MICRORESISTIVITY LOG

Weatherford®

COMPANY	STELBAR OIL CORPORATION
WELL	SCHRODER #3-14
FIELD	RUDOLPH NORTHEAST
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	1555' FSL & 545' FWL
PERMIT NUMBER	SE SW NW SW

SEC 14	TWP 17S	RGE 33W	Other Services
Latitude	38.573537161		MAI/MFE MPD/MDN
Longitude	100.941914166		MSS
API Number	15-171-21060		

Permanent Datum GL, Elevation 2986 feet
Log Measured From KB
Drilling Measured From KB @ 11 FEET

Elevations:	feet
KB	2997.00
DF	2995.00
GL	2986.00

Date	06-JUL-2014			
Run Number	ONE			
Service Order	7036-91870946			
Depth Driller	4730.00	feet		
Depth Logger	4729.00	feet		
First Reading	4683.11	feet		
Last Reading	3700.00	feet		
Casing Driller	310.00	feet		
Casing Logger	309.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	WBM			
Density / Viscosity	9.10 lb/USg		65.00 CP	
PH / Fluid Loss	10.00		7.80 ml/30Min	
Sample Source	MUDPIT			
Rm @ Measured Temp	0.65 @ 75.0	ohm-m		
Rmf @ Measured Temp	0.52 @ 75.0	ohm-m		
Rmc @ Measured Temp	0.78 @ 75.0	ohm-m		
Source Rmf / Rmc	CALC		CALC	
Rm @ BHT	0.41 @121.0	ohm-m		
Time Since Circulation	4 HOURS			
Max Recorded Temp	122.00	deg F		
Equipment / Base	13096		LIB	
Recorded By	DEREK CARTER			
Witnessed By	DAVE GOLDAK			
JOB #	LB14-199			

BOREHOLE RECORD

Last Edited: 06-JUL-2014 21:54

Bit Size inches	Depth From feet	Depth To feet
7.875	310.00	4730.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	310.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 13.08.2113
- TOOL STRING: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION
- HARDWARE:
  - MDN: DUAL BOWSPRING ECCENTRALIZER
  - MFE: 1 X 0.5 INCH STANDOFF
  - MSS: 2 X 0.5 INCH STANDOFF
  - MAI: 2 X 0.5 INCH STANDOFF
- 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: 1710 CU. FT.

- ANNULAR HOLE VOLUME WITH 5.5 INCH CASING FROM TD TO 3700 FT.: 170 CU. FT.

- SERVICE ORDER # 7036-91870946

- RIG: STERLING #2

- ENGINEER: DEREK CARTER

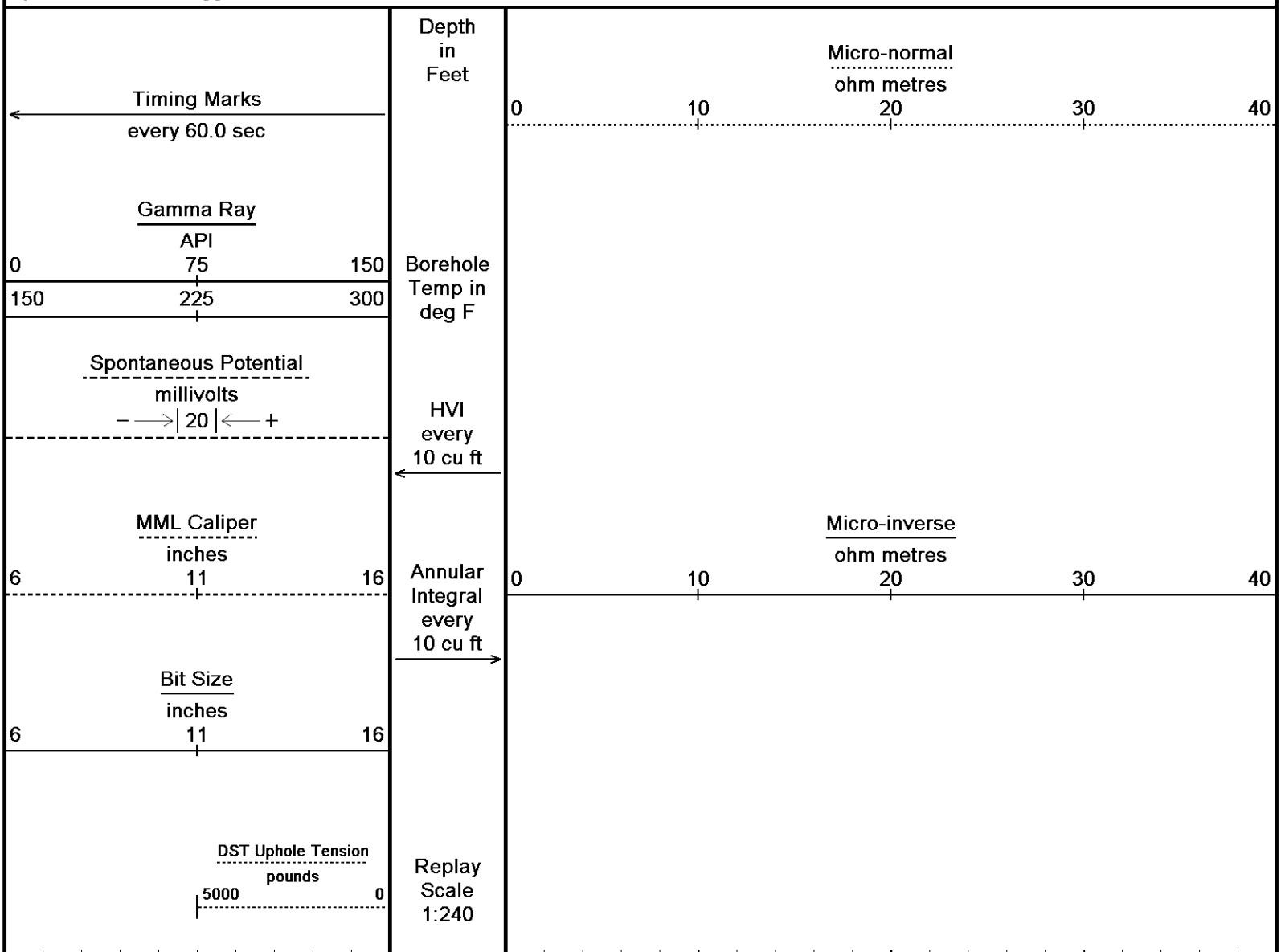
- OPERATOR: CARLOS RAMIREZ

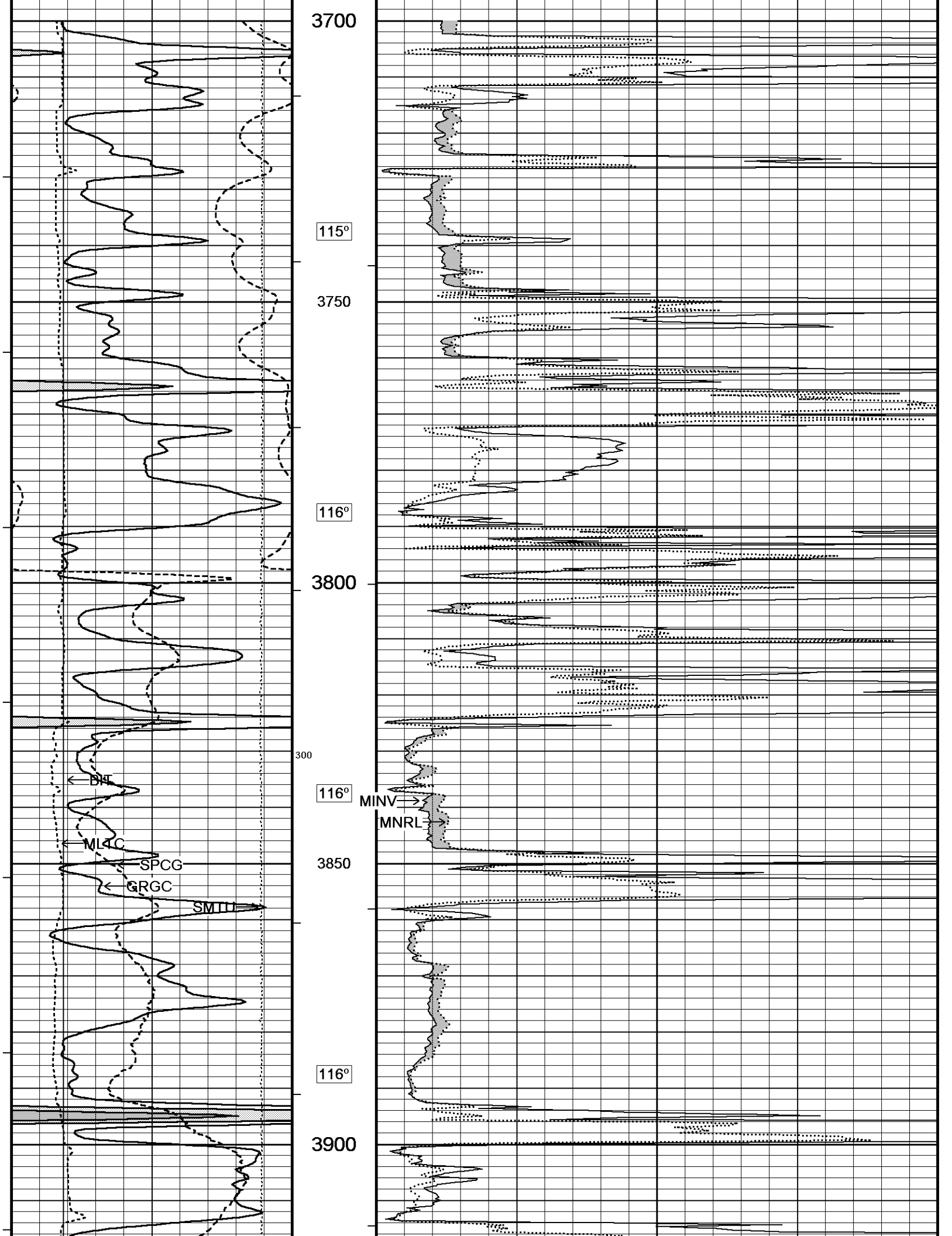
5 INCH MAIN

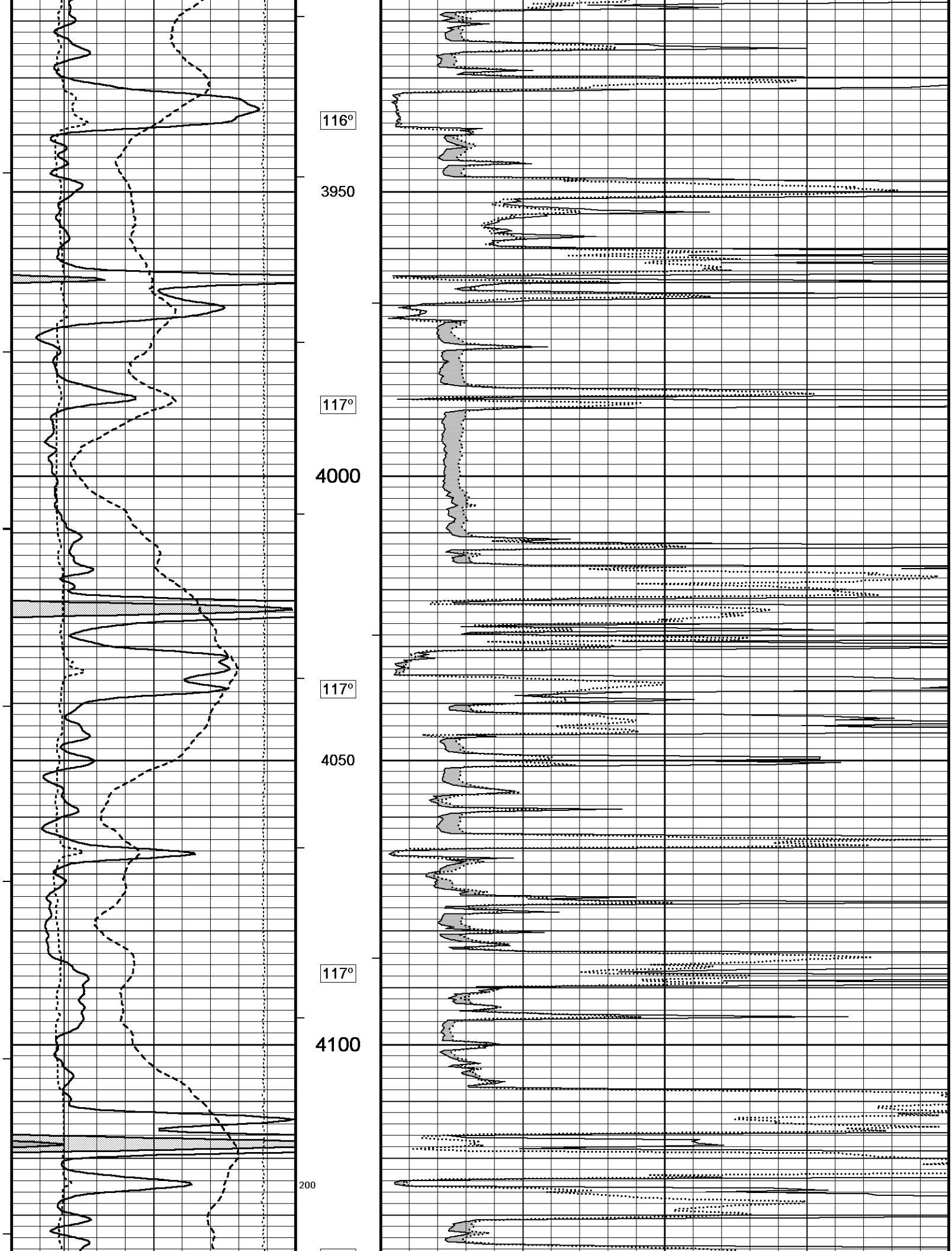
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 07-JUL-2014 02:51

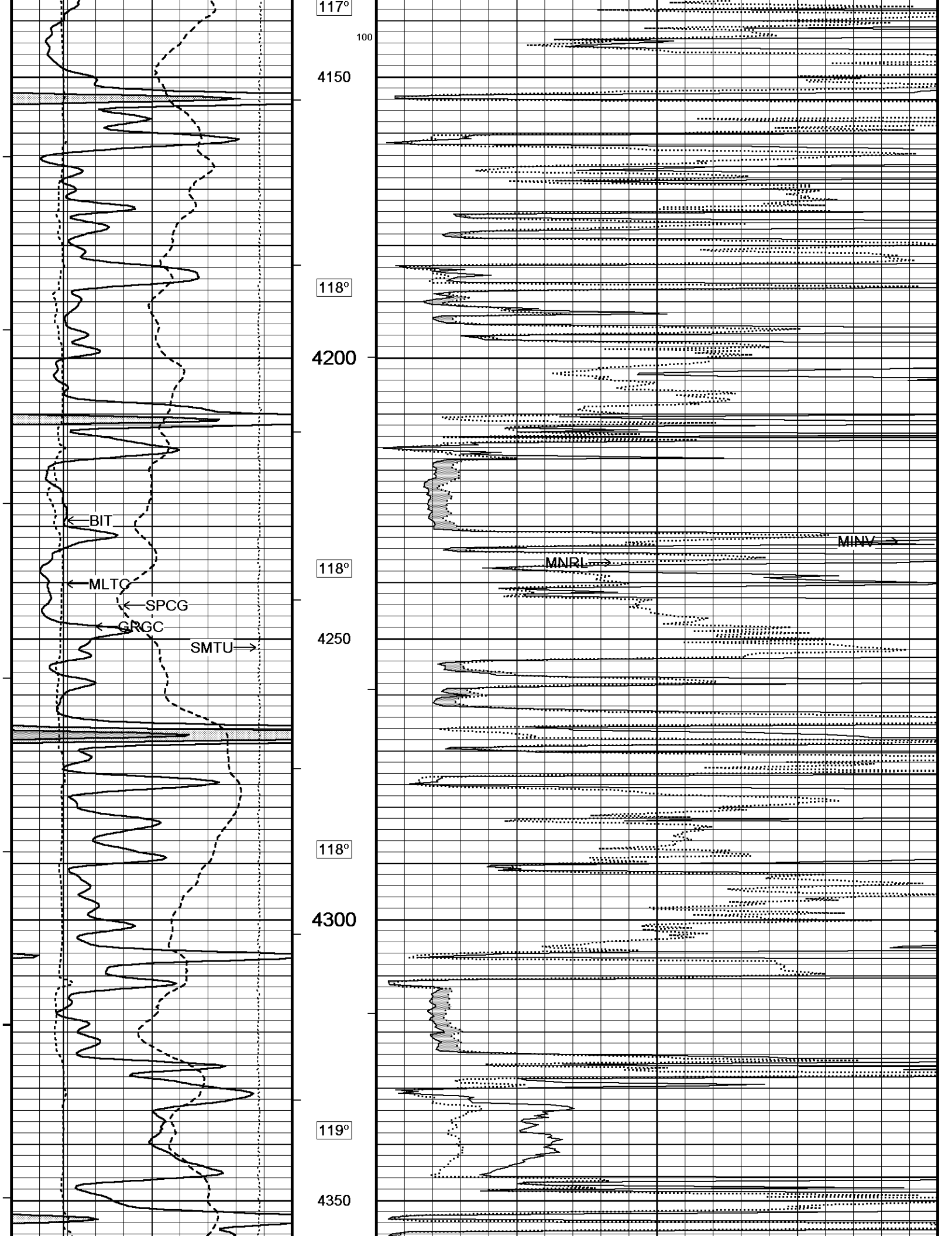
Filename: C:\Minimus 13.08.2113\Log Data\Stelbar Schroder #3-14\Stelbar Schroder #3-14 Main.dta — Recorded on 07-JUL-2014 00:25

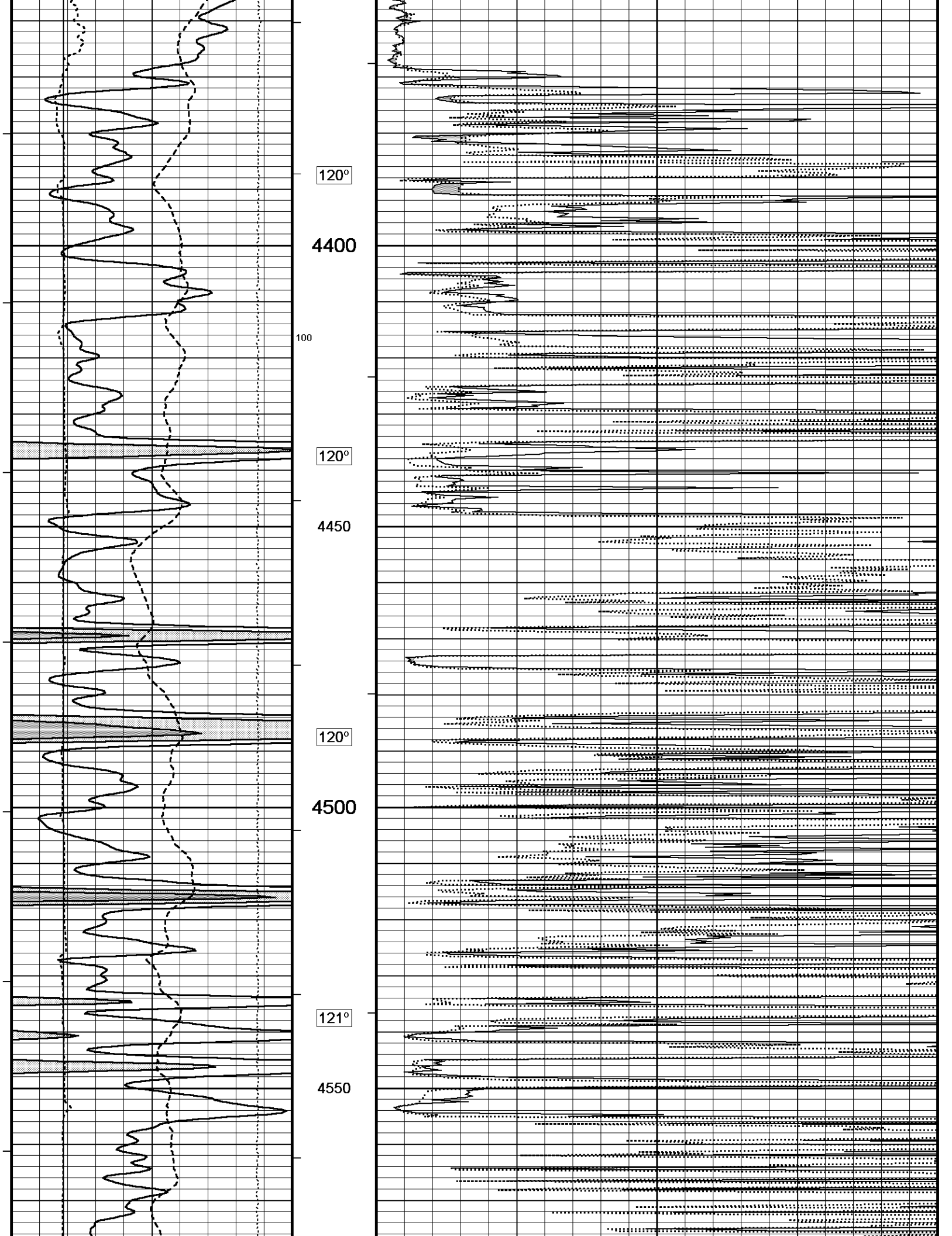
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113




3700
115°
3750
116°
3800
300
116°
MINV
MNRL
3850
116°
3900
BIT
ML1C
SPCG
GRGC
SMTU


116°
3950
117°
4000
117°
4050
117°
4100
200


117°
100
4150
118°
4200
BIT
MINV
MNRL
118°
MLTC
SPCG
GRGC
4250
SMTU
118°
4300
119°
4350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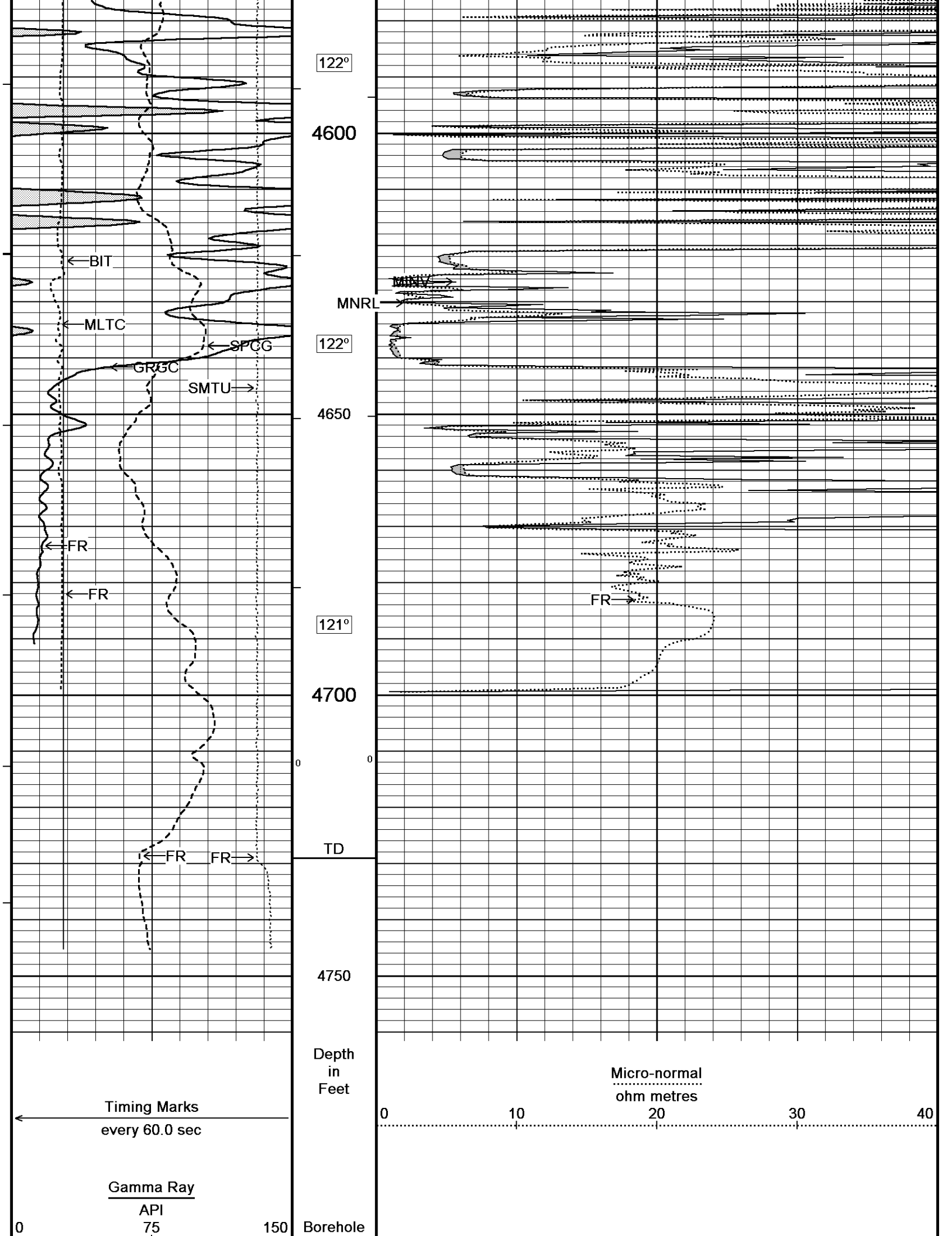
4400
100
120°
4450
120°
4500
121°
4550


122°
4600
BIT
MLTC
SPCG
GRGC
SMTU
MINV
MNRL
122°
4650
FR
FR
FR
121°
4700
FR
FR
TD
4750
Depth
in
Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
Borehole
Micro-normal
ohm metres
0
10
20
30
40

150 225 300

Temp in deg F

Spontaneous Potential
millivolts
− → | 20 | ← +

HVI every 10 cu ft

MML Caliper
inches
6 11 16

Annular Integral every 10 cu ft

Micro-inverse
ohm metres
0 10 20 30 40

Bit Size
inches
6 11 16

DST Uphole Tension
pounds
5000 0

Replay Scale 1:240

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 07-JUL-2014 02:51
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System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 07-JUL-2014 02:51
Filename: C:\Minimus 13.08.2113\Log Data\Stelbar Schroder #3-14\Stelbar Schroder #3-14 Repeat.dta — Recorded on 06-JUL-2014 23:05
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113

Depth in Feet

Micro-normal
ohm metres
0 10 20 30 40

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150

Borehole Temp in deg F

150 225 300

Spontaneous Potential
millivolts
− → | 20 | ← +

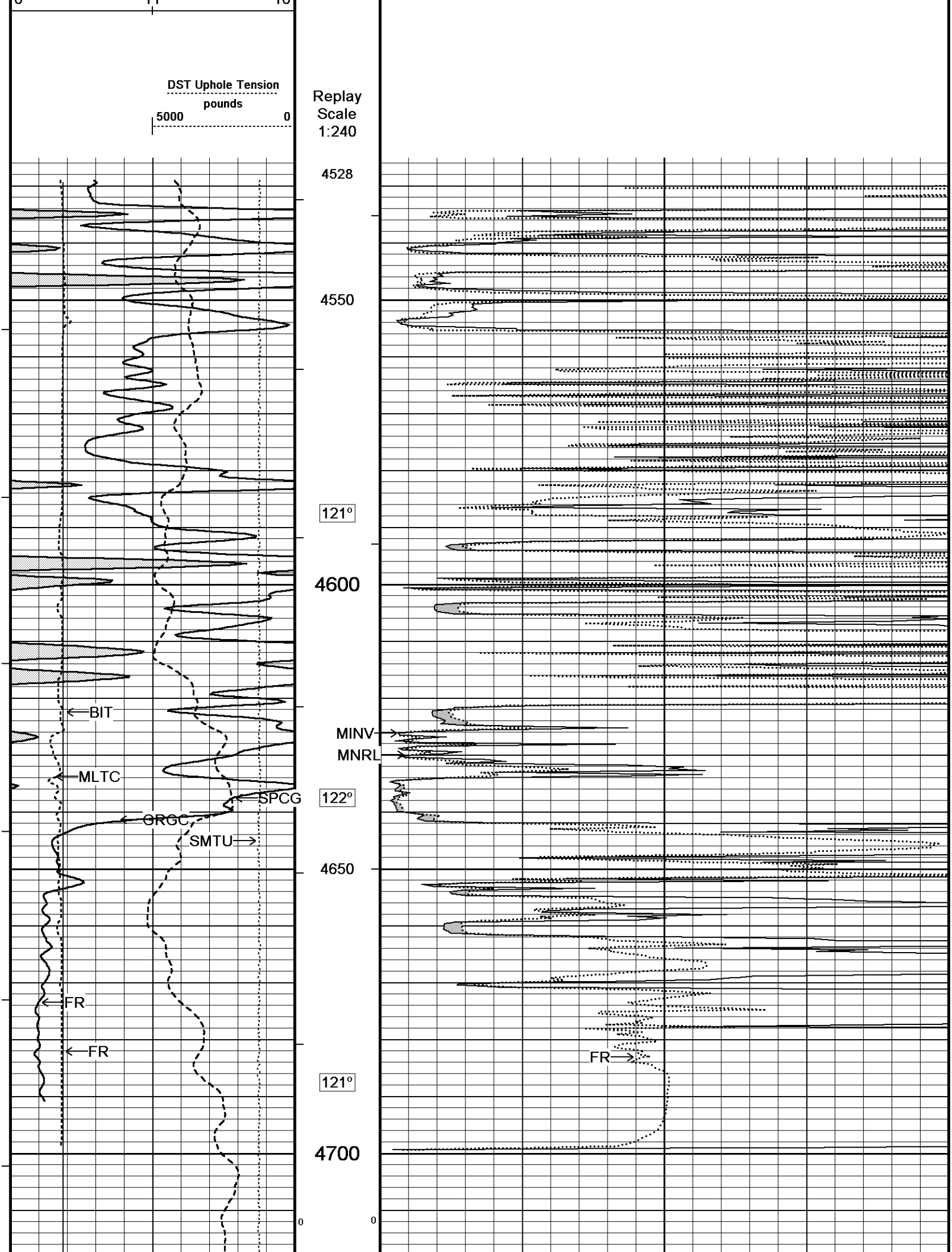
HVI every 10 cu ft

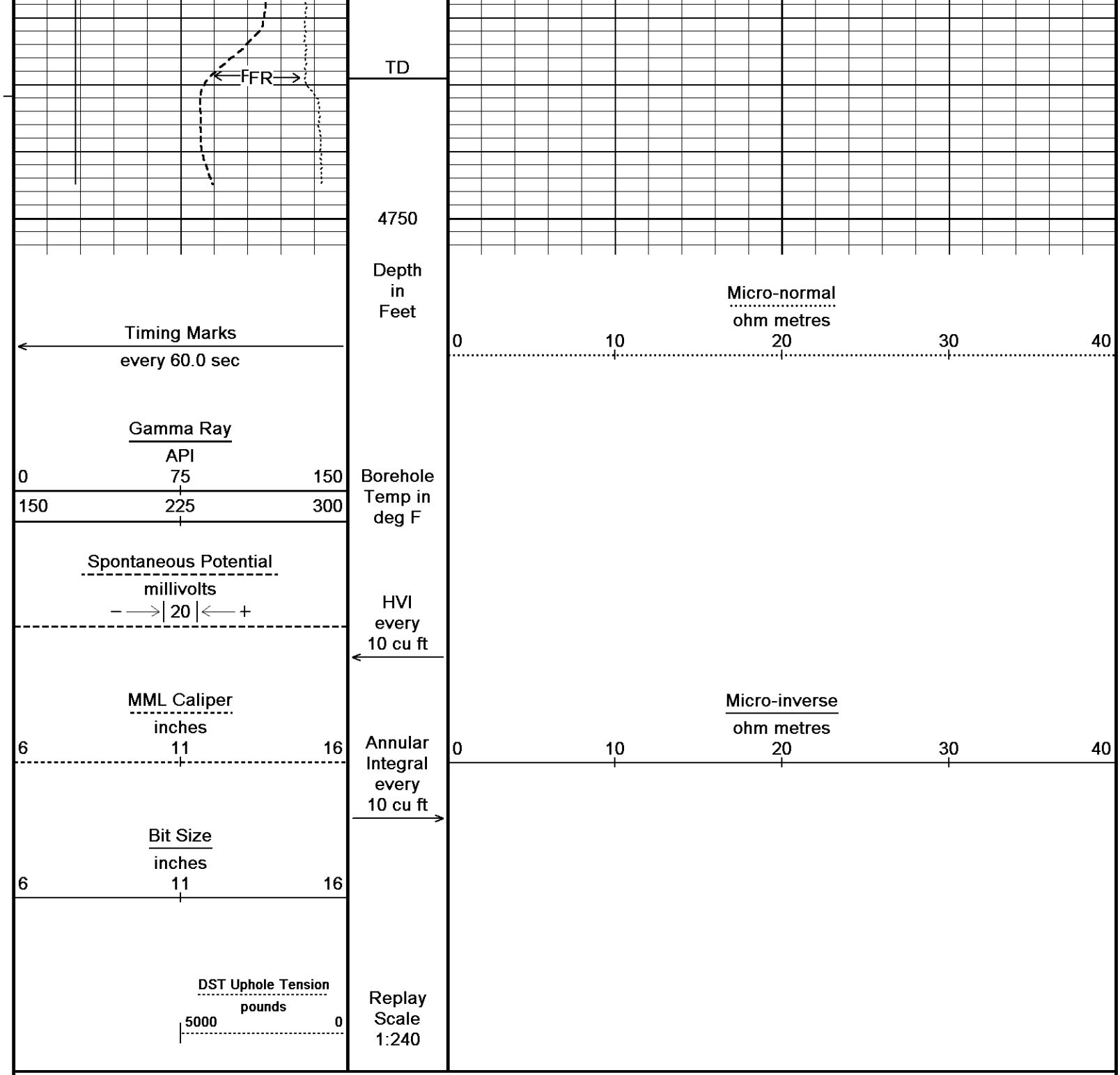
MML Caliper
inches
6 11 16

Micro-inverse
ohm metres
0 10 20 30 40

Annular Integral every 10 cu ft

Bit Size
inches
6 11 16


DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
4528
4550
121°
4600
BIT
MINV
MNRL
MLTC
SPCG
122°
ORGC
SMTU
4650
FR
FR
121°
4700
FR
0
0



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 07-JUL-2014 02:51

Filename: C:\Minimus 13.08.2113\Log Data\Stelbar Schroder #3-14\Stelbar Schroder #3-14 Repeat.dta — Recorded on 06-JUL-2014 23:05

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REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 13.08.2113\Log Data\Stelbar Schroder #3-14\Stelbar Schroder #3-14 Main.dta

General Constants All 000 — Last Edited on 06-JUL-2014,21:44

General Parameters

Mud Resistivity	0.650	ohm-metres
Mud Resistivity Temperature	75.000	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 2	N/A	
Annular Volume Diameter	5.500	inches
Caliper for Differential Caliper	None	

Rwa Parameters		
Porosity used	Crossplot Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	1.000	
RWA Constant M	2.000	
SW/APOR Tool Source	0.000	

Gamma Calibration MCG-D.K 469

Field Calibration on 06-JUL-2014 18:16

	Measured	Calibrated (API)
Background	68	46
Calibrator (Gross)	1153	771
Calibrator (Net)	1085	725

Gamma Constants MCG-D.K 469

Last Edited on 06-JUL-2014,21:46

Gamma Calibrator Number	GRC038	
Mud Density	1.09	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

High Resolution Temperature Calibration MCG-D.K 469

Field Calibration on 12-MAY-2014,02:16

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

High Resolution Temperature Constants MCG-D.K 469

Last Edited on 12-JUN-2014,06:51

Pre-filter Length	11

Caliper Calibration MML-A 3

Base Calibration on 02-JUL-2014 08:54
Field Calibration on 06-JUL-2014 18:04

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14943	5.98
2	18152	7.97
3	21442	9.86
4	25363	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.98	7.97

Micro Normal and Micro Inverse Calibration MML-A 3

Base Calibration on 02-JUL-2014 08:47
Field Check on 06-JUL-2014 18:02

Base Calibration

	Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	10.1	50.2	5.1	25.6
Micro Inverse	10.0	50.0	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	77.0	77.0
Micro Inverse	51.1	51.1

Micro Normal and Micro Inverse Constants MML-A 3

Last Edited on 06-JUL-2014,18:02

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	N/A	inches

Caliper Calibration MPD-C.A 216

Base Calibration on 02-JUL-2014 11:15
Field Calibration on 06-JUL-2014 17:56

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	17551	3.99
2	27136	5.98
3	37121	7.97
4	46912	9.86
5	58208	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.94	7.97

DOWNHOLE EQUIPMENT

C:\Minimus 13.08.2113\Log Data\Stelbar Schroder #3-14\Stelbar Schroder #3-14 Main.dta

3/8" Triple Cone Cable Head (MCB C A)
MCB-C.A 5 LG: 1.58 ft WT: 15.4 lb OD: 2.244 in

Compact Comms Gamma
MCG-D.K 469 LG: 8.70 ft WT: 63.9 lb OD: 2.240 in

Compact Micro-log
MML-A 3 LG: 7.97 ft WT: 81.6 lb OD: 2.240 in

Compact Neutron
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

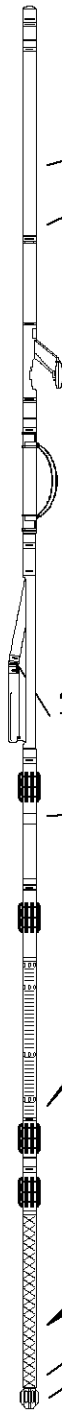
Compact Density/Caliper
MPD-C.A 216 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

Compact Focussed Electric
MFE-A.A 135 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Sonic
MSS-C.K 330 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

Compact Induction
MAI-A.A 111 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 62.25 ft Weight: 471.8 lb



55.39 ft	GRGC - Gamma Ray
52.48 ft	CGXT - MCG External Temperature
45.76 ft	MINV - Micro-inverse
45.76 ft	MNRL - Micro-normal
46.76 ft	MLTC - MML Caliper
40.97 ft	NPRL - Limestone Neutron Por.
33.73 ft	CLDC - Density Caliper
33.73 ft	AVOL - Annular Volume
33.73 ft	HVOL - Hole Volume
31.80 ft	DPRL - Limestone Density Por.
31.80 ft	DEN - Compensated Density
31.80 ft	DCOR - Density Correction
31.74 ft	PDPE - PE
26.24 ft	FEFE - Shallow FE
12.96 ft	DT35 - 3-5' Compensated Sonic
12.96 ft	SPRL - Wyllie Lime. Sonic Por.
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	STELBAR OIL CORPORATION
WELL	SCHRODER #3-14
FIELD	RUDOLPH NORTHEAST
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2997.00	feet	First Reading	4683.11	feet
Elevation Drill Floor	2995.00	feet	Depth Driller	4730.00	feet
Elevation Ground Level	2986.00	feet	Depth Logger	4729.00	feet

Weatherford®

MICRORESISTIVITY LOG