MICRO RESISTIVITY LOG

Weatherford®

COMPANY	SHAKESPEARE OIL CO., INC.
WELL	K OTTLEY 2-14
FIELD	WILDCAT
PROVINCE/COUNTY	LOGAN
COUNTRY/STATE	USA / KANSAS
LOCATION	NW-SW-SE-SE 500' FSL & 1150' FEL

SEC 14	TWP 14S	RGE 32W
Latitude	38.831151	
Longitude	-100.8393015	
API Number	15-109-21579	

Other Services
ARRAY INDUCTION — DUAL SPACED NEUTRON
PHOTO DENSITY

Permanent Datum Ground Level, Elevation 2791 feet
Log Measured From KB, 9.00 feet above Permanent Datum
Drilling Measured From KB

Elevations:	feet
KB	2800.00
DF	
GL	2791.00

Date	01-FEB-2019					
Run Number	ONE					
Service Order	18148-236170428					
Depth Driller	4550.00	feet				
Depth Logger	4548.00	feet				
First Reading	4520.80	feet				
Last Reading	1000.00	feet				
Casing Driller	264.00	feet				
Casing Logger	262.00	feet				
Bit Size	7.875	inches				
Hole Fluid Type	WATER BASED					
Density / Viscosity	9.40	lb/USg	57.00	sec/qt		
PH / Fluid Loss	10.00		9.60	ml/30Min		
Sample Source	FLOW LINE					
Rm @ Measured Temp	0.45 @ 83.0	ohm-m				
Rmf @ Measured Temp	0.40 @ 83.0	ohm-m				
Rmc @ Measured Temp	0.54 @ 83.0	ohm-m				
Source Rmf / Rmc	CALC		CALC			
Rm @ BHT	0.34 @111.0	ohm-m				
Time Since Circulation	3.0 HOURS					
Max Recorded Temp	111.00	deg F				
Equipment / Base	13244		LIB			
Recorded By	S. WIGHT					
Witnessed By	TIM LAUER					

BOREHOLE RECORD

Last Edited: 01-FEB-2019 07:24

Bit Size inches	Depth From feet	Depth To feet
12.250	0.00	264.00
7.875	264.00	4550.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	264.00	24.00

REMARKS

- RUN ONE: MCG, MML, MDN, MPD, MAI RUN IN COMBINATION.
- HARDWARE: DUAL BOWSPRING USED ON MDN.
0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 1835 CU.FT.
- ANNULAR HOLE VOLUME WITH 4.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING: 1360 CU.FT.
- RIG: DUKE #4.
- OPERATOR: B. TOVAR, B. COPELAND, D. STEELE

OPERATOR: B. TOVAR, B. COPELAND, D. STEELE

In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 01-FEB-2019 09:08
Filename: C:\Minimus 18.05.4364\DATA\Shakespeare Oil Co (OTTLEY 2-14)\MAIN PASS_FINAL.dta — Recorded on 01-FEB-2019 05:58
System Versions: Logged with 18.05.4364 Processed with 18.05.4364 Plotted with 18.05.4364

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
– → | 20 | ← +

MMR Caliper
inches
6 11 16

Bit Size
inches
6 11 16

DST Uphole Tension
pounds
5000 0

Depth in Feet

Borehole Temp in deg F

HVI every 10 cu ft

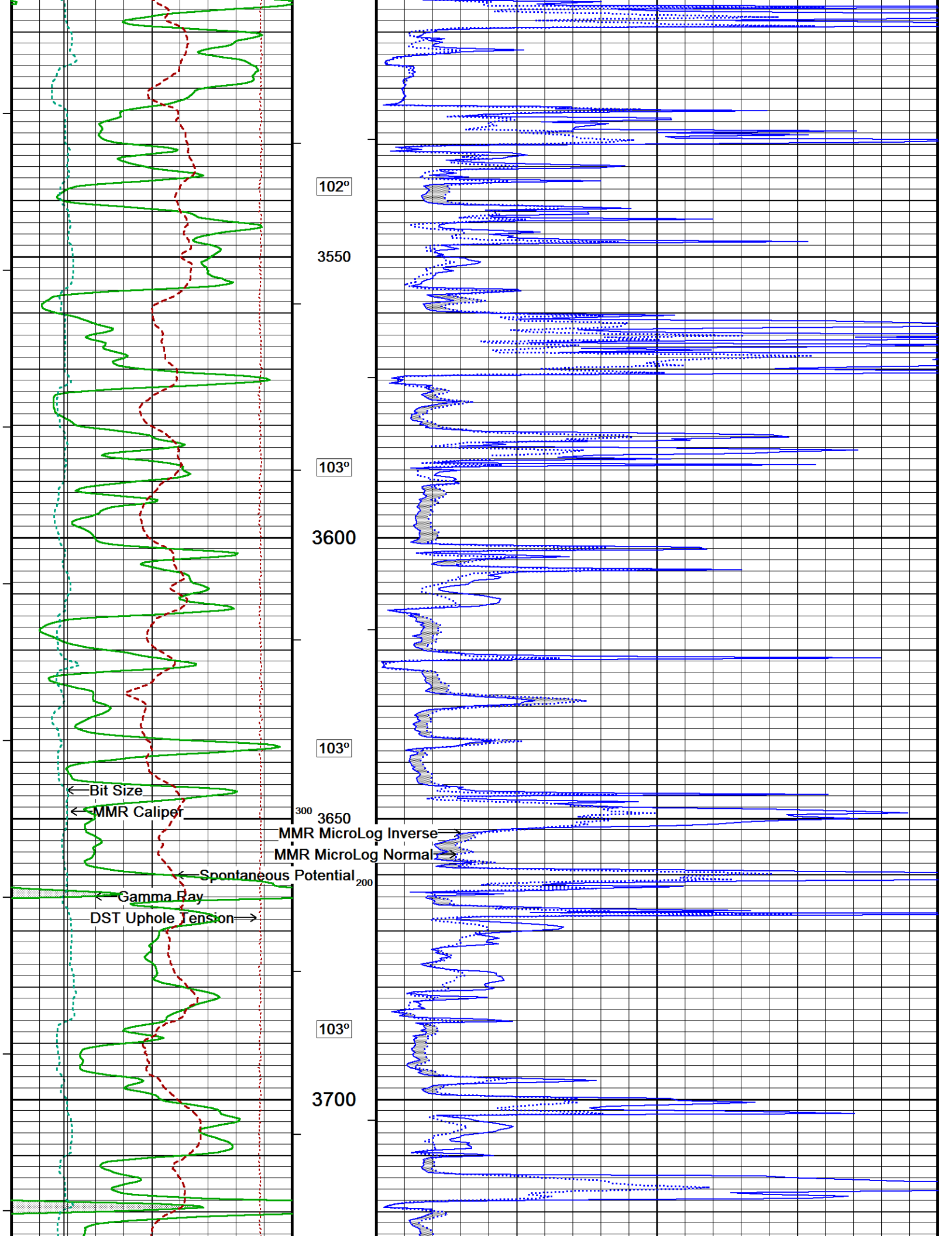
Annular Integral every 10 cu ft

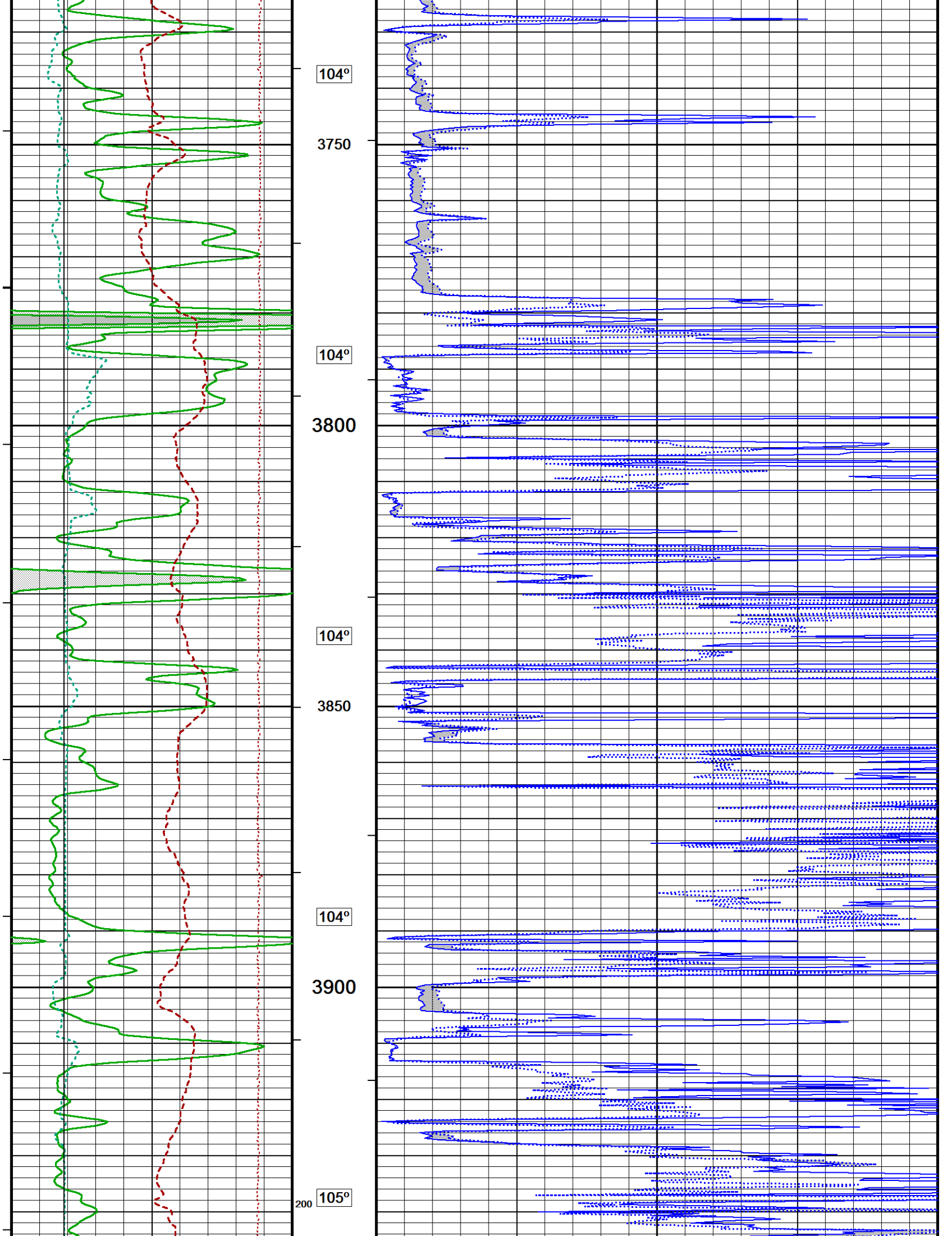
Replay Scale 1:240

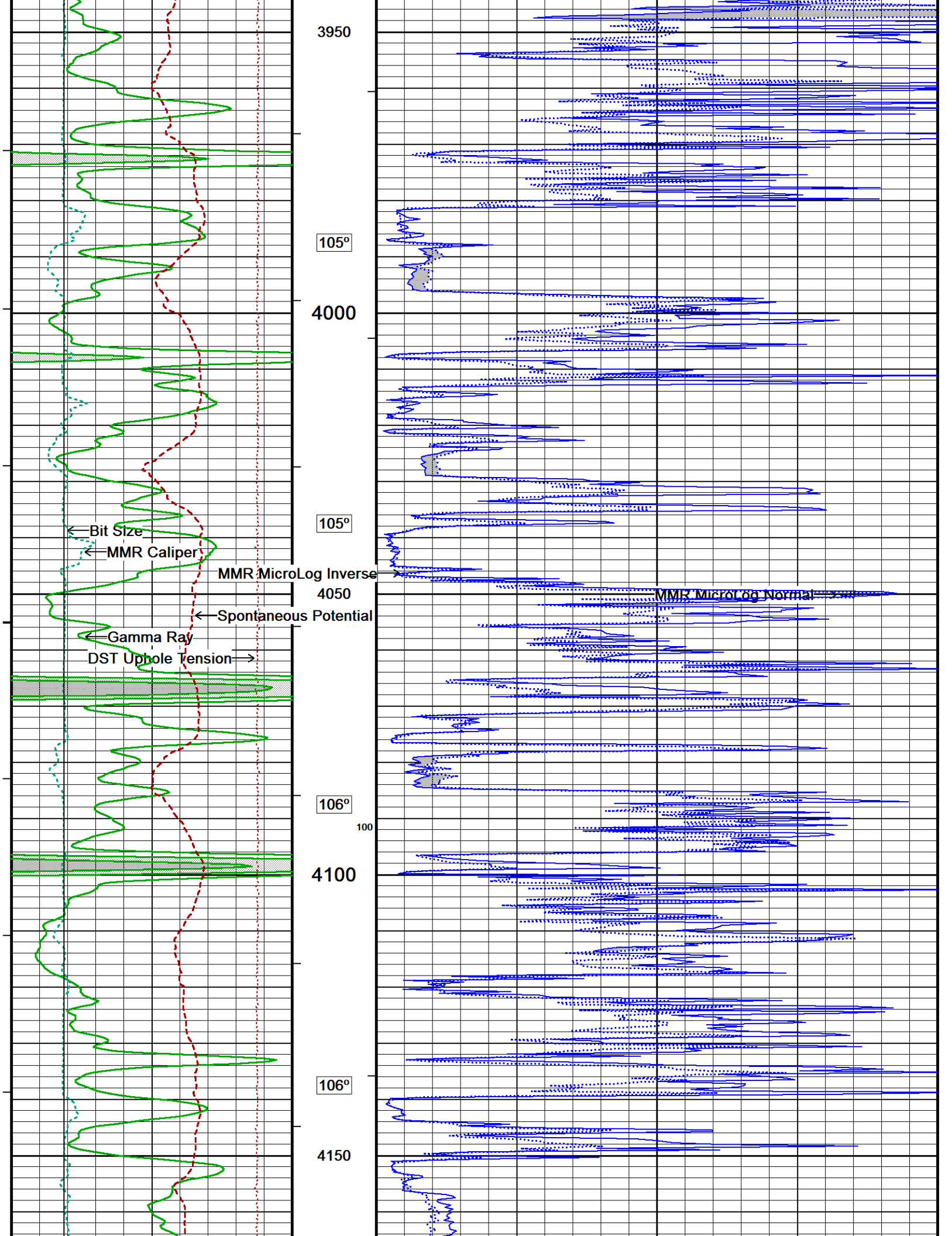
3500

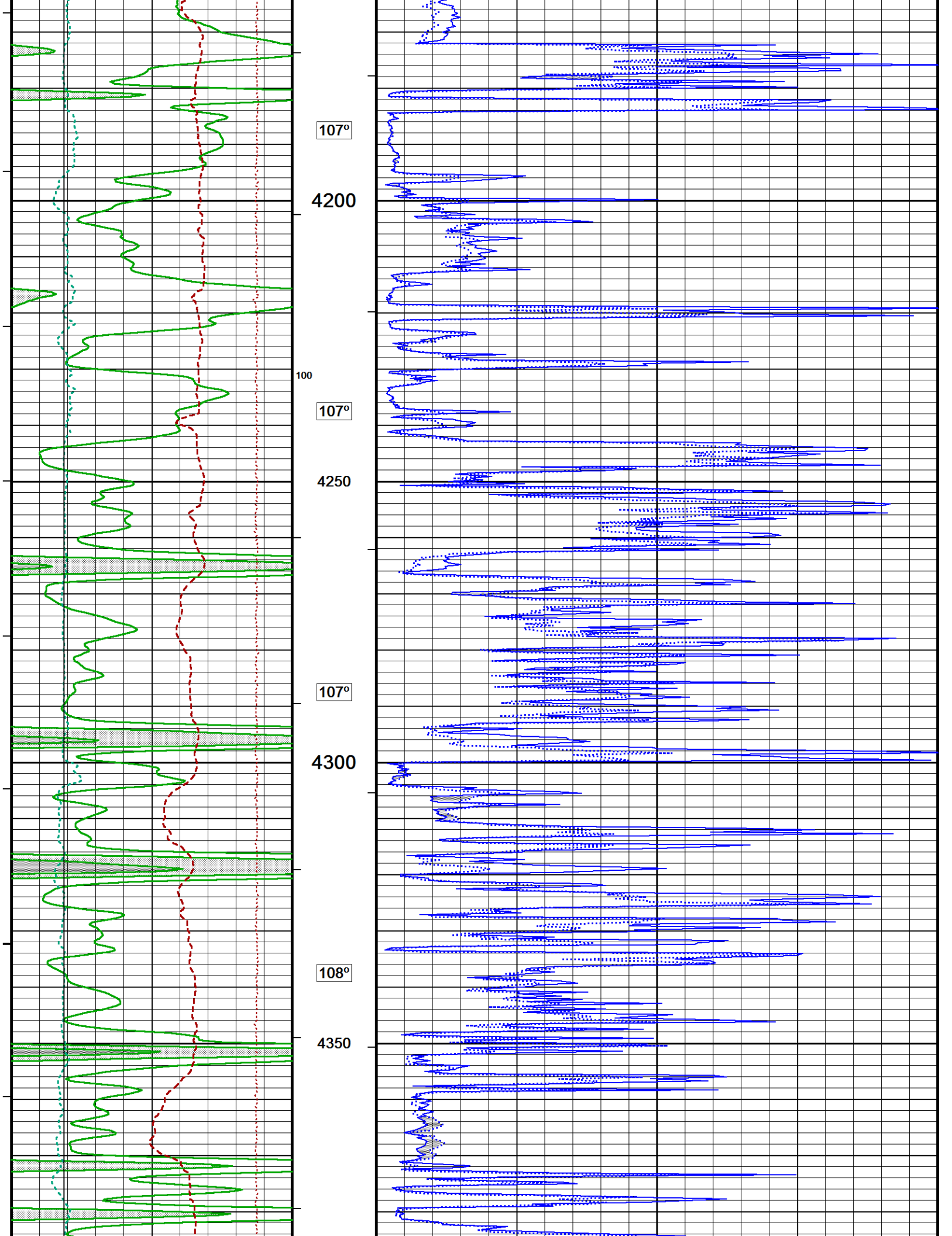
MMR MicroLog Normal
ohm metres
0 10 20 30 40

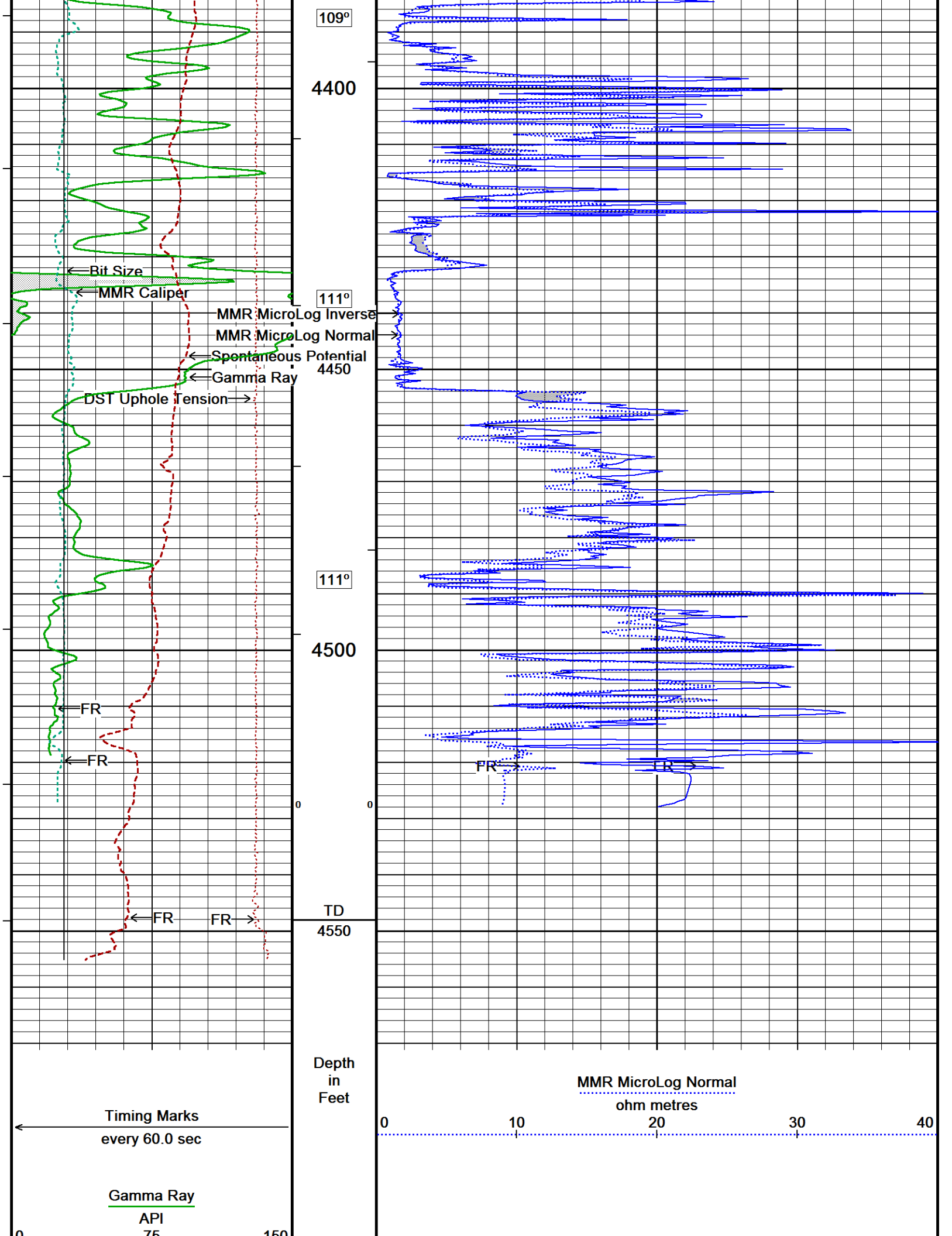
MMR MicroLog Inverse
ohm metres
0 10 20 30 40

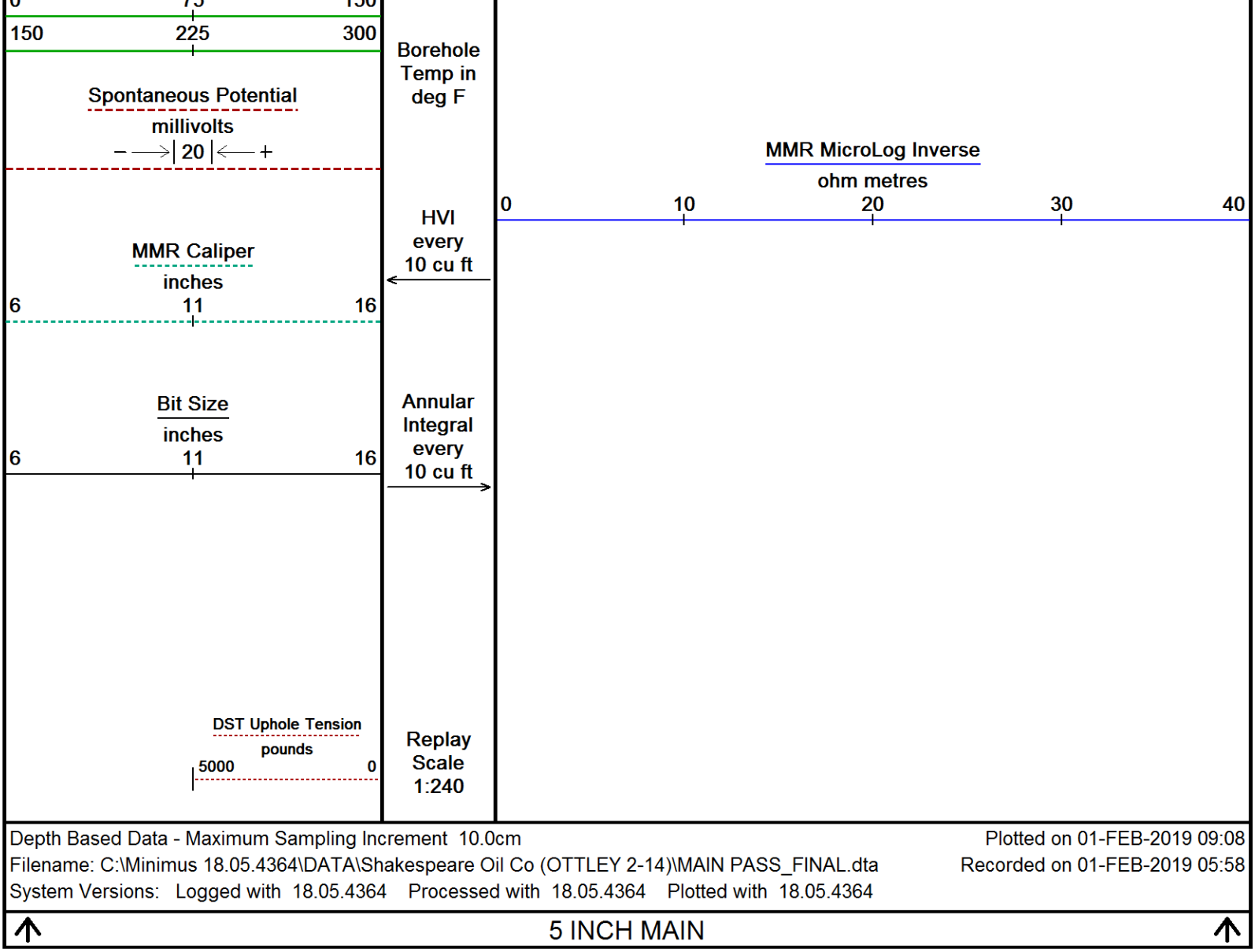

102°
3550
103°
3600
103°
Bit Size
MMR Caliper
300
3650
MMR MicroLog Inverse
MMR MicroLog Normal
Spontaneous Potential
200
Gamma Ray
DST Uphole Tension
103°
3700


104°
3750
104°
3800
104°
3850
104°
3900
200
105°


3950
105°
4000
105°
Bit Size
MMR Caliper
MMR MicroLog Inverse
4050
MMR MicroLog Normal
Spontaneous Potential
Gamma Ray
DST Uphole Tension
106°
100
4100
106°
4150


107°
4200
100
107°
4250
107°
4300
108°
4350


109°
4400
Bit Size
MMR Caliper
111°
MMR MicroLog Inverse
MMR MicroLog Normal
Spontaneous Potential
4450
Gamma Ray
DST Uphole Tension
111°
4500
FR
FR
FR
FR
FR
FR
0
0
TD
4550
Depth
in
Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
MMR MicroLog Normal
ohm metres
0
10
20
30
40

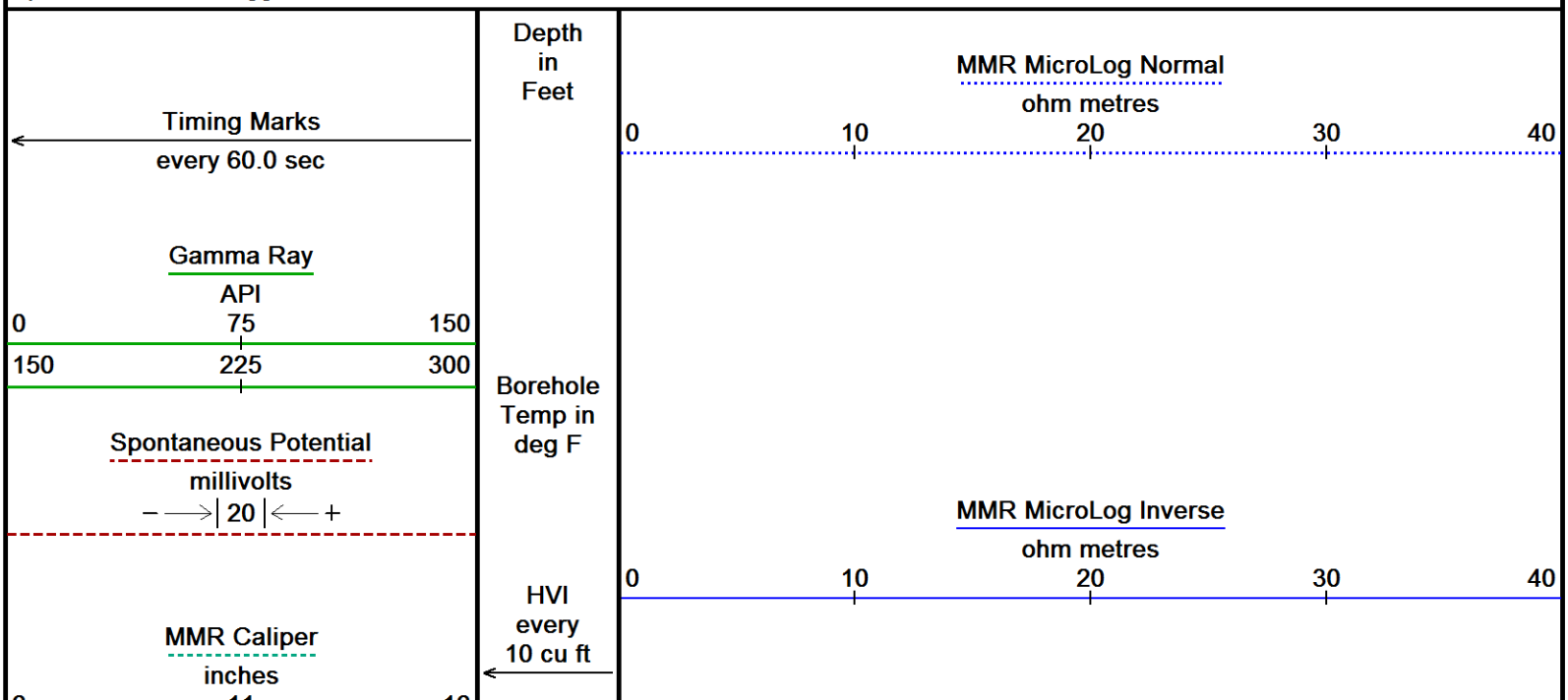


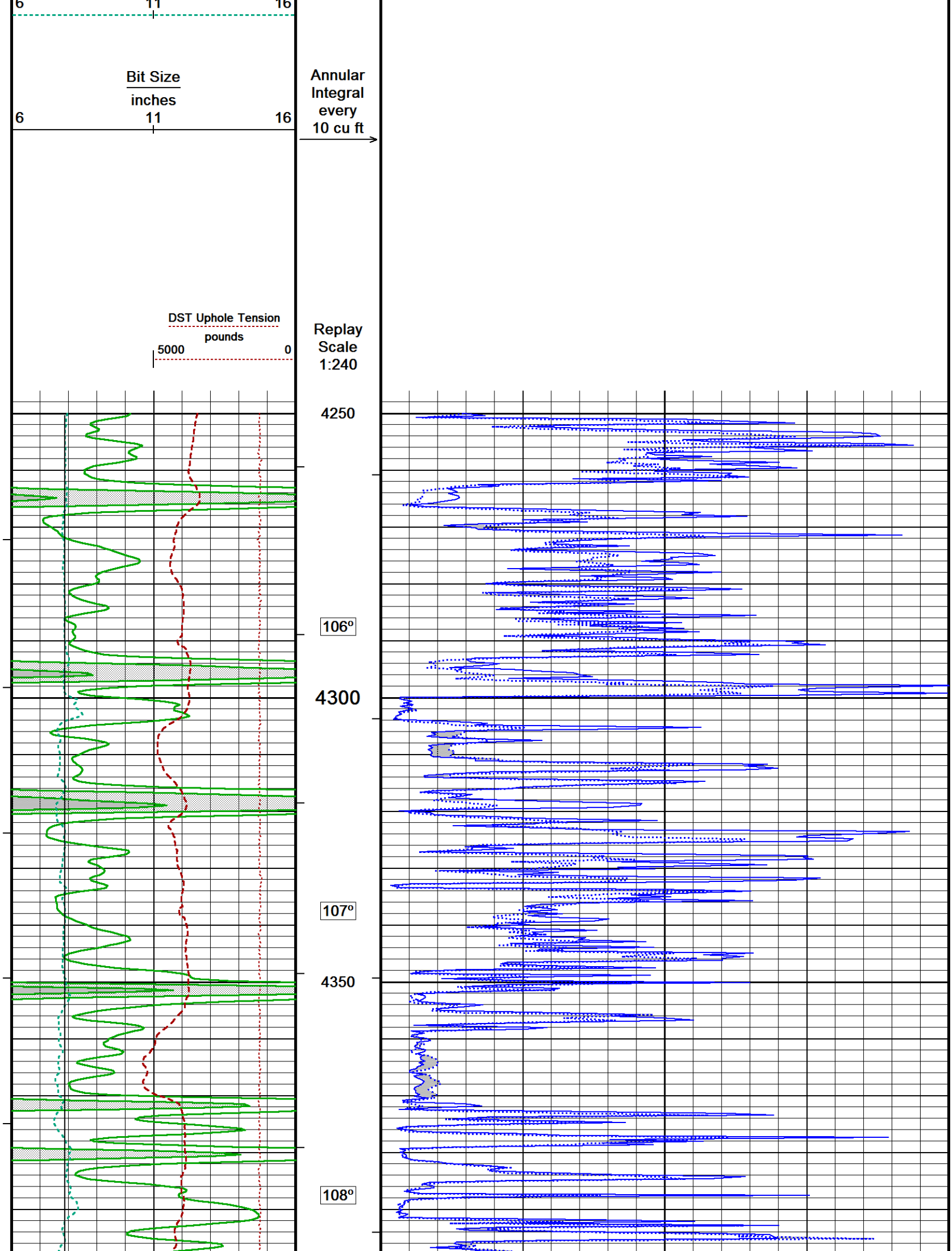
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 01-FEB-2019 09:08
Filename: C:\Minimus 18.05.4364\DATA\Shakespeare Oil Co (OTTLEY 2-14)\MAIN PASS_FINAL.dta — Recorded on 01-FEB-2019 05:58
System Versions: Logged with 18.05.4364 Processed with 18.05.4364 Plotted with 18.05.4364

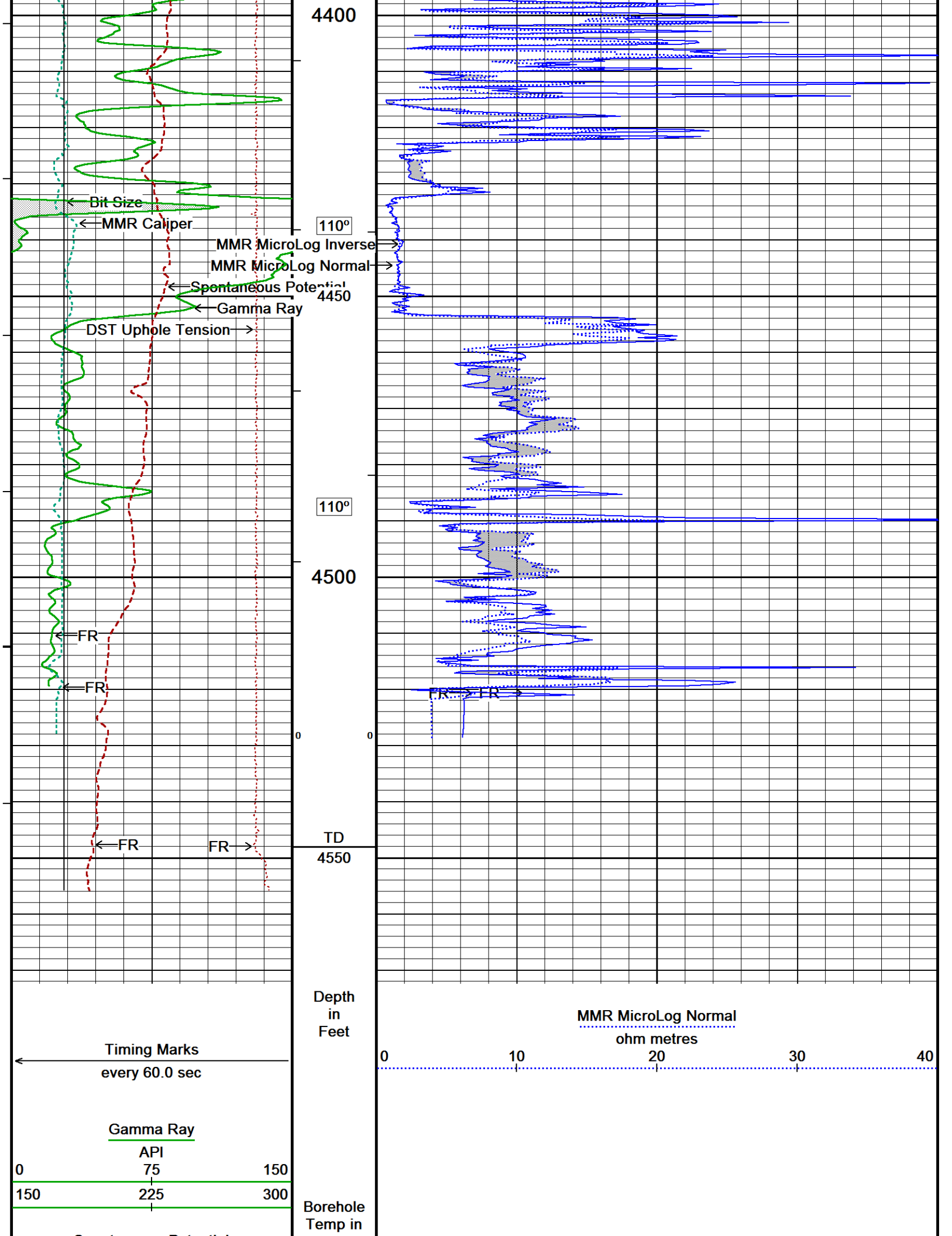
5 INCH MAIN

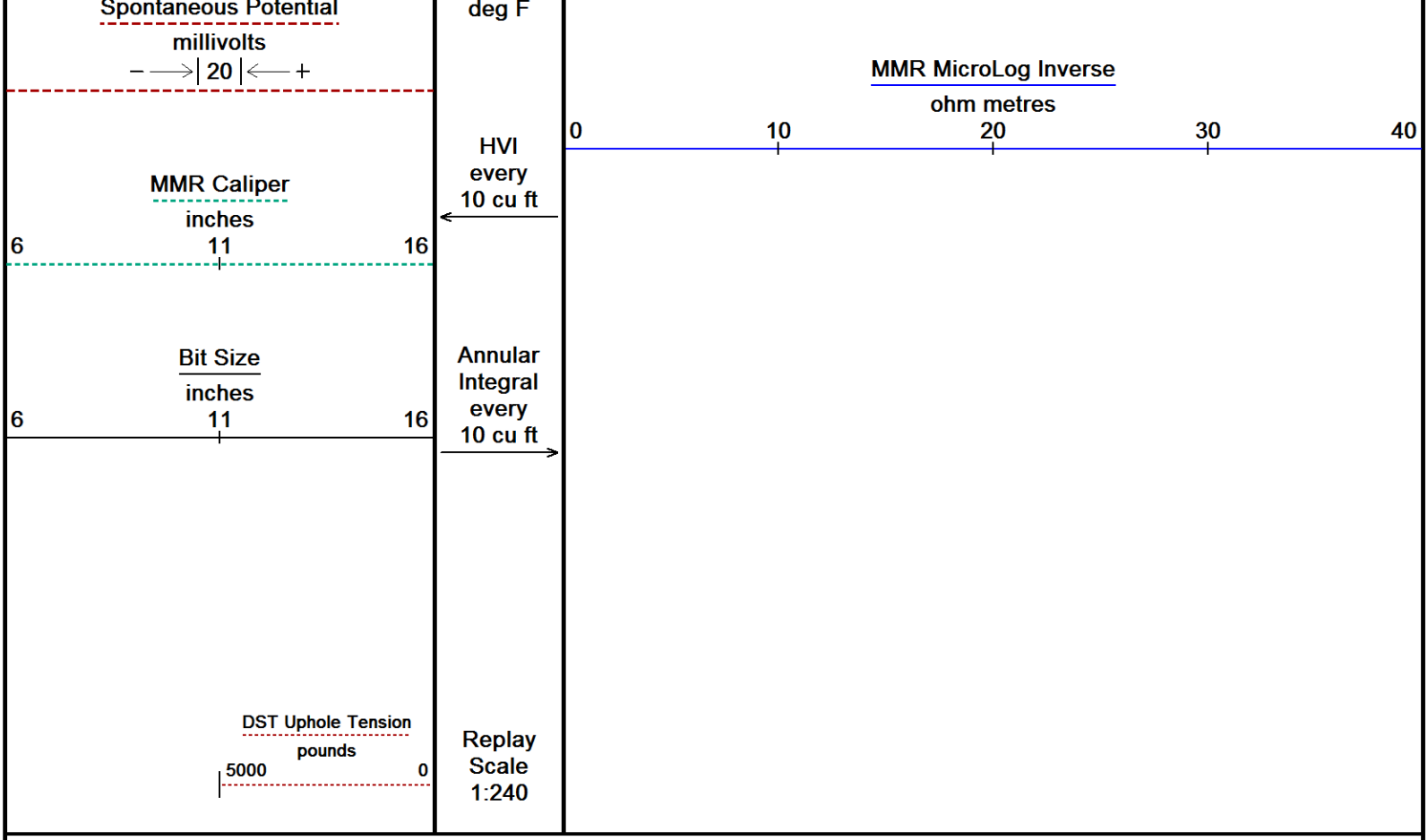
REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 01-FEB-2019 09:08
Filename: C:\Minimus 18.05.4364\DATA\Shakespeare Oil Co (OTTLEY 2-...\REPEAT PASS_FINAL.dta — Recorded on 01-FEB-2019 05:35
System Versions: Logged with 18.05.4364 Processed with 18.05.4364 Plotted with 18.05.4364




6
11
16
Bit Size
inches
6
11
16
Annular
Integral
every
10 cu ft
DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
4250
106°
4300
107°
4350
108°


4400
Bit Size
MMR Caliper
110°
MMR MicroLog Inverse
MMR MicroLog Normal
Spontaneous Potential
4450
Gamma Ray
DST Uphole Tension
110°
4500
FR
FR
0
0
FR
FR
FR
FR
TD
4550
Depth
in
Feet
MMR MicroLog Normal
ohm metres
0
10
20
30
40
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Borehole
Temp in



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 01-FEB-2019 09:08

Filename: C:\Minimus 18.05.4364\DATA\Shakespeare Oil Co (OTTLEY 2-...\REPEAT PASS_FINAL.dta — Recorded on 01-FEB-2019 05:35

System Versions: Logged with 18.05.4364 Processed with 18.05.4364 Plotted with 18.05.4364

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 18.05.4364\DATA\Shakespeare Oil Co (OTTLEY 2-14)\MAIN PASS_FINAL.dta

General Constants All 000

Last Edited on 01-FEB-2019,08:32

General Parameters		
Mud Resistivity	0.450	ohm-metres
Mud Resistivity Temperature	83.000	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	MMR Caliper	
HVOL Caliper 2	N/A	
Annular Volume Diameter	4.500	inches
Caliper for Differential Caliper	MMR Caliper	
Rwa Parameters		
Porosity used	Crossplot Porosity	
Resistivity used	Array Ind. Four 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 01-FEB-2019 04:18

Reading No	Measured	Calibrated (lbs)
1	14340.40	0.00
2	14867.91	377.00

SP Calibration MCG-D.K 443

Field Calibration on 10-DEC-2018 15:37

	Measured	Calibrated (mV)
Reference 1	100.8	99.9
Reference 2	-98.4	-99.9

High Resolution Temperature Calibration MCG-D.K 443

Field Calibration on 12-OCT-2018,05:20

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	212.00	212.00

High Resolution Temperature Constants MCG-D.K 443

Last Edited on 12-OCT-2018,05:20

Pre-filter Length	11

Gamma Calibration MCG-D.K 443

Field Calibration on 31-JAN-2019 17:18

	Measured	Calibrated (API)
Background	79	54
Calibrator (Gross)	744	510
Calibrator (Net)	665	456

Gamma Calibration Tolerances MCG-D.K 443

Ratio	1.458	1.40 / 1.475 / 1.55	Counts/API

Gamma Constants MCG-D.K 443

Last Edited on 01-FEB-2019,04:57

Gamma Calibrator Number	MCGGRCC141	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.13	gm/cc
Caliper Source for Processing	MMR Caliper	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

Micro Normal and Micro Inverse Calibration MMR-B.A 91

Base Calibration on 18-JAN-2019 12:24
Field Check on 31-JAN-2019 16:51

	Resistor 1 (ohm)	Resistor 2 (ohm)
	10.0	50.0

Base Calibration

	Measured		Calibrated (ohm-m)	
Micro Normal	10.2	49.8	5.1	25.6
Micro Inverse	9.9	49.4	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	93.8	93.8
Micro Inverse	62.3	62.3

Micro Normal & Micro Inverse Calibration Tolerance MMR-B.A 91

Micro Normal Res. 1	10.2	-5% / 10.0 / +5%	ohm	Micro Normal Res. 2	49.8	-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	93.8	-2% / 93.40 / +2%	ohm-m			
Micro Inverse Base Check	62.3	-2% / 62.27 / +2%	ohm-m			
Micro Normal Field Check	93.8	-2% / 93.8 / +2%	ohm-m			
Micro Inverse Field Check	62.3	-2% / 62.3 / +2%	ohm-m			

Micro Normal and Micro Inverse Constants MMR-B.A 91

Last Edited on 13-APR-2018,05:04

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159	
Micro Normal K Factor	0.5110	
Micro Inverse K Factor	0.3380	
Standoff Offset	0.0000	inches

Caliper Calibration MMR-B.A 91

Base Calibration on 18-JAN-2019 14:14
Field Calibration on 31-JAN-2019 16:54

Base Calibration

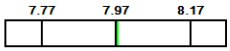
Reading No	Measured	Calibrator Size (in)

1	14078	5.98
2	17477	7.97
3	20615	9.86
4	24868	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.97	7.97

Caliper Calibration Tolerances MMR-B.A 91

Short Arm Field Cal. 7.97 

in

Micro-Resistivity Caliper Constants MMR-B.A 91

Sonde Configuration Resistivity Mode

Micro Laterolog Calibration MMR-B.A 91

Base Calibration on 31-DEC-1999 00:00
Field Check on 31-DEC-1999 00:00

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

Base Calibration

Measured		Calibrated (ohm-m)	
Ref 1	Ref 2	Ref 1	Ref 2
0.0	0.0	0.0	0.0

Base Check (ohm-m)	Field Check (ohm-m)
0.0	0.0

Micro Laterolog Constants MMR-B.A 91

Pad Type	6 in Solid Nylon B23059	
Standoff Offset	0.0000	inches
Micro Laterolog K Factor	0.0128	
Micro Laterolog Rm K Factor	N/A	

Mudcake Thickness Correction Constants

Mud Cake Source	Constant Value	
Mud Cake Thickness	0.4000	inches
Mud Cake Thickness Caliper		
Mud Cake Resistivity	0.1500	ohm-m
Mud Cake Resistivity Temp.	20.00	Degrees C
Mud Cake Resistivity Source	Constant Value	
Temp. for Rmc Corr.	MCG External Temperature	

Neutron Calibration MDN-B.A 292

Base Calibration on 07-JAN-2019,13:23
Field Check on 31-JAN-2019 17:01

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2910	91	3714	110
Ratio	31.871		33.764	

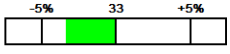
Field Calibrator at Base

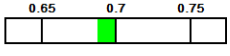
	Calibrated (cps)	
	2207	3209
Ratio	0.688	

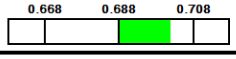
Field Check

	Calibrated (cps)	
	2227	3174
Ratio	0.702	

Neutron Calibration Tolerances MDN-B.A 292

Ratio 31.871 

Base Check 0.688 

Field Check 0.702 

Neutron Constants MDN-B.A 292

Last Edited on 31-JAN-2019,16:57

Neutron Source Id	P0204NN	
Neutron Jig Number	NJ5736	
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	None	
Formation Pressure	N/A	kpsi
Temperature Source	Constant Value	
Temperature	68.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	N/A	kppm
Barite Mud Correction	Not Applied	

Induction Calibration MAI-B.J 390

Factory Loop Calibration 07-JAN-2019 10:28
Field Check on 31-JAN-2019 16:41

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)	16.8	458.6	9.3	966.2	2.166	-27.2
2	6.3	377.7	7.6	821.4	2.191	-6.2
3	3.8	258.6	5.2	566.0	2.200	-3.0
4 (far)	1.9	132.3	2.6	279.2	2.121	-1.4

Array Temperature	77.9	Deg F

Tool Checks

	Factory Reference (mmho/m)		Before Survey (mmho/m)		
Array	Low	High	Low	High	
1 (near)	13.2	3960.1	13.2	3959.7	
2	29.9	3563.5	30.0	3563.4	
3	27.9	3061.4	28.0	3061.6	
4 (far)	19.7	2087.8	19.7	2087.8	
Array Temperature	64.9		65.0		Deg F

Induction Check Tolerances MAI-B.J 390

Low Array 1	13.2	11.7 / 13.2 / 14.7	mmho/m	High Array 1	3959.7	-0.5% / 3960.1 / +0.5%	mmho/m
Low Array 2	30.0	28.4 / 29.9 / 31.4	mmho/m	High Array 2	3563.4	-0.5% / 3563.5 / +0.5%	mmho/m
Low Array 3	28.0	26.4 / 27.9 / 29.4	mmho/m	High Array 3	3061.6	-0.5% / 3061.4 / +0.5%	mmho/m
Low Array 4	19.7	18.2 / 19.7 / 21.2	mmho/m	High Array 4	2087.8	-0.5% / 2087.8 / +0.5%	mmho/m

Induction Constants MAI-B.J 390

Last Edited on 01-FEB-2019,04:51

Induction Model	RtAP-NC	

Borehole Correction Constants

Tool Centred	No	
Hole Size Source	Density Caliper	
Hole Size Constant Value	N/A	inches
Stand-off Type	Fins	
Stand-off	0.50	inches
Number of Fins on Stand-off	8.0000	
Stand-off Fin Angle	45.00	degrees
Stand-off Fin Width	0.5000	inches
Rm Source	Global Value: Temperature Corrected	
Temp. for Rm Corr.	MCG External Temperature	
Borehole Correction Method	Default	

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	

High Resolution Temperature Calibration MAI-B.J 390

Field Calibration on 15-MAY-2018,12:48

	Measured	Calibrated(Deg F)
Lower	10.00	10.00
Upper	100.00	100.00

High Resolution Temperature Constants MAI-B.J 390

Last Edited on 06-MAR-2018,13:01

Pre-filter Length	11

Caliper Calibration MPD-C.A 216

Base Calibration on 18-JAN-2019 17:06
Field Calibration on 31-JAN-2019,17:29

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16199	3.99
2	24624	5.98
3	33344	7.97
4	41632	9.86
5	50912	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.93	7.97

Caliper Calibration Tolerances MPD-C.A 216

Long Arm Field Cal.	7.93	7.57	7.97	8.37	in

Photo Density Calibration MPD-C.A 216

Base Calibration on 18-JAN-2019 16:36
Field Check on 31-JAN-2019 16:50

Density Calibration

Base Calibration

	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	993	1180		
Reference 1	46604	22300	59556	30836
Reference 2	18380	2158	24941	2541

Field Check at Base

	993.3	1179.8
Field Check		
	994.6	1180.0

PE Calibration

Base Calibration	WS	Measured WH	Ratio	Calibrated Ratio
Background	179	890		
Reference 1	19088	46448	0.415	0.371
Reference 2	5249	18271	0.292	0.272

Field Check at Base		
	179.3	890.5
Field Check		
	183.0	894.1

Photo Density Calibration Tolerances MPD-C.A 216

Near Density Ratio	2.62	-5% 2.52 +5%	Far Density Ratio	21.59	-5% 21.00 +5%
PE Calibration	0.115	0.089 0.110 0.131			
Near Den. Field Check	994.6	-3% 993.3 +3%	Far Den. Field Check	1180.0	-3% 1179.8 +3%
PE WS Field Check	183.0	-6% 179.3 +6%	PE WH Field Check	894.1	-6% 890.5 +6%

Density Constants MPD-C.A 216

Last Edited on 01-FEB-2019,05:51

Density Source Id	P50557B	
Nylon Calibrator Number	DNCE695	
Aluminium Calibrator Number	DACD698	
Density Shoe Profile	8 inch	
Caliper Source for Processing	MMR Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.13	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)
2.71	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

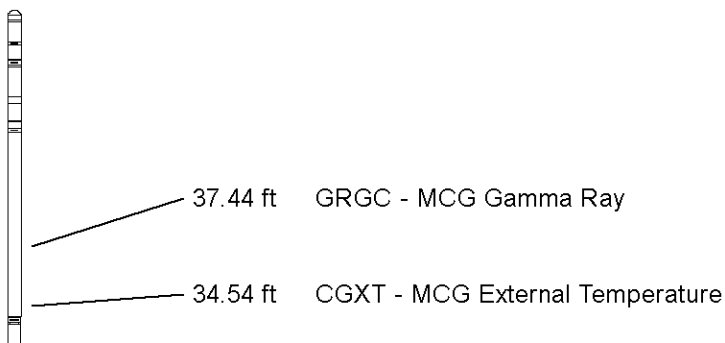
C:\Minimus 18.05.4364\DATA\Shakespeare Oil Co (OTTLEY 2-14)\MAIN PASS_FINAL.dta

11B Tension Cablehead
MCB-A 1 LG: 2.18 ft WT: 19.8 lb OD: 2.244 in

Compact Swivel Head Adaptor
SHA-J.B 717 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

Compact Comms Gamma
MCG-D.K 443 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity



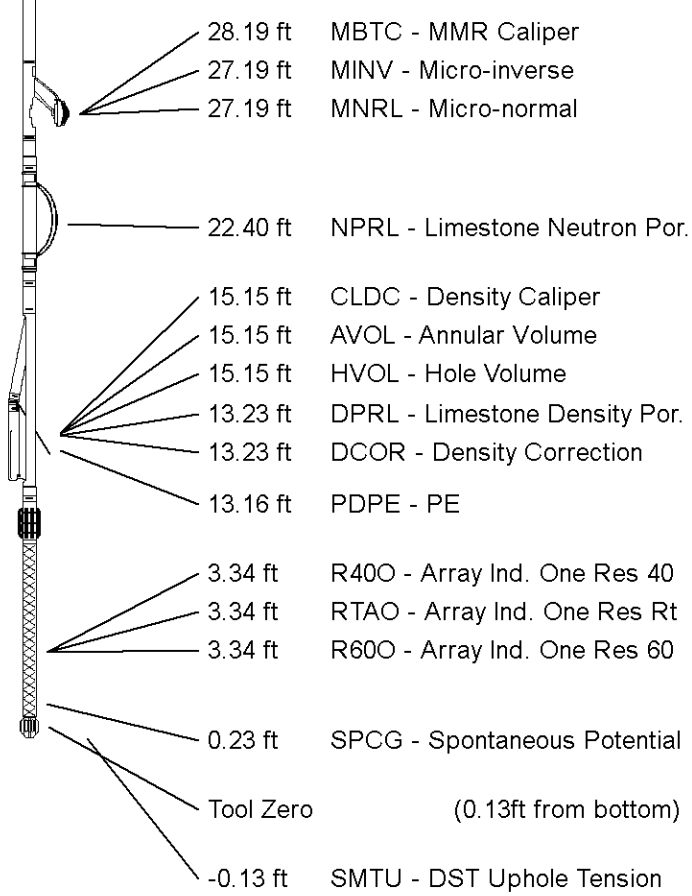
MMR-B.A 91 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron
MDN-B.A 292 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-C.A 216 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

Compact Induction
MAI-B.J 390 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 47.21 ft Weight: 377.0 lb



28.19 ft	MBTC - MMR Caliper
27.19 ft	MINV - Micro-inverse
27.19 ft	MNRL - Micro-normal
22.40 ft	NPRL - Limestone Neutron Por.
15.15 ft	CLDC - Density Caliper
15.15 ft	AVOL - Annular Volume
15.15 ft	HVOL - Hole Volume
13.23 ft	DPRL - Limestone Density Por.
13.23 ft	DCOR - Density Correction
13.16 ft	PDPE - PE
3.34 ft	R40O - Array Ind. One Res 40
3.34 ft	RTAO - Array Ind. One Res Rt
3.34 ft	R60O - Array Ind. One Res 60
0.23 ft	SPCG - Spontaneous Potential
Tool Zero	(0.13ft from bottom)
-0.13 ft	SMTU - DST Uphole Tension

All measurements relative to tool zero.

COMPANY	SHAKESPEARE OIL CO., INC.
WELL	K OTTLEY 2-14
FIELD	WILDCAT
PROVINCE/COUNTY	LOGAN
COUNTRY/STATE	USA / KANSAS

Elevation Kelly Bushing	2800	feet	First Reading	4520.80	feet
Elevation Drill Floor		feet	Depth Driller	4550.00	feet
Elevation Ground Level	2791	feet	Depth Logger	4548.00	feet

Weatherford®

MICRO RESISTIVITY LOG