Weatherford®

10 INCH HIGH RESOLUTION REPEAT SECTION COMPOSITE LOG

COMPANY	SUEMAUR EXPLORATION & PRODUCTION LLC
WELL	RITTER 1-10
FIELD	WILDCAT
PROVINCE/COUNTY	DECATUR
COUNTRY/STATE	USA / KANSAS
LOCATION	SW SE NE SE 1478' FSL & 375' FEL

SEC 10	TWP 4S	RGE 28W	
Latitude	39.71630708	Other Services	
Longitude	-100.442936191	ARRAY INDUCTION	MICRO RESISTIVITY
API Number	15-039-212630000	PHOTO DENSITY	COMPENSATED SONIC
		DUAL SPACED NEUTRON	

Permanent Datum GL, Elevation 2716 feet
Log Measured From KB, 5.00 feet above Permanent Datum
Drilling Measured From KB

Elevations:	feet
KB	2721.00
DF	2719.00
GL	2716.00

Date	21-SEP-2019			
Run Number	ONE			
Service Order	3648-256198398			
Depth Driller	4487.00	feet		
Depth Logger	4479.00	feet		
First Reading	4476.00	feet		
Last Reading	3480.00	feet		
Casing Driller	262.00	feet		
Casing Logger	260.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	WBM			
Density / Viscosity	9.20	lb/USg	64.00 sec/qt	
PH / Fluid Loss	10.00		7.20 ml/30Min	
Sample Source	FLOWLINE			
Rm @ Measured Temp	1.10 @ 99.0	ohm-m		
Rmf @ Measured Temp	0.88 @ 99.0	ohm-m		
Rmc @ Measured Temp	1.32 @ 99.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.90 @123.0	ohm-m		
Time Since Circulation	5 HOURS			
Max Recorded Temp	123.00	deg F		
Equipment / Base	13175	ElReno		
Recorded By	GUTHMUELLER			
Witnessed By	L NICHOLSON			

BOREHOLE RECORD

Last Edited: 21-SEP-2019 12:24

Bit Size inches	Depth From feet	Depth To feet
12.250	0.00	262.00
7.875	262.00	4487.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURF	8.625	0.00	262.00	24.00

REMARKS

- WLS SOFTWARE VERSION: 19.03.4078
- TOOLSTRING:
  CBH-229,MTAK-189,, SHA-725, MCG-571, MML-033, MDN-515, MPD-506,SKJ-516, MFE-413,MSS-368, MAI-492 LOGGED IN COMBINATION.
- HARDWARE USED:
  MAI: TWO 0.5 INCH STAND-OFFS.
  MSS: THREE 0.5 INCH STAND-OFFS
  MFE: ONE 0.5 INCH STAND-OFF.
  MDN: DUAL BOWSPRING.
  MPD: 8 INCH PROFILE PLATE.

2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY.

- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING = XXXX CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING = XXXX CU.FT.

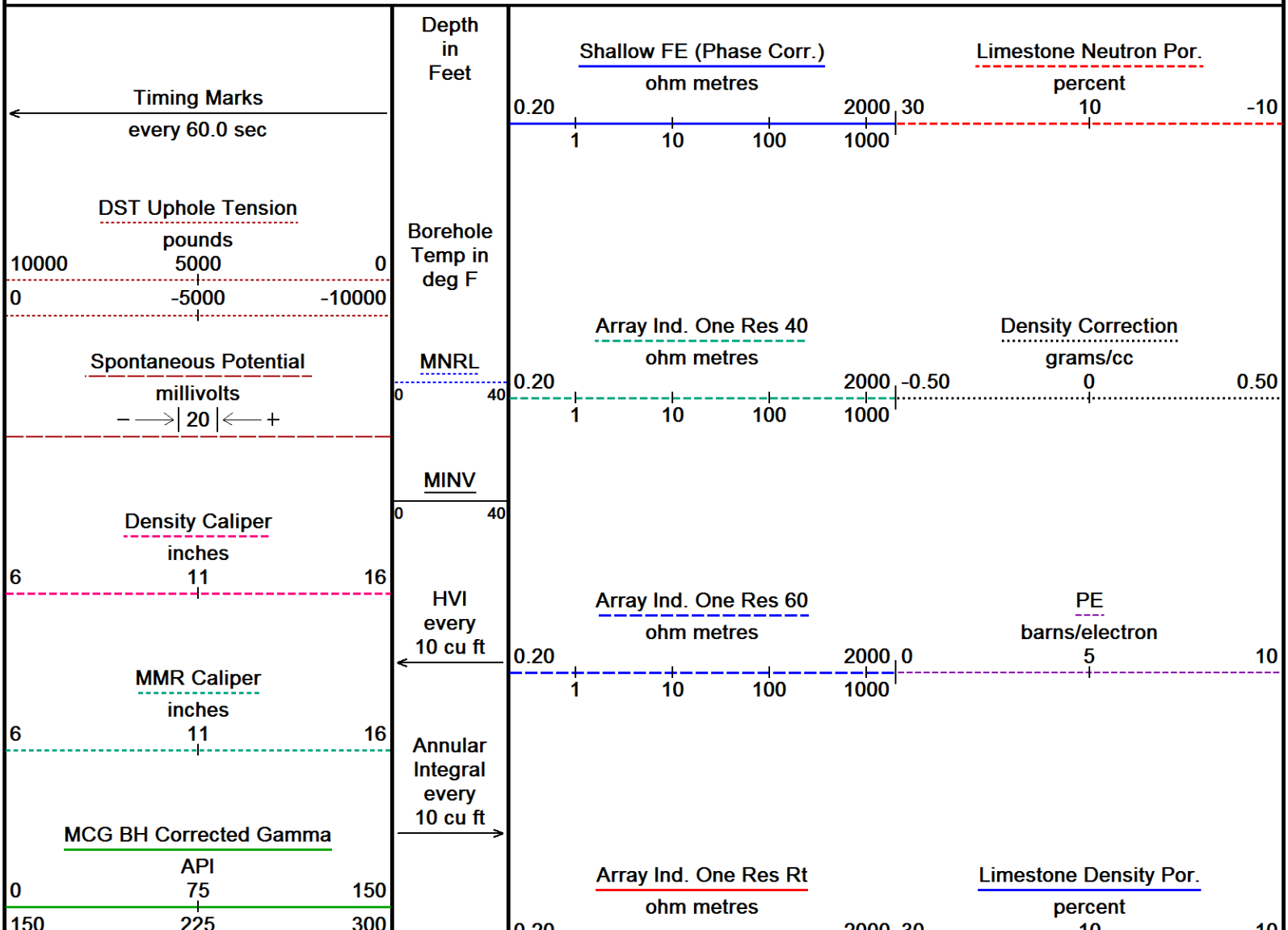
- OPERATORS: J KLINE

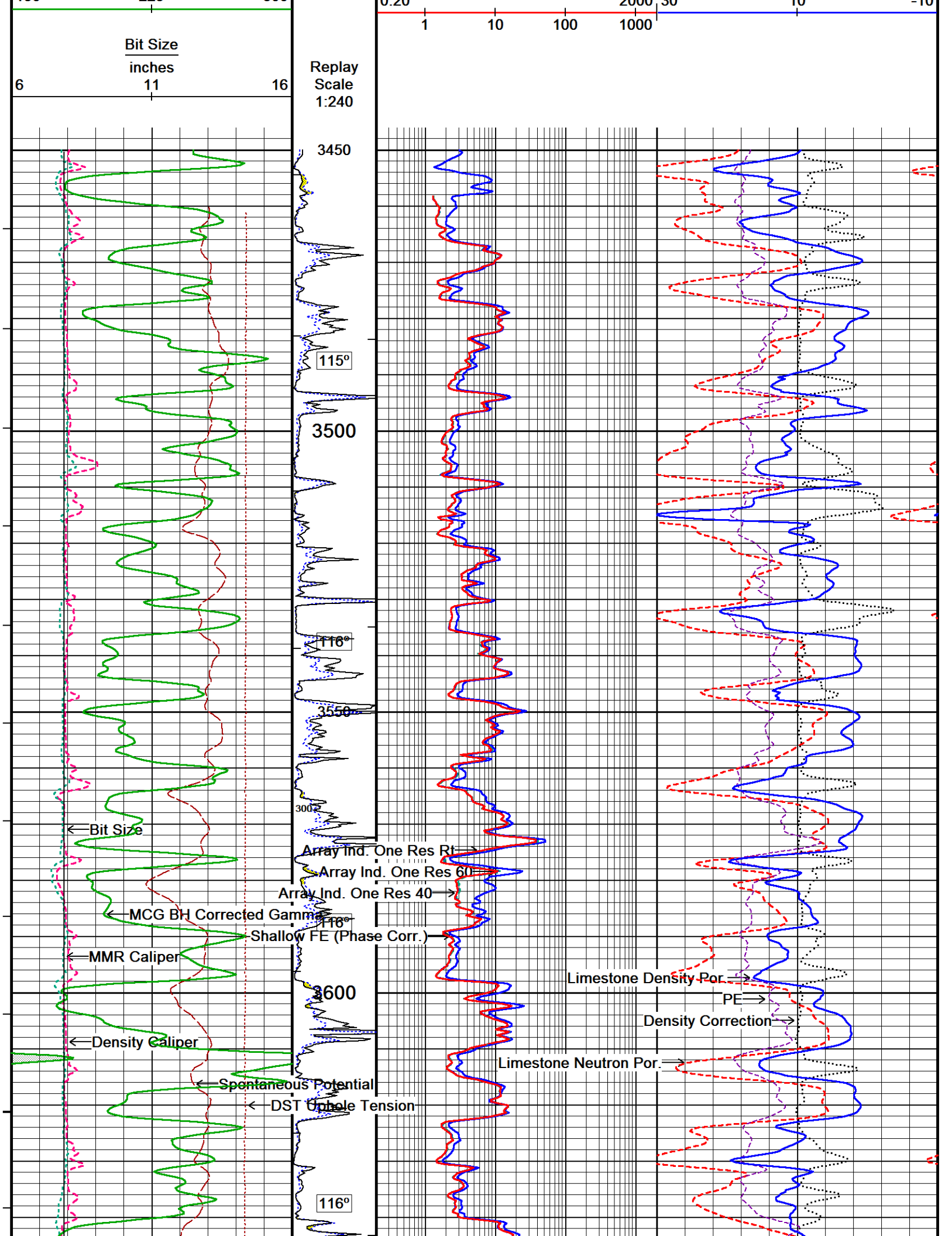
- MUD PROPERTIES: CHLORIDES: 1400 PPM.
LCM: 2 #/BBL.

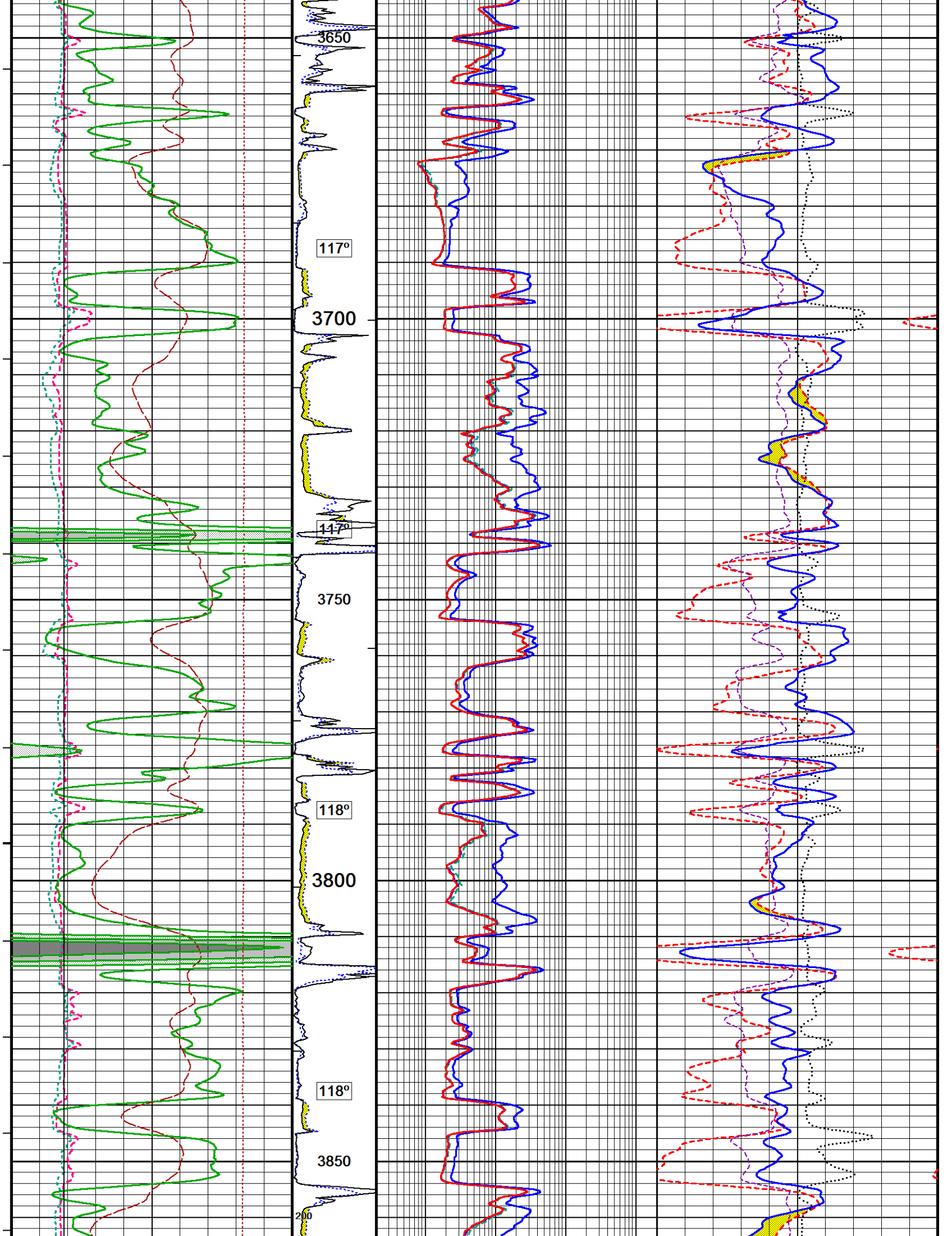
LOG RESPONSE EFFECTED BY WASHOUTS AND BOREHOLE RUGOSITY
** HIGH RESOLUTION PRESENTED FROM TD TO 3500'**

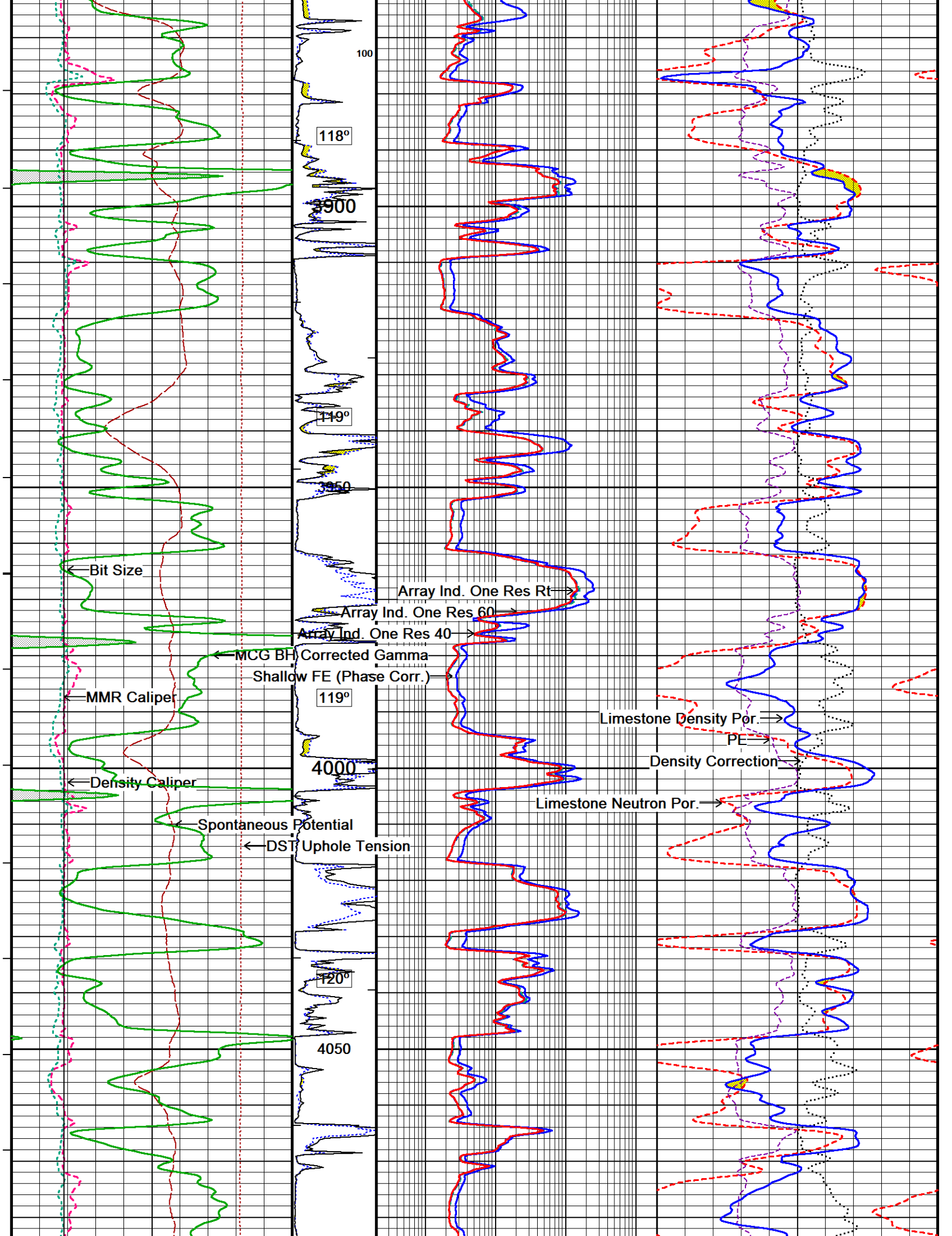
REPEAT SECTION

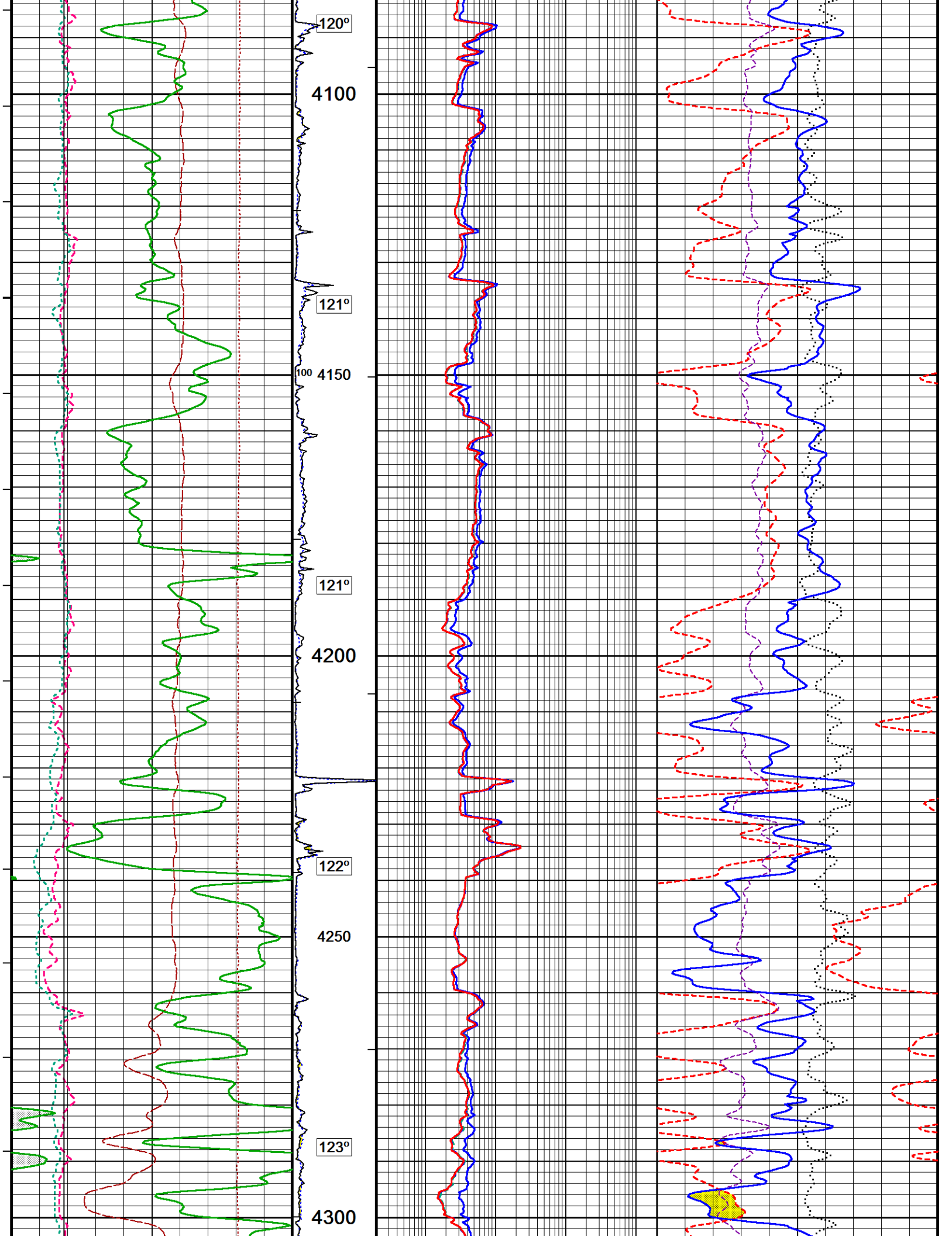
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 21-SEP-2019 15:37
Filename: E:\19_03_WLS_Data\SUEMUR EXPL and PROD_Ritter 1-10\Repeat.dta — Recorded on 21-SEP-2019 13:40
System Versions: Logged with 19.03.4087 Processed with 19.03.4087 Plotted with 19.03.4087

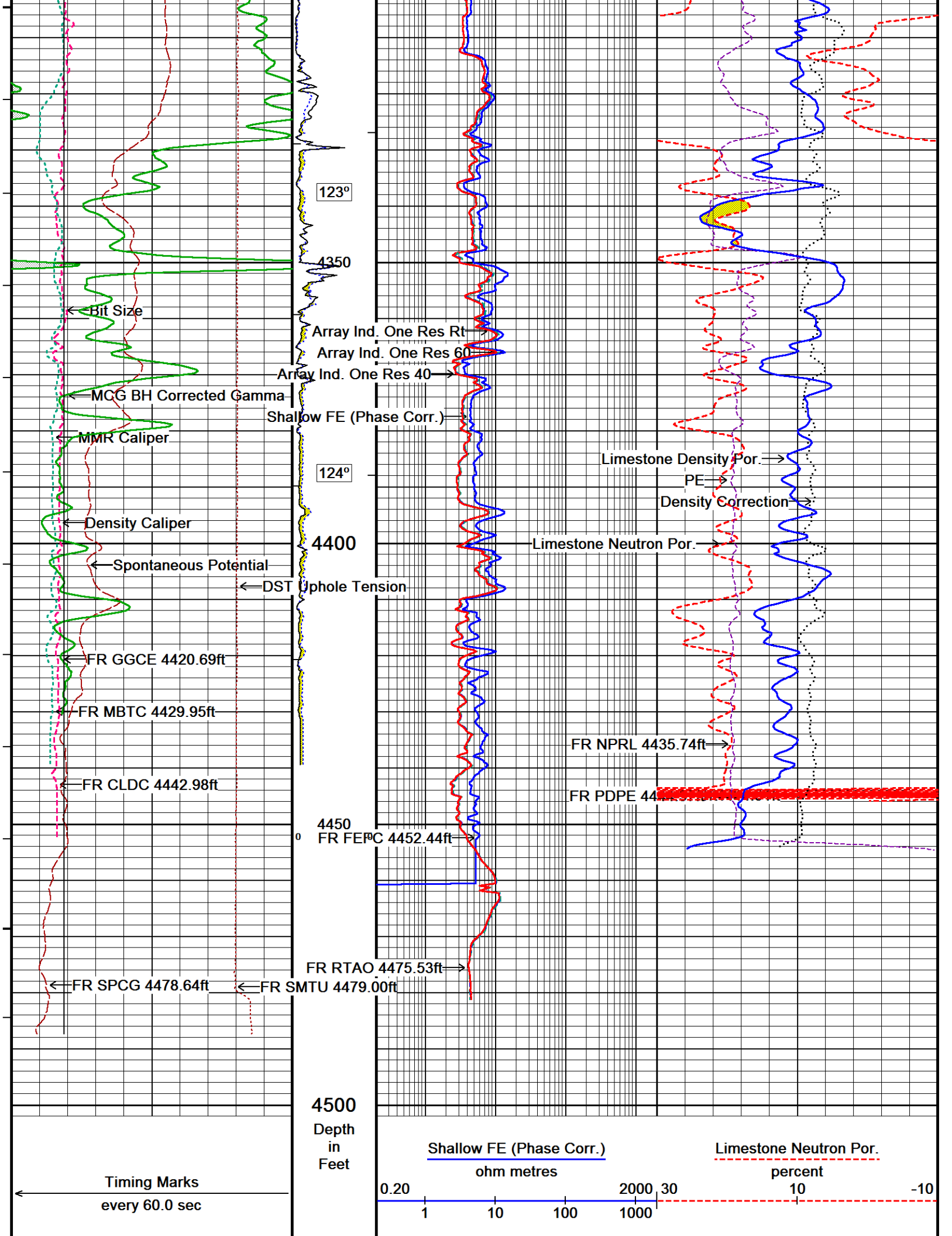


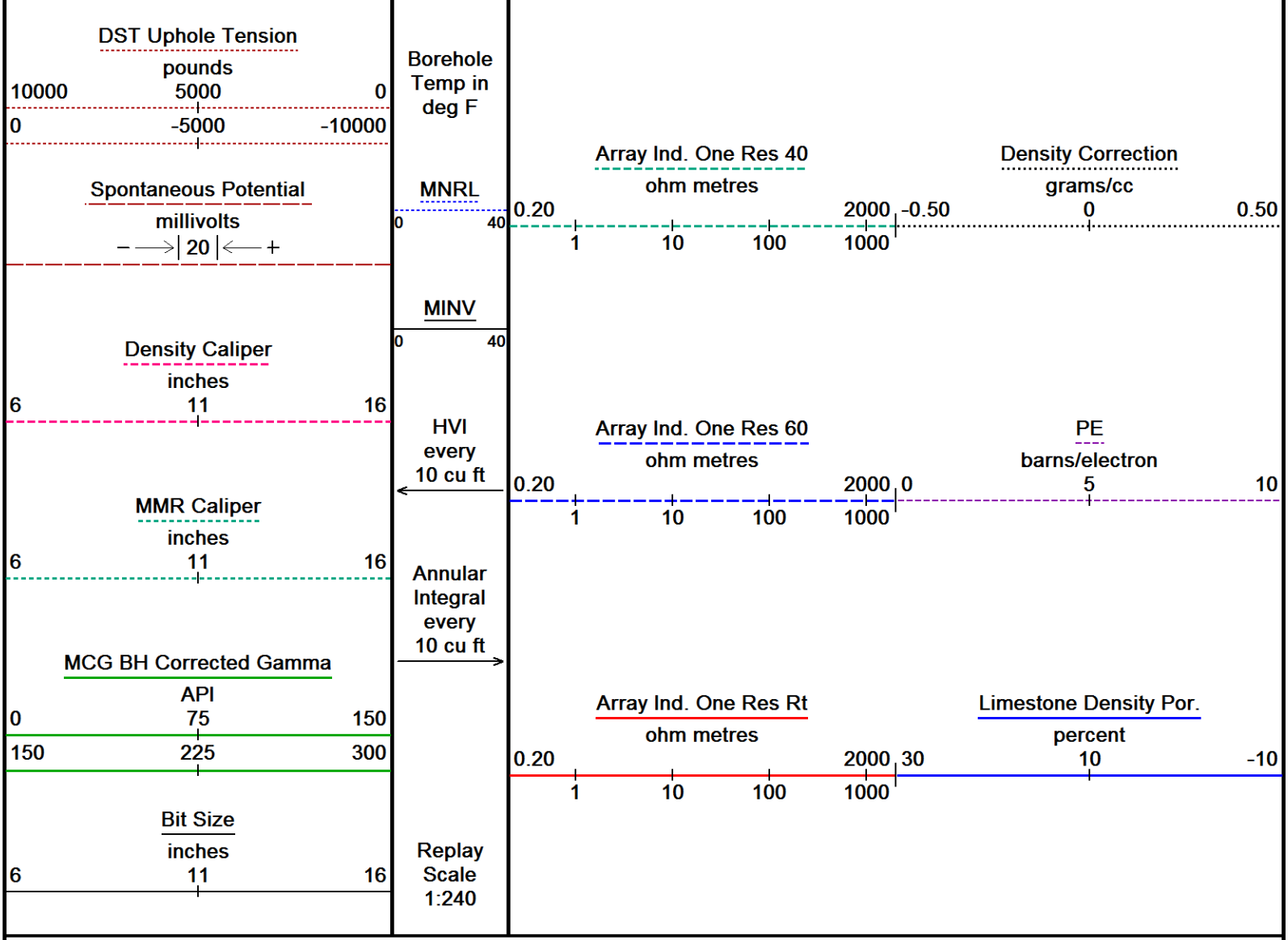

Bit Size
inches
6
11
16
Replay
Scale
1:240
0.20
2000
30
10
-10
1
10
100
1000
3450
115°
3500
116°
3550
300
116°
3600
116°
Bit Size
MCG BH Corrected Gamma
MMR Caliper
Density Caliper
Spontaneous Potential
DST Uphole Tension
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE (Phase Corr.)
Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.


3650
117°
3700
117°
3750
118°
3800
118°
3850
200


100
118°
3900
119°
3950
Bit Size
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
MCG BH Corrected Gamma
Shallow FE (Phase Corr.)
MMR Caliper
119°
Limestone Density Por.
PE
Density Correction
4000
Density Caliper
Limestone Neutron Por.
Spontaneous Potential
DST Uphole Tension
120°
4050


120°
4100
121°
100
4150
121°
4200
122°
4250
123°
4300


123°
4350
Bit Size
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
MCG BH Corrected Gamma
Shallow FE (Phase Corr.)
MMR Caliper
124°
Limestone Density Por.
PE
Density Correction
Density Caliper
4400
Limestone Neutron Por.
Spontaneous Potential
DST Uphole Tension
FR GGCE 4420.69ft
FR MBTC 4429.95ft
FR NPRL 4435.74ft
FR CLDC 4442.98ft
FR PDPE 44
4450
FR FEPC 4452.44ft
FR RTAO 4475.53ft
FR SPCG 4478.64ft
FR SMTU 4479.00ft
4500
Depth
in
Feet
Timing Marks
every 60.0 sec
Shallow FE (Phase Corr.)
ohm metres
0.20
2000
1
10
100
1000
Limestone Neutron Por.
percent
30
10
-10

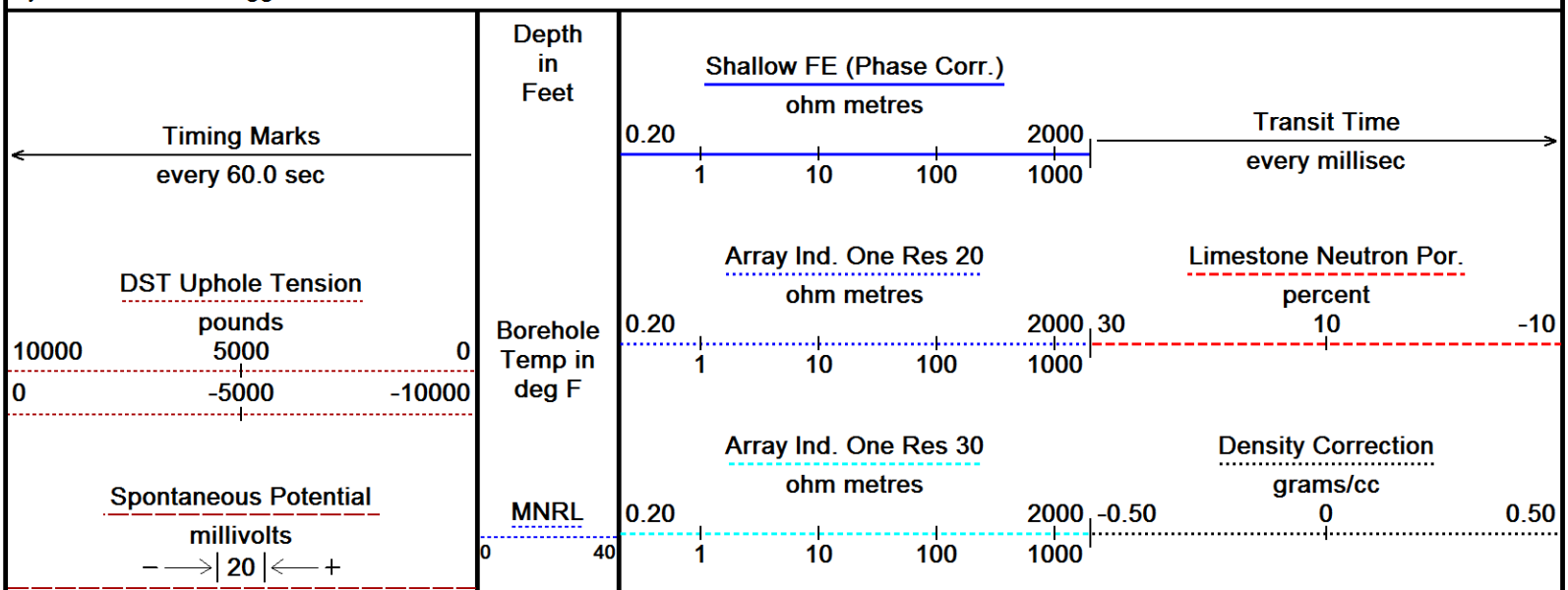


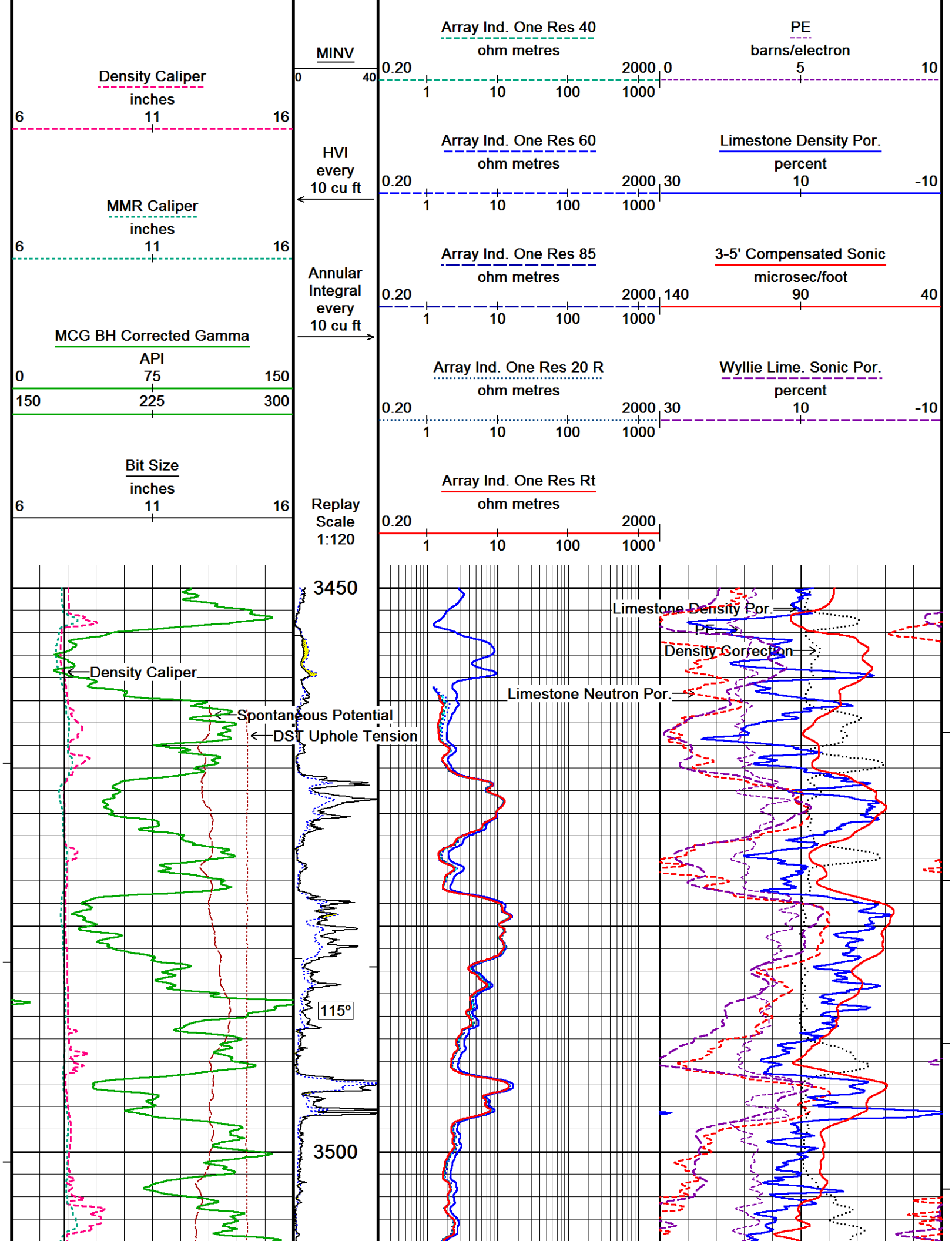
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 21-SEP-2019 15:37
Filename: E:\19_03_WLS_Data\SUEMUR EXPL and PROD_Ritter 1-10\Repeat.dta
Recorded on 21-SEP-2019 13:40
System Versions: Logged with 19.03.4087 Processed with 19.03.4087 Plotted with 19.03.4087

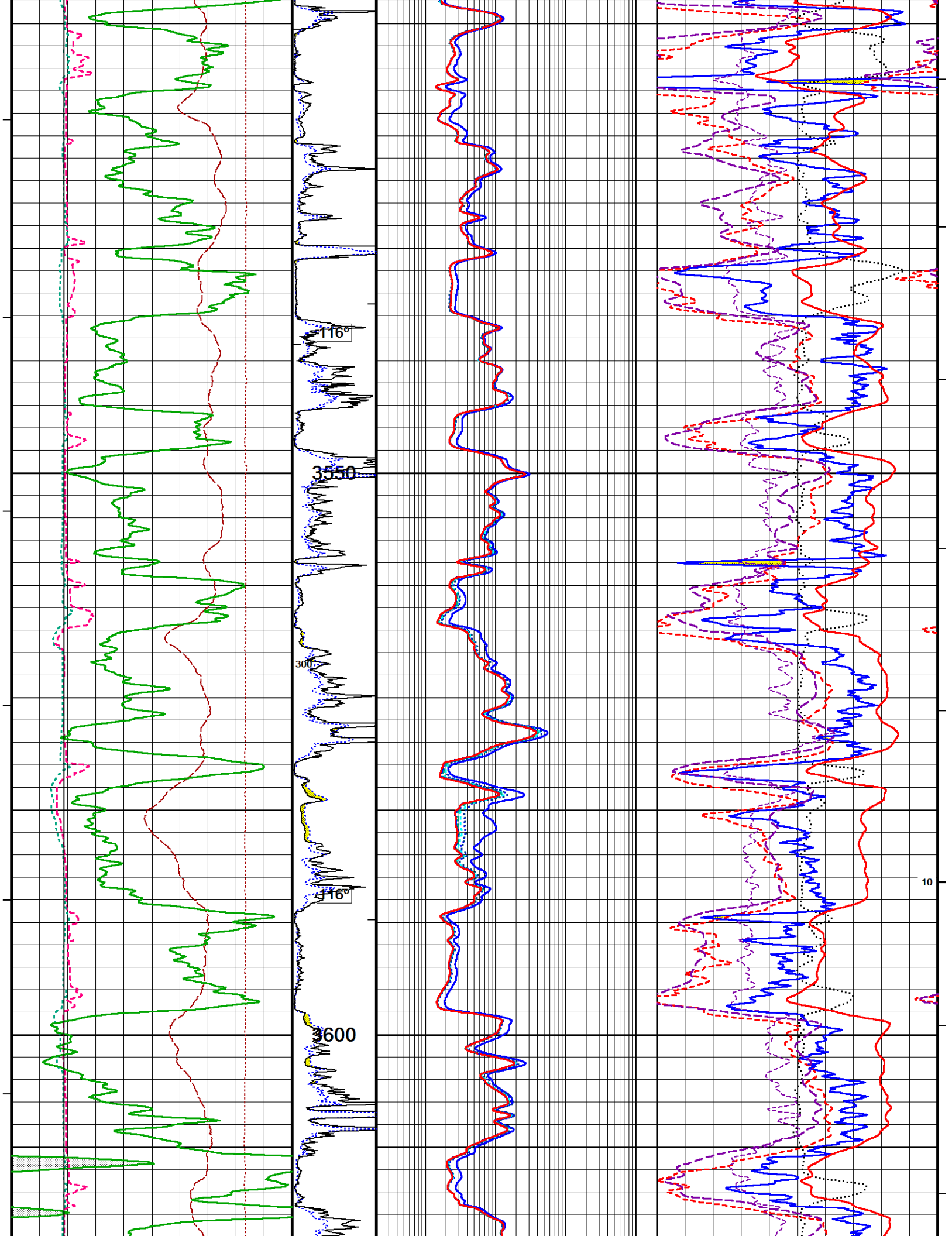
REPEAT SECTION

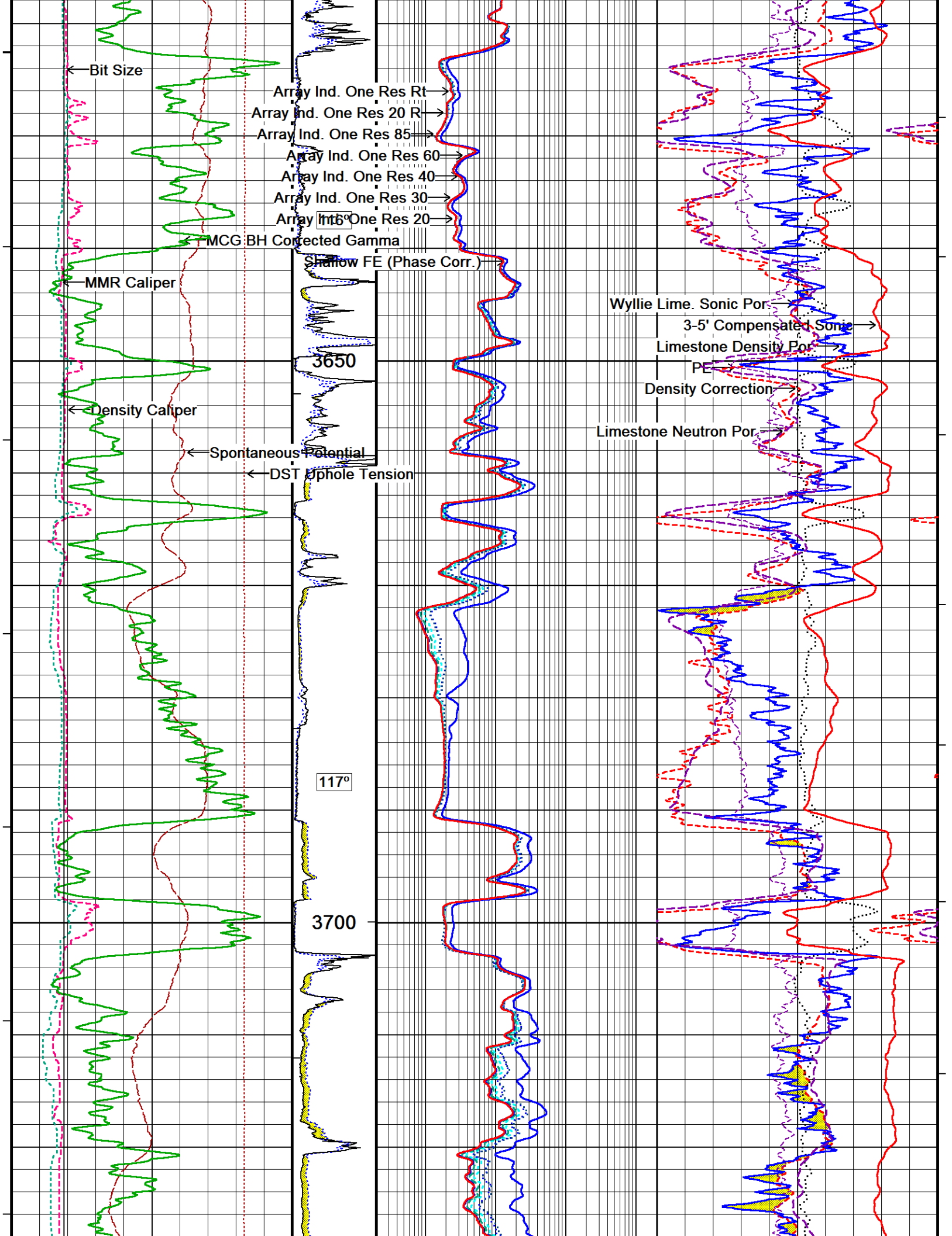
HIGH RESOLUTION PASS

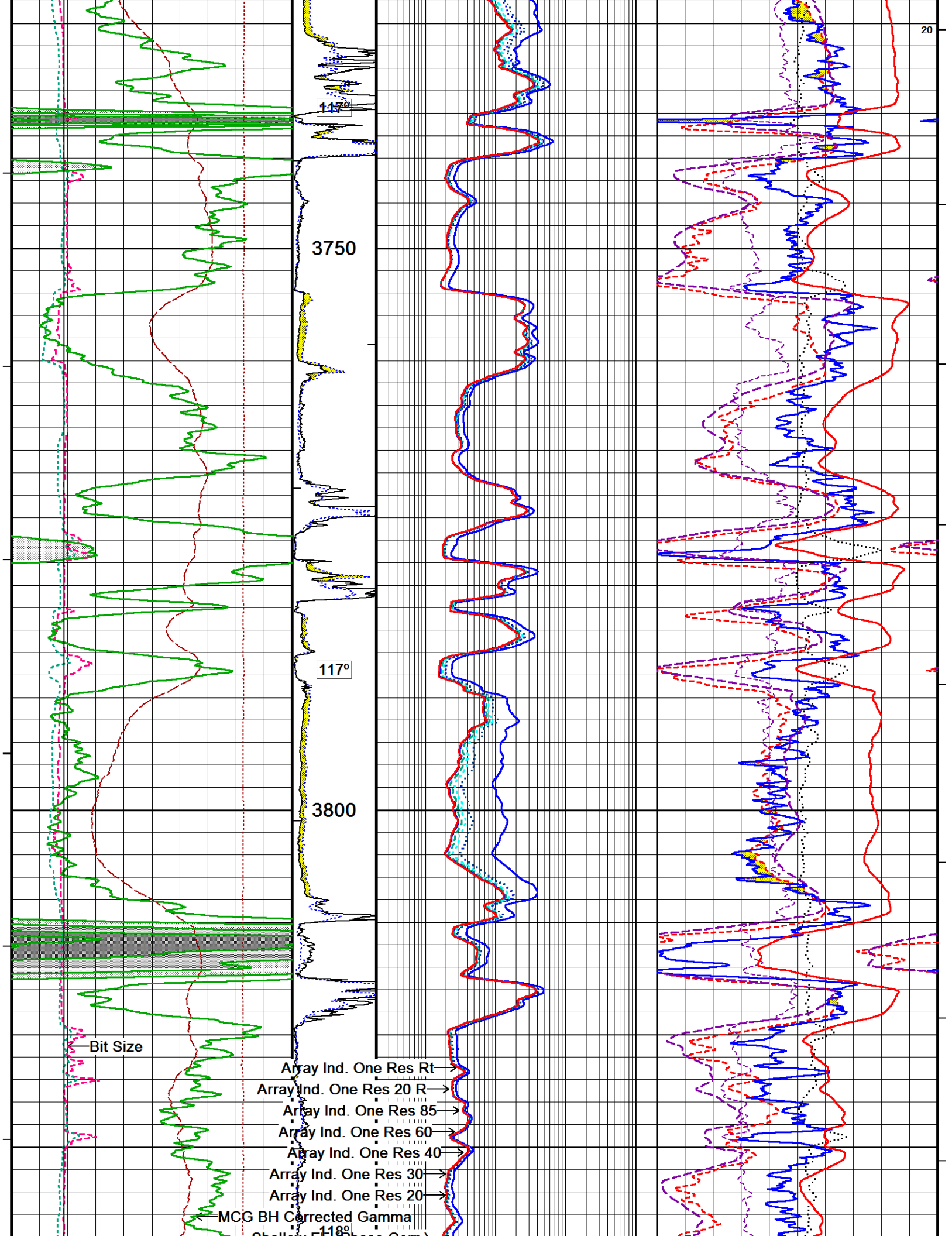
Depth Based Data - Maximum Sampling Increment 2.5cm
Plotted on 21-SEP-2019 15:37
Filename: E:\19_03_WLS_Data\SUEMUR EXPL and PROD_Ritter 1-10\HighRes.dta
Recorded on 21-SEP-2019 13:40
System Versions: Logged with 19.03.4087 Plotted with 19.03.4087

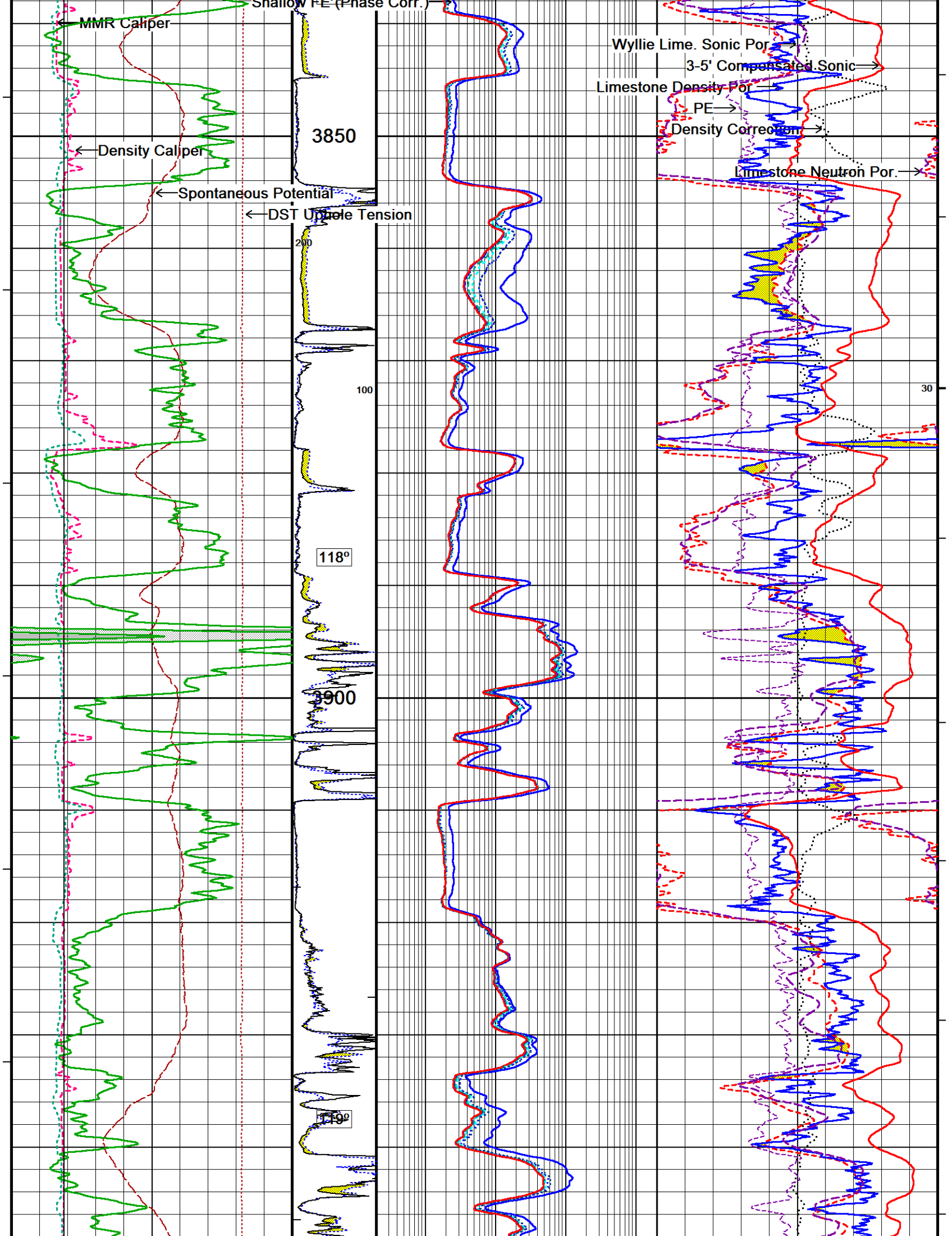


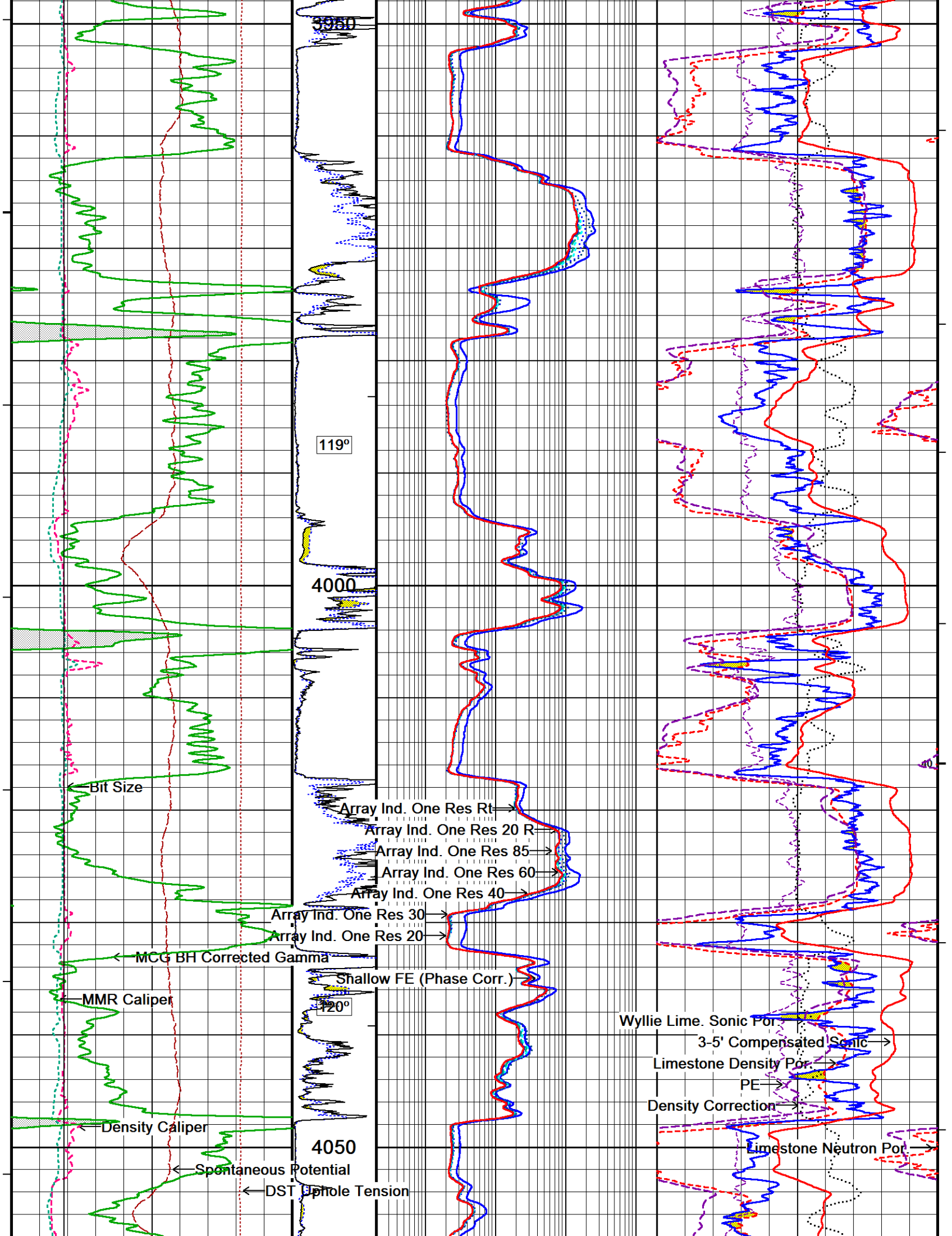

Density Caliper
inches
6
11
16
MMR Caliper
inches
6
11
16
MCG BH Corrected Gamma
API
0
75
150
150
225
300
Bit Size
inches
6
11
16
MINV
0
40
HVI
every
10 cu ft
Annular
Integral
every
10 cu ft
Replay
Scale
1:120
Array Ind. One Res 40
ohm metres
0.20
2000
1
10
100
1000
PE
barns/electron
0
5
10
Array Ind. One Res 60
ohm metres
0.20
2000
1
10
100
1000
Limestone Density Por.
percent
30
10
-10
Array Ind. One Res 85
ohm metres
0.20
2000
1
10
100
1000
3-5' Compensated Sonic
microsec/foot
140
90
40
Array Ind. One Res 20 R
ohm metres
0.20
2000
1
10
100
1000
Wyllie Lime. Sonic Por.
percent
30
10
-10
Array Ind. One Res Rt
ohm metres
0.20
2000
1
10
100
1000
3450
3500
Density Caliper
Spontaneous Potential
DST Uphole Tension
115°
Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.

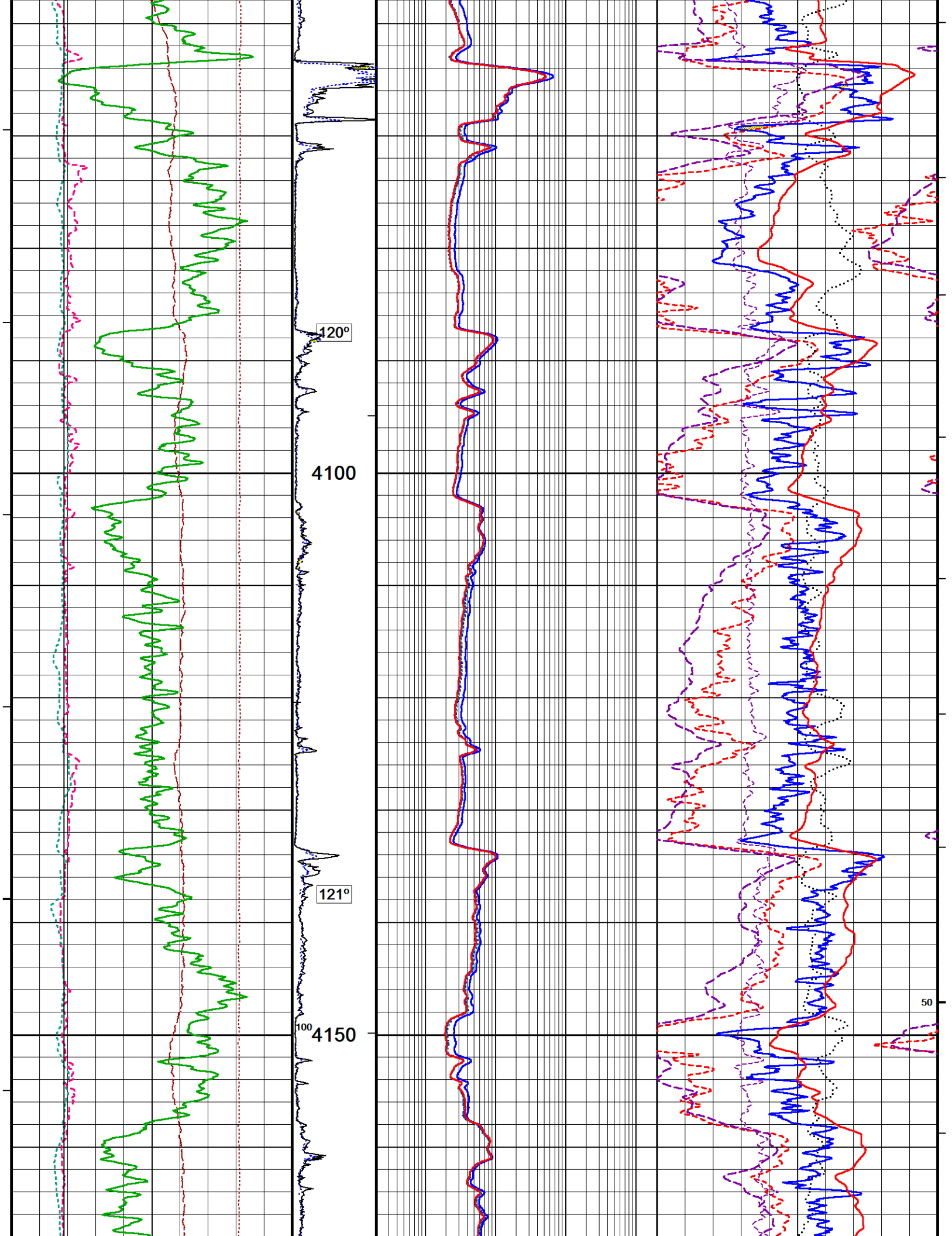

116°
3550
300
116°
3600
10

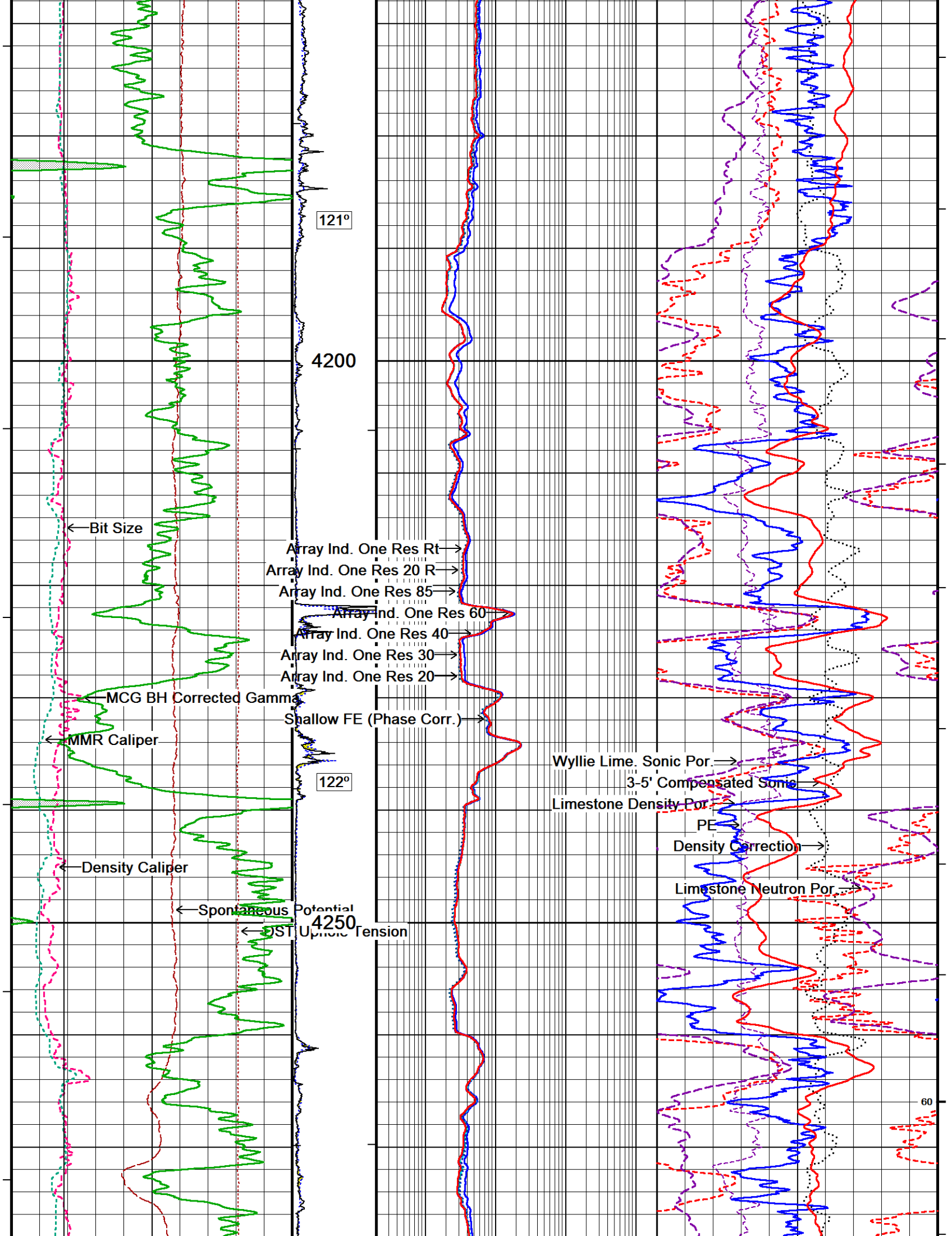

Bit Size
Array Ind. One Res Rt
Array Ind. One Res 20 R
Array Ind. One Res 85
Array Ind. One Res 60
Array Ind. One Res 40
Array Ind. One Res 30
Array Ind. One Res 20
MCG BH Corrected Gamma
Shallow FE (Phase Corr.)
MMR Caliper
Wyllie Lime. Sonic Por
3-5' Compensated Sonic
Limestone Density Por
PE
Density Correction
Density Caliper
Limestone Neutron Por
Spontaneous Potential
DST Uphole Tension
3650
3700
117°

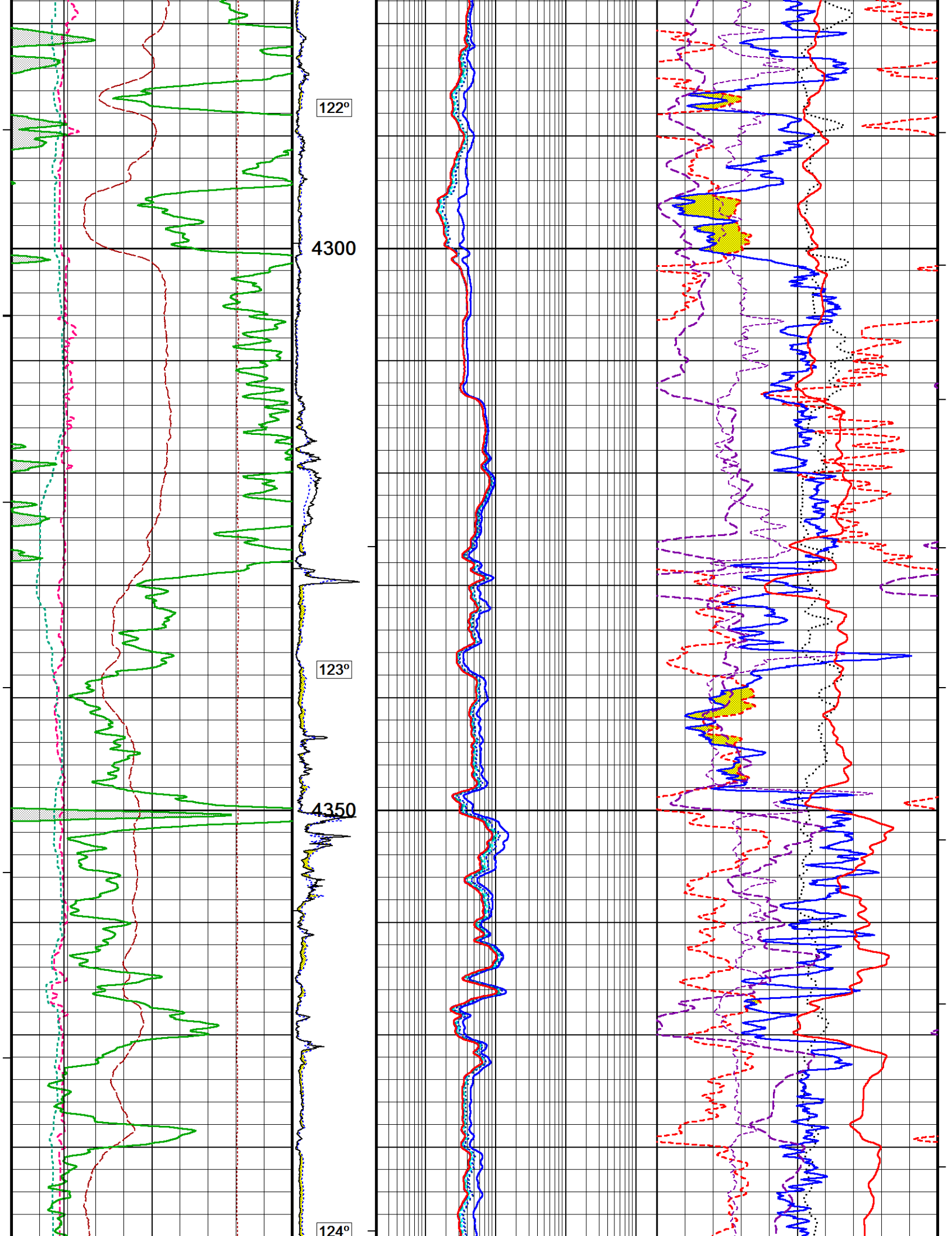

20
117°
3750
117°
3800
Bit Size
Array Ind. One Res Rt
Array Ind. One Res 20 R
Array Ind. One Res 85
Array Ind. One Res 60
Array Ind. One Res 40
Array Ind. One Res 30
Array Ind. One Res 20
MCG BH Corrected Gamma
118°

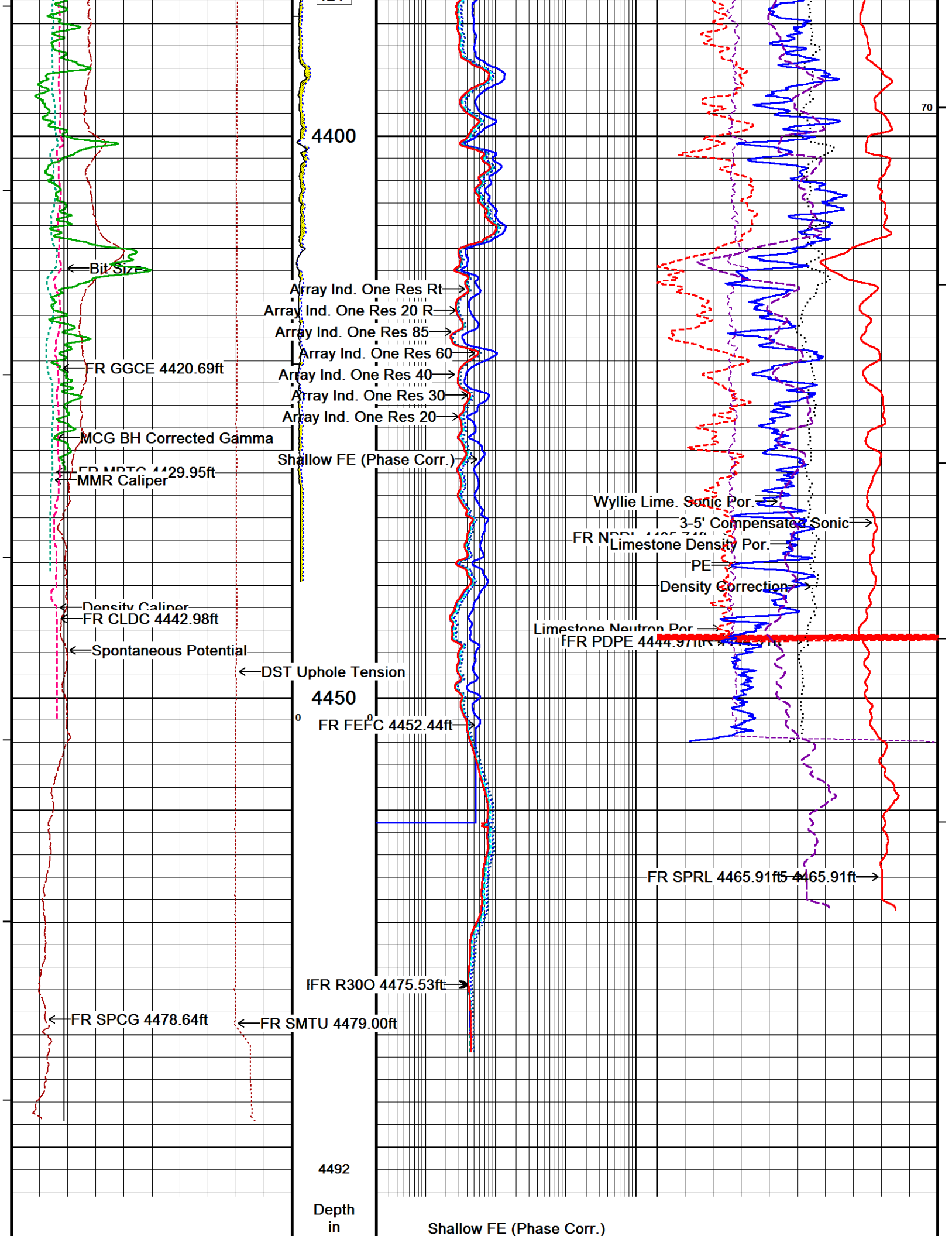

Shallow PE (Phase Corr.)
MMR Caliper
Density Caliper
Spontaneous Potential
DST Uphole Tension
3850
200
100
118°
3900
119°
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.
30

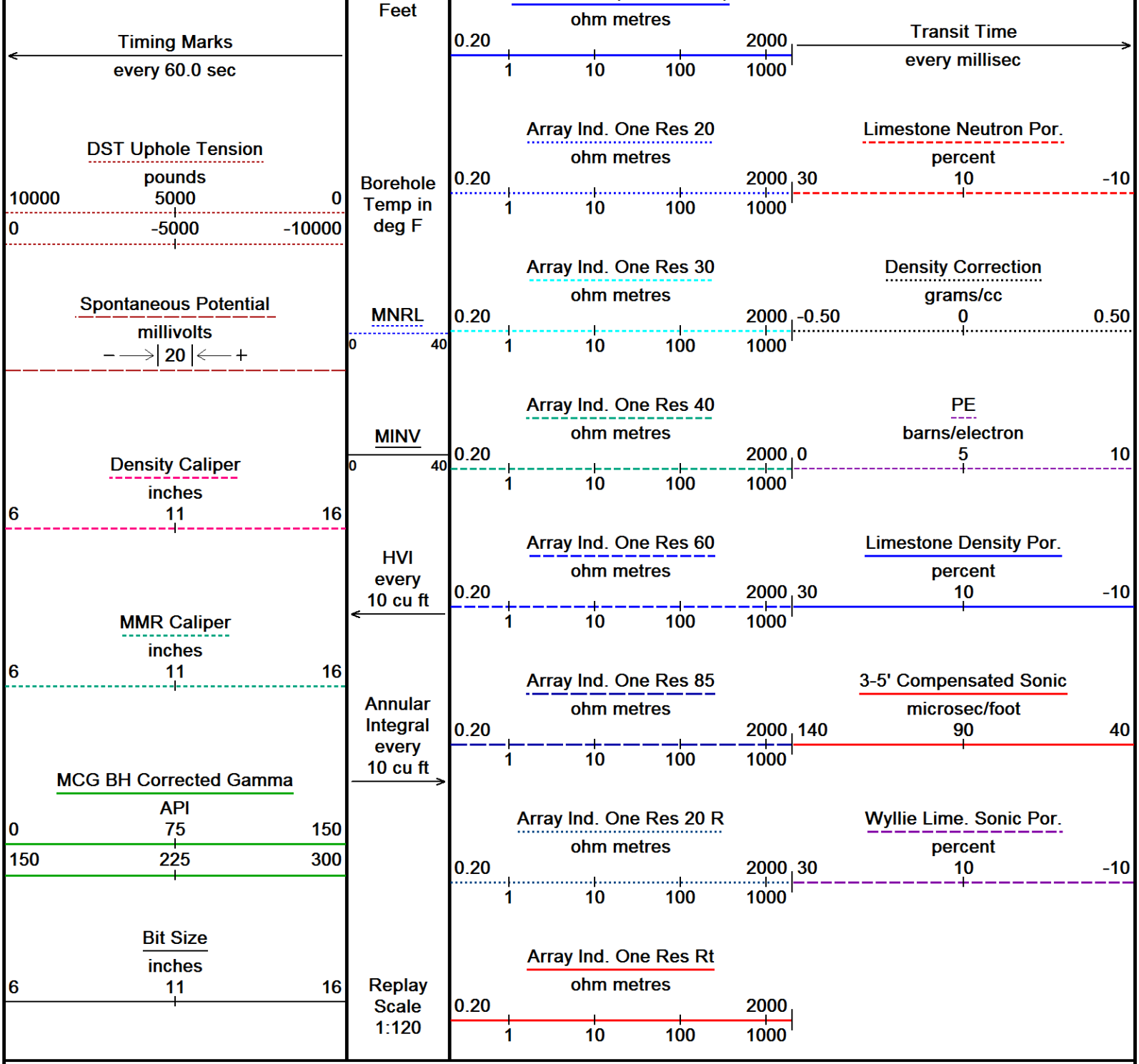

3950
119°
4000
Bit Size
Array Ind. One Res Rt
Array Ind. One Res 20 R
Array Ind. One Res 85
Array Ind. One Res 60
Array Ind. One Res 40
Array Ind. One Res 30
Array Ind. One Res 20
MCG BH Corrected Gamma
Shallow FE (Phase Corr.)
MMR Caliper
120°
Wyllie Lime. Sonic Por
3-5' Compensated Sonic
Limestone Density Por.
PE
Density Correction
Density Caliper
4050
Limestone Neutron Por.
Spontaneous Potential
DST Uphole Tension


120°
4100
121°
100
4150
50


121°
4200
Bit Size
Array Ind. One Res Rt
Array Ind. One Res 20 R
Array Ind. One Res 85
Array Ind. One Res 60
Array Ind. One Res 40
Array Ind. One Res 30
Array Ind. One Res 20
MCG BH Corrected Gamma
Shallow FE (Phase Corr.)
MMR Caliper
122°
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
Limestone Density Por.
PE
Density Correction
Density Caliper
Limestone Neutron Por.
Spontaneous Potential
4250
DST Uphole Tension
60


122°
4300
123°
4350
124°


4400
4450
4492
70
Bit Size
FR GGCE 4420.69ft
MCG BH Corrected Gamma
MMR Caliper
Density Caliper
FR CLDC 4442.98ft
Spontaneous Potential
DST Uphole Tension
FR SPCG 4478.64ft
FR SMTU 4479.00ft
Array Ind. One Res Rt
Array Ind. One Res 20 R
Array Ind. One Res 85
Array Ind. One Res 60
Array Ind. One Res 40
Array Ind. One Res 30
Array Ind. One Res 20
Shallow FE (Phase Corr.)
FR FEFC 4452.44ft
IFR R30O 4475.53ft
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.
FR SPRL 4465.91ft
Depth in
Shallow FE (Phase Corr.)



Depth Based Data - Maximum Sampling Increment 2.5cm
Plotted on 21-SEP-2019 15:37
Filename: E:\19_03_WLS_Data\SUEMUR EXPL and PROD_Ritter 1-10\HighRes.dta
Recorded on 21-SEP-2019 13:40
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HIGH RESOLUTION PASS

BEFORE SURVEY CALIBRATION

E:\19_03_WLS_Data\SUEMUR EXPL and PROD_Ritter 1-10\Main.dta

General Constants All 000

Last Edited on 21-SEP-2019,14:43

General Parameters		
Mud Resistivity	1.100	ohm-metres
Mud Resistivity Temperature	90.000	degrees F
Water Level	0.000	feet
Borehole Fluid Processing	Wet Hole	
Hole/Annular Volume and Differential Caliper Parameters		
HVOL Method	Single Caliper	
HVOL Caliper 1	Density Caliper	

HVOL Caliper 1	Density Caliper	
HVOL Caliper 2	N/A	
Annular Volume Diameter	5.500	inches
Caliper for Differential Caliper	Density Caliper	

Rwa Parameters

Porosity used	Limestone Density Por.
Resistivity used	Array Ind. One Res Rt
RWA Constant A	0.620
RWA Constant M	2.150
SW/APOR Tool Source	0.000

Down-hole Tension Calibration SMS 0

Field Calibration on 03-SEP-2019 00:07

Reading No	Measured	
1	14295.63	0.00
2	16160.51	901.70

High Resolution Temperature Calibration MCG-E.A 571

Field Calibration on 17-SEP-2019,14:38

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	200.00	200.00

High Resolution Temperature Constants MCG-E.A 571

Last Edited on 01-FEB-2019,10:33

Pre-filter Length	11

SP Calibration MCG-E.A 571

Field Calibration on 17-SEP-2019,14:38

	Measured	Calibrated (mV)
Reference 1	-100.0	-100.0
Reference 2	100.0	100.0

Gamma Calibration MCG-E.A 571

Field Calibration on 20-SEP-2019 23:51

	Measured	Calibrated (API)
Background	57	39
Calibrator (Gross)	1897	1300
Calibrator (Net)	1840	1261

Gamma Calibration Tolerances MCG-E.A 571

		1.40	1.475	1.55	
Ratio	1.459				Counts/API

Gamma Constants MCG-E.A 571

Last Edited on 21-SEP-2019,00:00

Gamma Calibrator Number	046	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.08	gm/cc
Caliper Source for Processing	Bit Size	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

Caliper Calibration MMR-A 33

Base Calibration on 17-SEP-2019 13:27
Field Calibration on 20-SEP-2019 23:02

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14815	5.97
2	18298	7.98
3	21581	9.86
4	25388	11.88
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.08	7.98

Caliper Calibration Tolerances MMR-A 33

		7.78	7.98	8.18	
Short Arm Field Cal.	8.08				in

Micro Normal and Micro Inverse Calibration MMR-A 33

Base Calibration on 17-SEP-2019 13:50
Field Check on 20-SEP-2019 23:00

	Resistor 1 (ohm)		Resistor 2 (ohm)	
	10.0		50.0	
Base Calibration				
		Measured		Calibrated (ohm-m)
Micro Normal	9.9	49.2	5.1100	25.5500
Micro Inverse	9.9	49.4	3.3800	16.9000

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	94.6	94.6
Micro Inverse	62.4	62.4

Micro Normal & Micro Inverse Calibration Tolerance MMR-A 33

Micro Normal Res. 1	9.9	-5% 10.0 +5%	ohm	Micro Normal Res. 2	49.2	-5% 50.0 +5% ohm
Micro Inverse Res. 1	9.9	-5% 10.0 +5%	ohm	Micro Inverse Res. 2	49.4	-5% 50.0 +5% ohm
Micro Normal Base Check	94.6	-2% 94.46 +2%	ohm-m			
Micro Inverse Base Check	62.4	-2% 62.31 +2%	ohm-m			
Micro Normal Field Check	94.6	-2% 94.6 +2%	ohm-m			
Micro Inverse Field Check	62.4	-2% 62.4 +2%	ohm-m			

Micro Normal and Micro Inverse Constants MMR-A 33

Last Edited on 19-MAR-2019,10:20

Pad Type	8 in Solid Nylon Machined B22378	
Micro Normal K Factor	0.5110	
Micro Inverse K Factor	0.3380	
Standoff Offset	0.0000	inches

Micro-Resistivity Caliper Constants MMR-A 33

Sonde Configuration	Resistivity Mode

Neutron Calibration MDN-C.A 515

Base Calibration on 17-SEP-2019 14:21
Field Check on 20-SEP-2019 23:19

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2972	92	3714	110
Ratio	32.288		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	1231	1827
Ratio	0.674	

Field Check

	Calibrated (cps)	
	2148	3134
Ratio	0.685	

Neutron Calibration Tolerances MDN-C.A 515

Ratio	32.288	-5% 33 +5%
Base Check	0.674	0.65 0.7 0.75
Field Check	0.685	0.654 0.674 0.694

Neutron Constants MDN-C.A 515

Last Edited on 17-SEP-2019,14:02

Neutron Source Id	P58130B	
Neutron Jig Number	NEC013	
Air Hole Processing	Legacy	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu

Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	Constant Value	
Formation Pressure	0.00	kpsi
Temperature Source	Constant Value	
Temperature	68.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-C.A 413

Base Calibration on 17-SEP-2019 15:08
Field Check on 20-SEP-2019 23:06

	Resistor 1 (ohm)	Resistor 2 (ohm)
	0.0	1000.0

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	971.7	126.8
Base Check		278.9
Field Check		279.2

FE Calibration Tolerances MFE-C.A 413

Reference 2	971.7	-3% 980.0 +3%	ohm
Base Check	278.9	-2% 277.0 +2%	ohm-m
Field Check	279.2	-2% 278.9 +2%	ohm-m

FE Constants MFE-C.A 413

Last Edited on 21-SEP-2019,12:23

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Borehole Correction Constants		
Sonde Position	Centred	inches
Hole Size Source	Density Caliper	
Hole Size Constant Value	N/A	inches
Rm Source	Global Value: Temperature Corrected	
Temp. for Rm Corr.	MCG External Temperature	

Sonic Constants MSS-C.K 368

Last Edited on 17-SEP-2019,15:25

Maximum Boundary Contrast	70.00	micro-sec/ft
Fluid Transit Time	189.00	micro-sec/ft
Limestone Transit Time	47.50	micro-sec/ft
Sandstone Transit Time	55.50	micro-sec/ft
Dolomite Transit Time	43.50	micro-sec/ft
Sonic used for Porosities	3-5' Compensated	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	0.00	micro-sec
MX3FT	1500.00	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft
Sonde Mode	Compensated	
Hole Type	Open Hole	

Sonde Parameters

	Measured	Calibrated
Offset		0.0000
Free Pipe	0.0000	

Peak Amplitude Source

Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	N/A	N/A	N/A	N/A	N/A

4'	N/A	N/A	N/A	N/A	N/A
5'	N/A	N/A	N/A	N/A	N/A
6'	N/A	N/A	N/A	N/A	N/A

Processed Fixed Gate Parameters

Waveform Used For Processing N/A

Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)	Depth (ft)
0.00	0.00	0.00	
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	

Full Waveform Parameters

Use 3' Waveform to derive TR	No	
Use 4' Waveform to derive TR	No	
Use 5' Waveform to derive TR	No	
Use 6' Waveform to derive TR	No	
3' Waveform Discriminator Level	0.30	mV
4' Waveform Discriminator Level	0.30	mV
5' Waveform Discriminator Level	0.15	mV
6' Waveform Discriminator Level	0.15	mV
Waveform Discriminator Filter	Not Applied	
Semblance Window Width	150.00	micro-sec
Semblance Processing Enabled	Yes	
Tracking Boxes Enabled In Processing	Yes	

High Resolution Temperature Calibration MAI-C.A 492

Field Calibration on 20-SEP-2019,23:10

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	200.00	200.00

High Resolution Temperature Constants MAI-C.A 492

Last Edited on 12-DEC-2017,11:02

Pre-filter Length	11

Induction Calibration MAI-C.A 492

Factory Loop Calibration 20-SEP-2019 23:10
Field Check on 17-SEP-2019 15:22

Factory Loop Calibration

High Conductivity Reference Resistor	3.3	ohm
Low Conductivity Reference Resistor	333.3	ohm

	Measured Signal (unitless)		Reference Conductivity (mmho/m)		Calibration	
Array	Low	High	Low	High	Gain	Offset
1 (near)	16.2	457.7	9.3	966.2	2.168	-25.9
2	6.5	373.4	7.6	821.4	2.218	-6.9
3	3.2	252.5	5.2	566.0	2.249	-1.9
4 (far)	2.7	130.3	2.6	279.2	2.169	-3.4

Array Temperature 77.2 Deg F

Tool Checks

	Factory Reference (mmho/m)		Before Survey (mmho/m)		
Array	Low	High	Low	High	
1 (near)	-4.7	2102.5	-6.8	2101.1	
2	12.3	1924.0	10.4	1922.8	
3	14.7	1668.0	13.1	1667.0	
4 (far)	7.9	1136.7	6.9	1136.0	
Array Temperature		78.2		98.8	Deg F

Induction Check Tolerances MAI-C.A 492

Low Array 1	-6.8	-6.2 -4.7 -3.2	mmho/m	High Array 1	2101.1	-0.5% 2102.5 +0.5% mmho/m
Low Array 2	10.4	10.8 12.3 13.8	mmho/m	High Array 2	1922.8	-0.5% 1924.0 +0.5% mmho/m
Low Array 3	13.1	13.2 14.7 16.2	mmho/m	High Array 3	1667.0	-0.5% 1668.0 +0.5% mmho/m
Low Array 4	6.9	6.4 7.9 9.4	mmho/m	High Array 4	1136.0	-0.5% 1136.7 +0.5% mmho/m

Induction Constants MAI-C.A 492

Last Edited on 20-SEP-2019,23:08

Induction Model		RtAP-WBM			
Borehole Correction Constants					
Tool Centred		Yes			
Hole Size Source		MMR Caliper			
Hole Size Constant Value		N/A	inches		
Stand-off Type		N/A			
Stand-off		N/A	inches		
Number of Fins on Stand-off		N/A			
Stand-off Fin Angle		N/A	degrees		
Stand-off Fin Width		N/A	inches		
Rm Source	Global Value: Temperature Corrected				
Temp. for Rm Corr.	MCG External Temperature				
Borehole Correction Method		Centred			
Squasher Start		0.0020	mhos/metre		
Squasher Offset		N/A	mhos/metre		
Borehole Normalisation					
DRM1	0.0000	DRC1		0.0000	
DRM2	0.0000	DRC2		0.0000	
MRM1	0.0000	MRC1		0.0000	
MRM2	0.0000	MRC2		0.0000	
SRM1	0.0000	SRC1		0.0000	
SRM2	0.0000	SRC2		0.0000	
Calibration Site Corrections					
Channel 1		0.00	mmhos/metre		
Channel 2		0.00	mmhos/metre		
Channel 3		0.00	mmhos/metre		
Channel 4		0.00	mmhos/metre		
Symmetrised Receiver Gains					
Receiver 1		1.00			
Receiver 2		1.00			
Receiver 3		1.00			
Receiver 4		1.00			
Apparent Porosity and Water Saturation Constants					
Archie Constant (A)		1.00			
Cementation Exponent (M)		2.00			
Saturation Exponent (N)		2.00			
Saturation of Water for Apor		100.00	percent		
Resistivity of Water for Apor and Sw		0.05	ohm-m		
Resistivity of Mud Filtrate for Sw		0.00	ohm-m		
Source for Rt		0.00			
Source for Rxo		0.00			

Caliper Calibration MPD-D.A 506

Base Calibration on 17-SEP-2019 12:37
Field Calibration on 20-SEP-2019 23:27

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	20149	4.00
2	30235	5.97
3	40489	7.98
4	50180	9.86
5	61200	11.88
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.91	7.98

Caliper Calibration Tolerances MPD-D.A 506

Short Arm Field Cal. 7.91 in

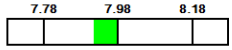


Photo Density Calibration MPD-D.A 506

Base Calibration on 17-SEP-2019 13:03

Field Check on 20-SEP-2019 23:26

Density Calibration

Base Calibration	Measured Near	Measured Far	Calibrated (sdu) Near	Calibrated (sdu) Far
Background	1160	1354		
Reference 1	49815	23833	59494	30754
Reference 2	20423	2452	24557	2522
Field Check at Base	1160.4	1353.6		
Field Check	1159.3	1355.6		

PE Calibration

Base Calibration	WS	Measured WH	Measured Ratio	Calibrated Ratio
Background	219	1043		
Reference 1	21438	49637	0.437	0.367
Reference 2	6218	20299	0.312	0.271
Field Check at Base	219.1	1042.6		
Field Check	221.1	1043.3		

Photo Density Calibration Tolerances MPD-D.A 506

Near Density Ratio	2.53	-5% 2.52 +5%	Far Density Ratio	20.46	-5% 21.00 +5%
PE Calibration	0.120	0.089 0.110 0.131			
Near Den. Field Check	1159.3	-3% 1160.4 +3%	Far Den. Field Check	1355.6	-3% 1353.6 +3%
PE WS Field Check	221.1	-6% 219.1 +6%	PE WH Field Check	1043.3	-6% 1042.6 +6%

Density Constants MPD-D.A 506

Last Edited on 18-SEP-2019,15:49

Density Source Id	P50541B	
Nylon Calibrator Number	766	
Aluminium Calibrator Number	633	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.08	gm/cc
Mud Density Type		
Mud Filtrate Density	1.00	gm/cc
Dry Hole Mud Filtrate Density	1.00	gm/cc
DNCT	0.00	gm/cc
CRCT	0.00	gm/cc
Density Z/A Correction	Hybrid	
Precision Enhanced Density Processing	Applied	

Matrix Density (gm/cc)	Depth (ft)
2.68	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

DOWNHOLE EQUIPMENT

E:\19_03_WLS_Data\SUEMUR EXPL and PROD_Ritter 1-10\Main.dta

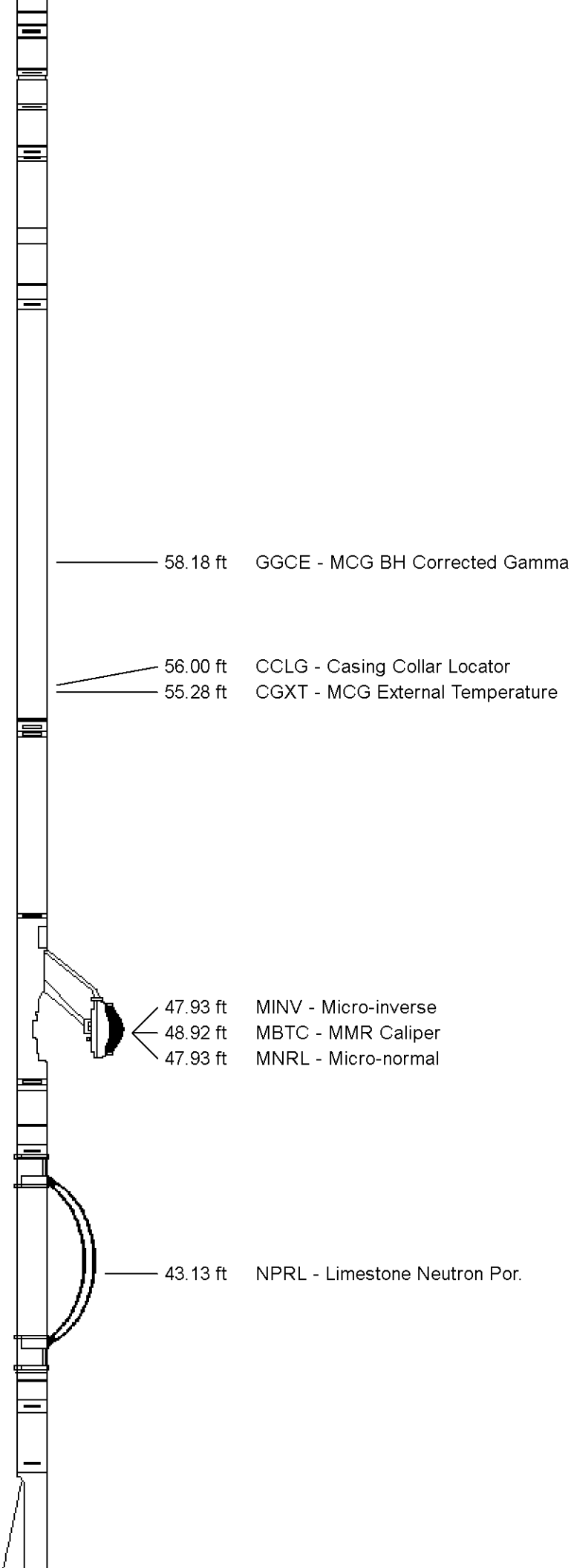
Cablehead, 11 pin

CBH-CA 229 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

11C-11B Compact Tool Adaptor
MTA-K.A 189 LG: 1.53 ft WT: 13.2 lb OD: 2.240 in

Compact Swivel Head Adaptor
SHA-J.B 726 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

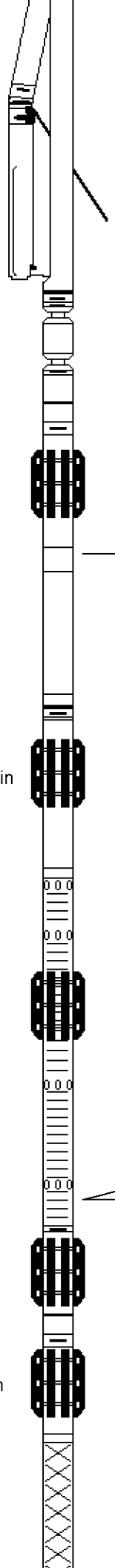
Compact Comms Gamma
MCG-E.A 571 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in



Compact Micro-Resistivity
MMR-A 33 LG: 8.59 ft WT: 81.6 lb OD: 5.079 in

Compact Neutron
MDN-C.A 515 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-D.A 506 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in



35.89 ft CLDC - Density Caliper
35.89 ft HVOL - Hole Volume
35.89 ft AVOL - Annular Volume
33.96 ft DCOR - Density Correction
33.96 ft DPRL - Limestone Density Por.
33.90 ft PDPE - PE

Compact Knuckle Joint
SKJ-E.B 516 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

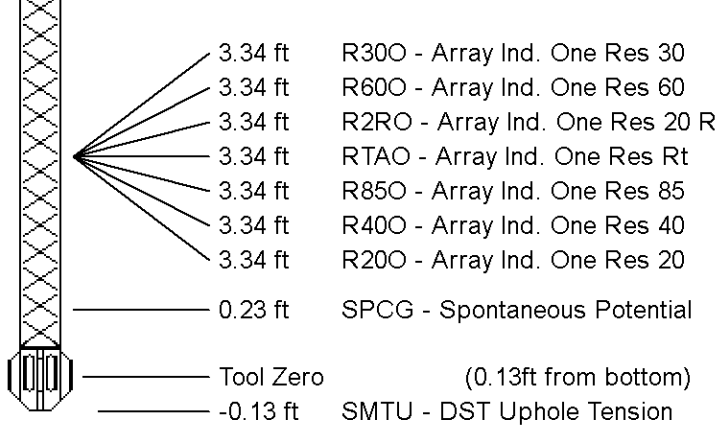
Compact Focussed Electric
MFE-C.A 413 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

26.43 ft FEFC - Shallow FE (Phase Corr.)

Compact Sonic
MSS-C.K 368 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

12.96 ft DT35 - 3-5' Compensated Sonic
12.96 ft SPRL - Wyllie Lime. Sonic Por.

Compact Induction
MAI-C.A 492 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in



Total Length: 69.69 ft Weight: 540.1 lb All measurements relative to tool zero.

COMPANY	SUEMAUR EXPLORATION & PRODUCTION LLC
WELL	RITTER 1-10
FIELD	WILDCAT
PROVINCE/COUNTY	DECATUR
COUNTRY/STATE	USA / KANSAS

Elevation Kelly Bushing	2721	feet	First Reading	4476.00	feet
Elevation Drill Floor	2719	feet	Depth Driller	4487.00	feet
Elevation Ground Level	2716	feet	Depth Logger	4479.00	feet

Weatherford®

10 INCH HIGH RESOLUTION
REPEAT SECTION
COMPOSITE LOG