81		19.83	60.00
SDLP	Density Insite Pad	I87M06P72	65.00	2.55	*	22.04	60.00
MICP	Microlog Pad	I15M94P73	8.00	1.00	*	22.33	60.00
ACRt	Array Compensated True Resistivity Instrument Section	989	50.00	5.03		14.80	300.00
ACRt	Array Compensated True Resistivity	90144321-e989-s	200.00	14.22		0.58	300.00
SP	SP Ring	1	0.00	0.25	*	1.86	300.00
SO	STANDOFF	001	3.00	0.59	*	11.58	100.00
CBHD	Cabbage Head	001	10.00	0.58		0.00	300.00
Total			**1,099.10**	**52.83**			

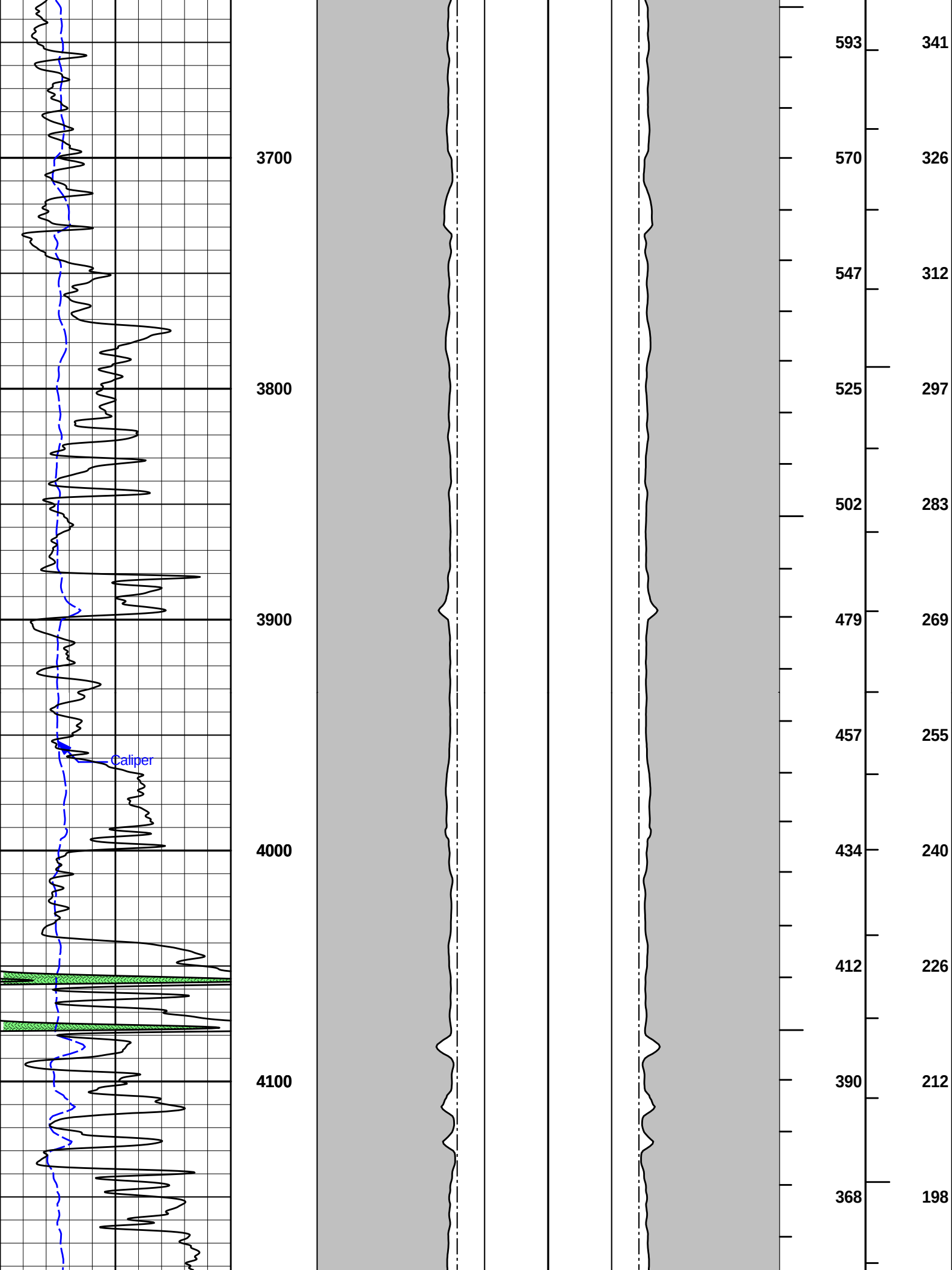
* Not included in Total Length and Length Accumulation.

HALLIBURTON

Plot Time: 09-May-12 00:18:58
Plot Range: 3300 ft to 5179.5 ft
Data: CANTON_C_3_20\Well Based*\
Plot File: \\-LOCAL-\CANTON_C_3_20\0002 RED_BLACK_SDL\PORO\1_AHV Plot_x

ANNULAR HOLE VOLUME PLOT

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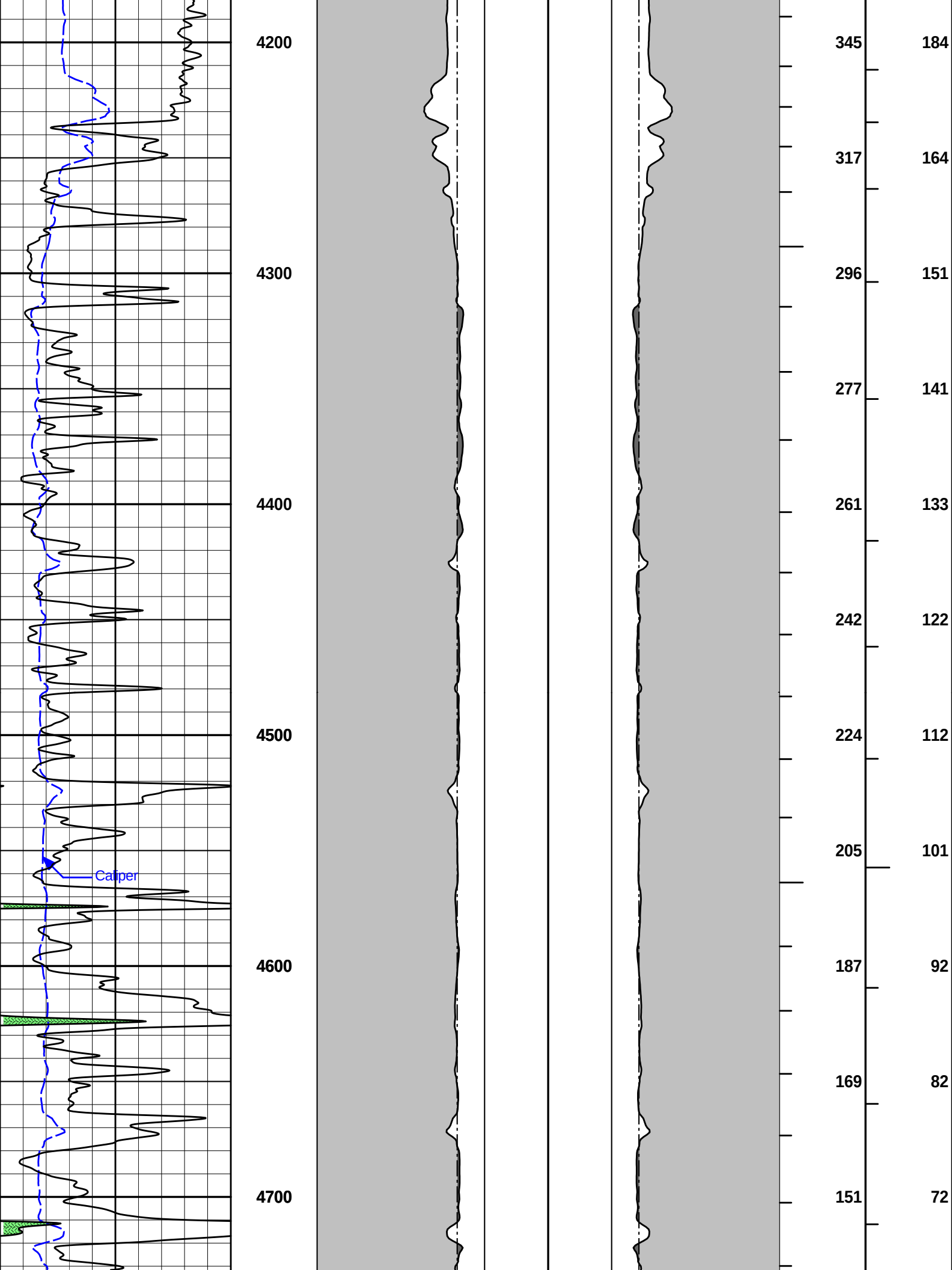
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4400
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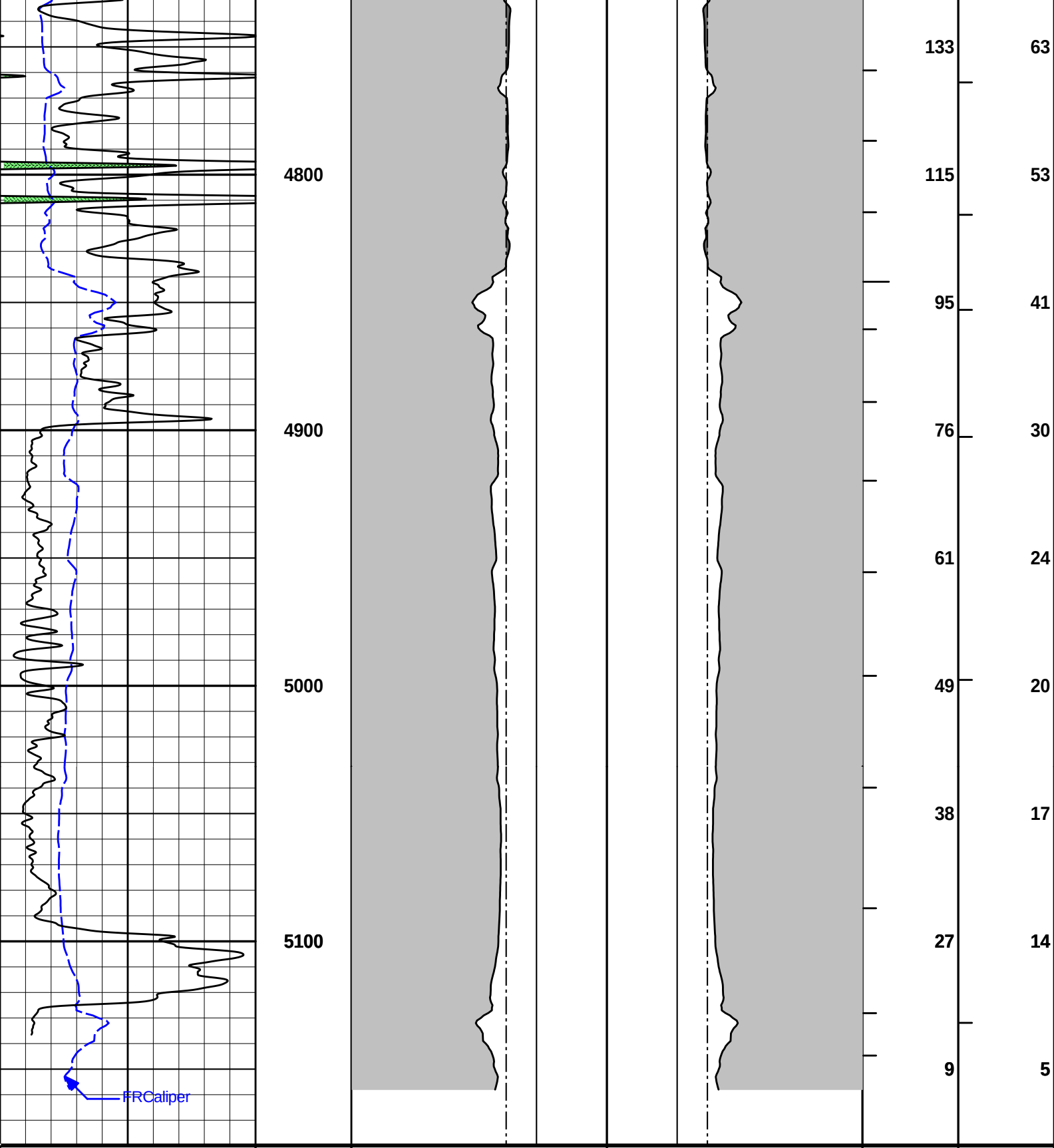

6 CALI 16 inches 0 Gamma API 150 api	1 : 600 ft	Casing OD 20 0 inches CALI 20 0 inches Bit Size 20 0 MUDCAKE	Casing OD 0 20 inches CALI 0 20 inches Bit Size 0 20 MUDCAKE	BHVT	AHVT

HALLIBURTON

Plot Time: 09-May-12 00:19:01
Plot Range: 3300 ft to 5179.5 ft
Data: CANTON_C_3_20\Well Based*\
Plot File: \\-LOCAL-\CANTON_C_3_20\0002 RED_BLACK_SDL\PORO\1_AHV Plot_x

ANNULAR HOLE VOLUME PLOT

COMPANY	**HERMAN L LOEB**		
WELL	**CANTON C #3-20**		
FIELD	**GLICK**		
COUNTY	**KIOWA**	STATE	**KANSAS**

HALLIBURTON

DUAL SPACED NEUTRON SPECTRAL DENSITY LOG