



Weatherford

MICRORESISTIVITY LOG

COMPANY										SHAKESPEARE OIL CO., INC.									
WELL										CHURCH OF GOD #2-27									
FIELD										PENCE									
PROVINCE/COUNTY										SCOTT									
COUNTRY/STATE										U.S.A. / KANSAS									
LOCATION										2305' FNL & 50' FEL									
PERMIT NUMBER										NE SE SE NE									
SEC 27		TWP 16S		RGE 34W		Other Services				MPD/MDN									
Latitude		38.635216355				MAI/MFE													
Longitude		101.054556971																	
API Number		15-171-21086																	
Permanent Datum GL, Elevation 3119 feet										Elevations: KB 3129.00 DF 3127.00 GL 3119.00									
Log Measured From KB																			
Drilling Measured From KB @ 10 FEET																			
Date						18-SEP-2014													
Run Number						ONE													
Service Order						7960-98252230													
Depth Driller						4890.00				feet									
Depth Logger						4883.00				feet									
First Reading						3800.00				feet									
Last Reading						4849.76				feet									
Casing Driller						268.00				feet									
Casing Logger						263.00				feet									
Bit Size						7.875				inches									
Hole Fluid Type						WBM													
Density / Viscosity						9.20		lb/USg		54.00		CP							
PH / Fluid Loss						11.00				8.80		ml/30Min							
Sample Source						MUDPIT													
Rm @ Measured Temp						0.60 @ 75.0				ohm-m									
Rmf @ Measured Temp						0.48 @ 75.0				ohm-m									
Rmc @ Measured Temp						0.72 @ 75.0				ohm-m									
Source Rmf / Rmc						CALC				CALC									
Rm @ BHT						0.41 @ 111.0				ohm-m									
Time Since Circulation						4 HOURS													
Max Recorded Temp						112.00				deg F									
Equipment / Base						13096		LIB											
Recorded By						DEREK CARTER				JAKE HINES									
Witnessed By						TIM PRIEST													
IOB #						LB14-282													

BOREHOLE RECORD					Last Edited: 18-SEP-2014 13:24
Bit Size inches		Depth From feet		Depth To feet	
7.875		268.00		4890.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	268.00	24.00	

REMARKS
- SOFTWARE ISSUE: WLS 13.08.2113
- TOOL STRING: MCG, MML, MDN, MPD, MFE, MAI RUN IN COMBINATION
- HARDWARE: MDN: DUAL BOWSPRING ECCENTRALIZER MFE: 1 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: 2140 CU. FT.
- ANNUAL HOLE VOLUME WITH 5.5 INCH CASING FROM TD TO 3800 FT: 200 CU. FT.

- SERVICE ORDER # 7960-98252230

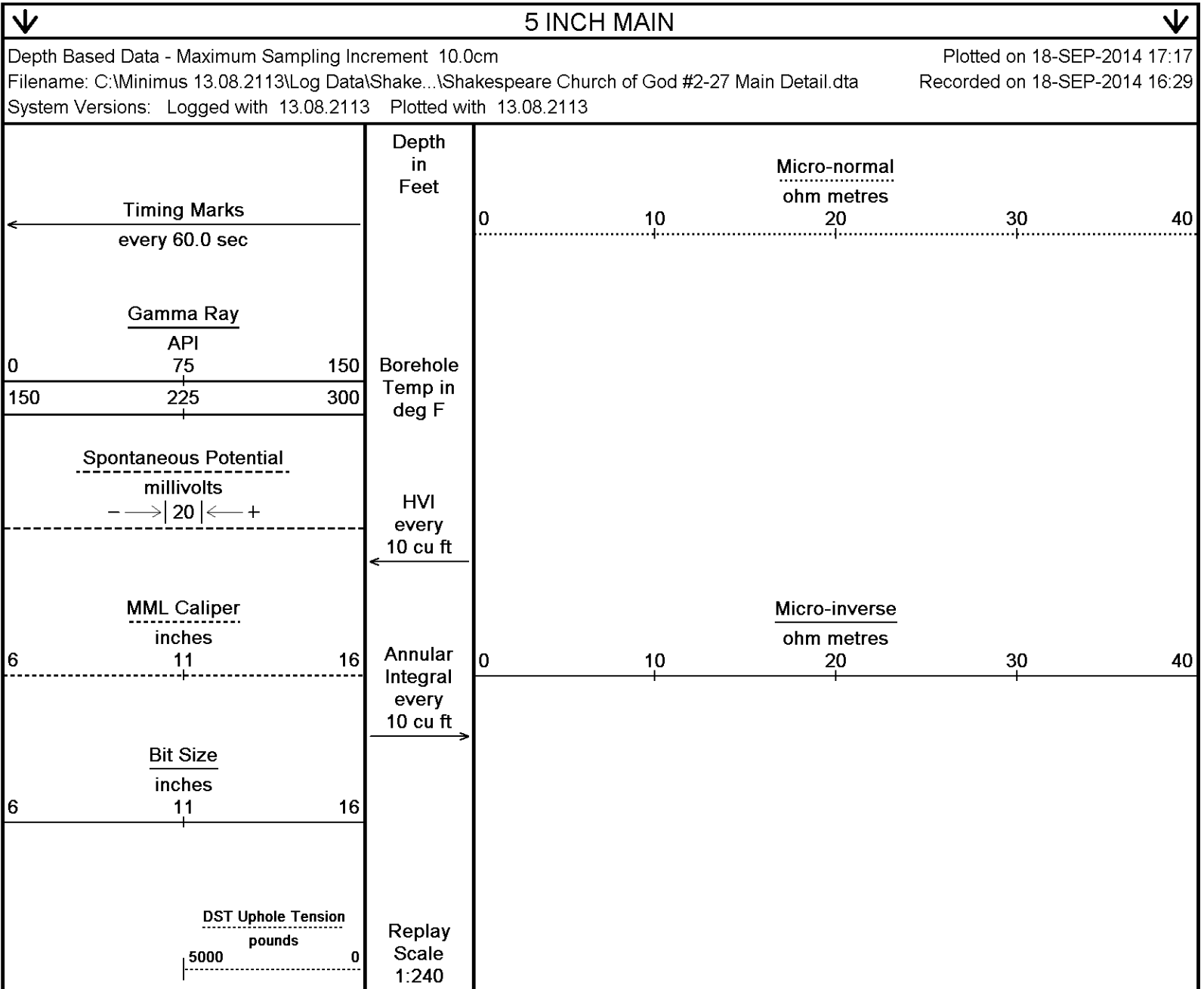
- RIG: H.D. DRILLING #2

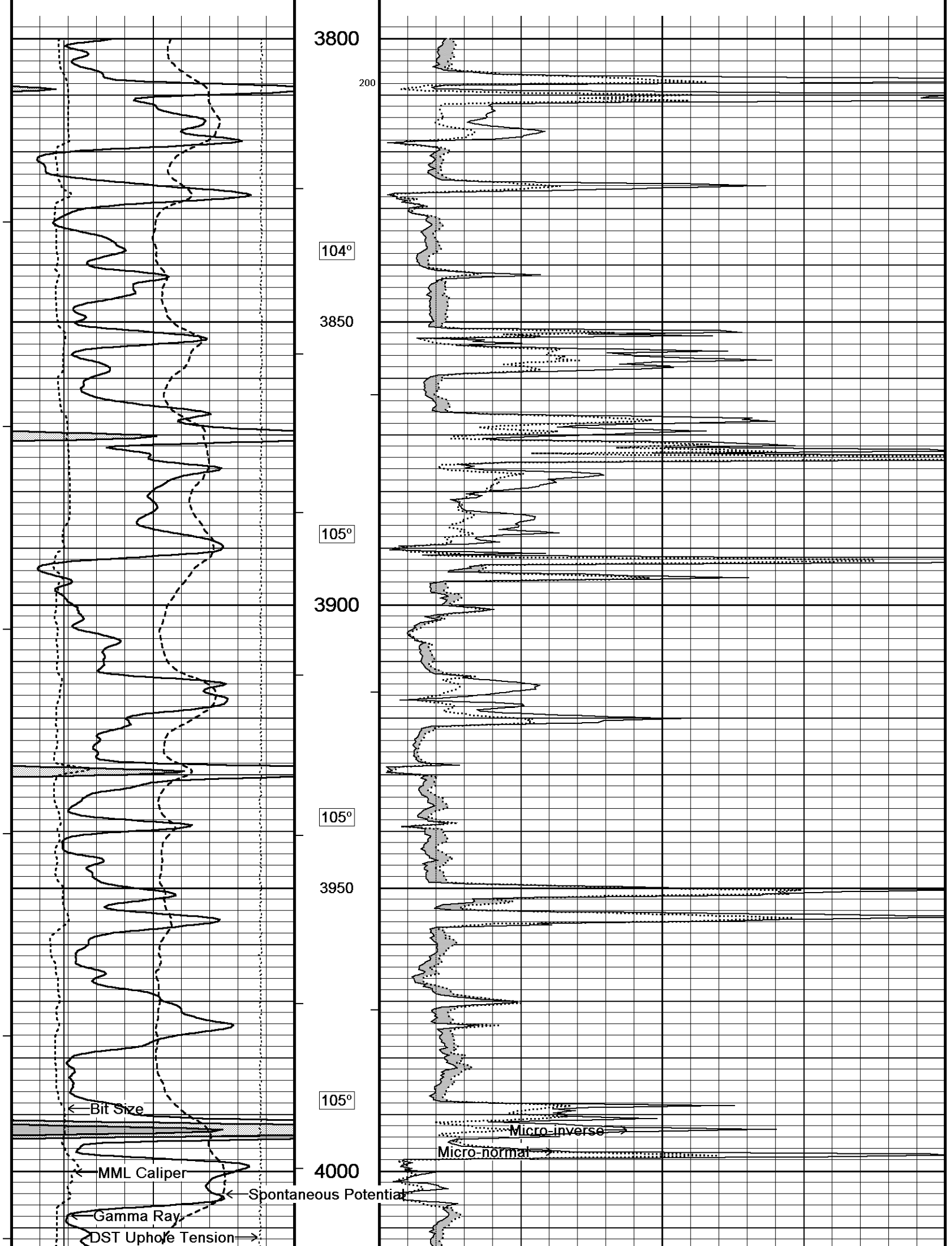
- ENGINEER: DEREK CARTER

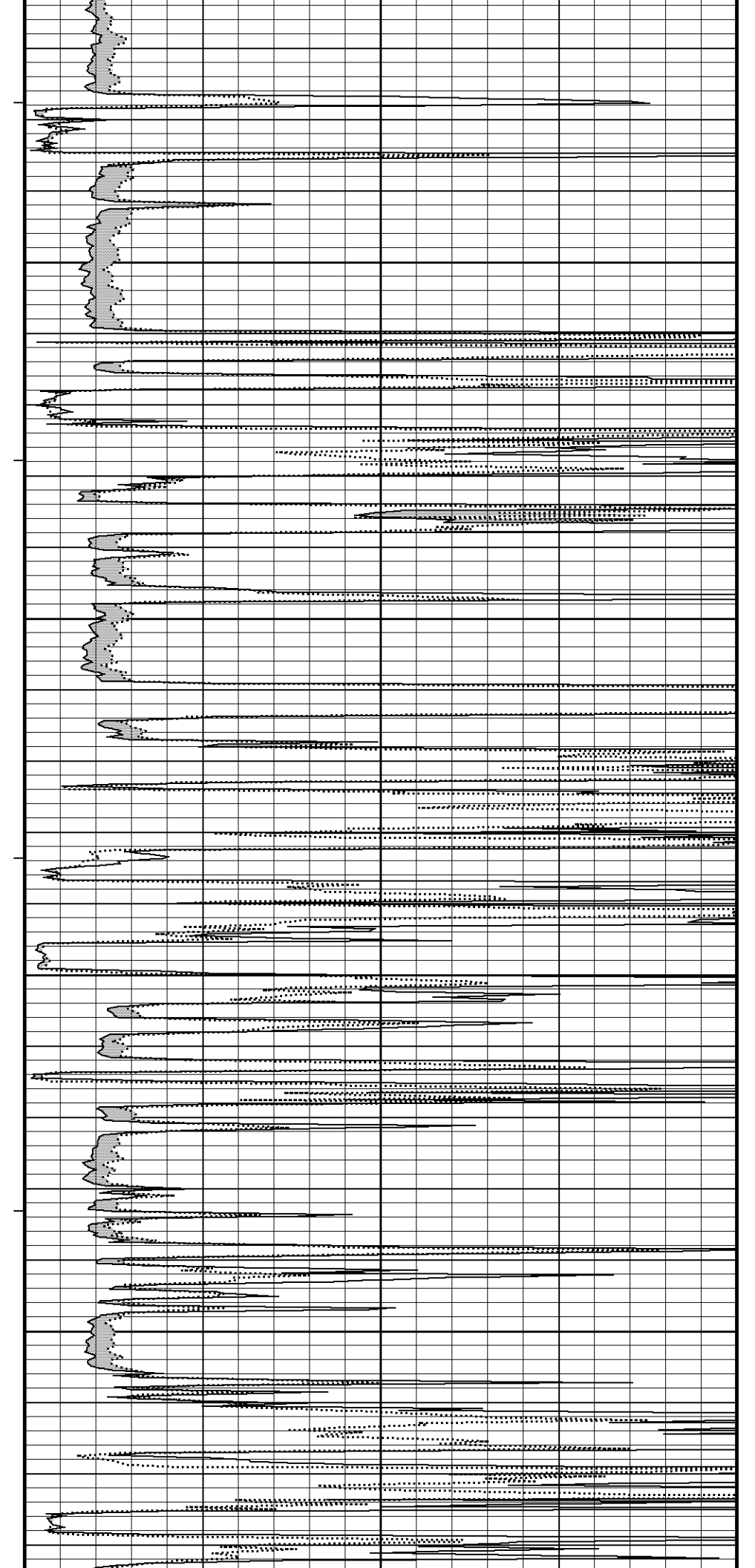
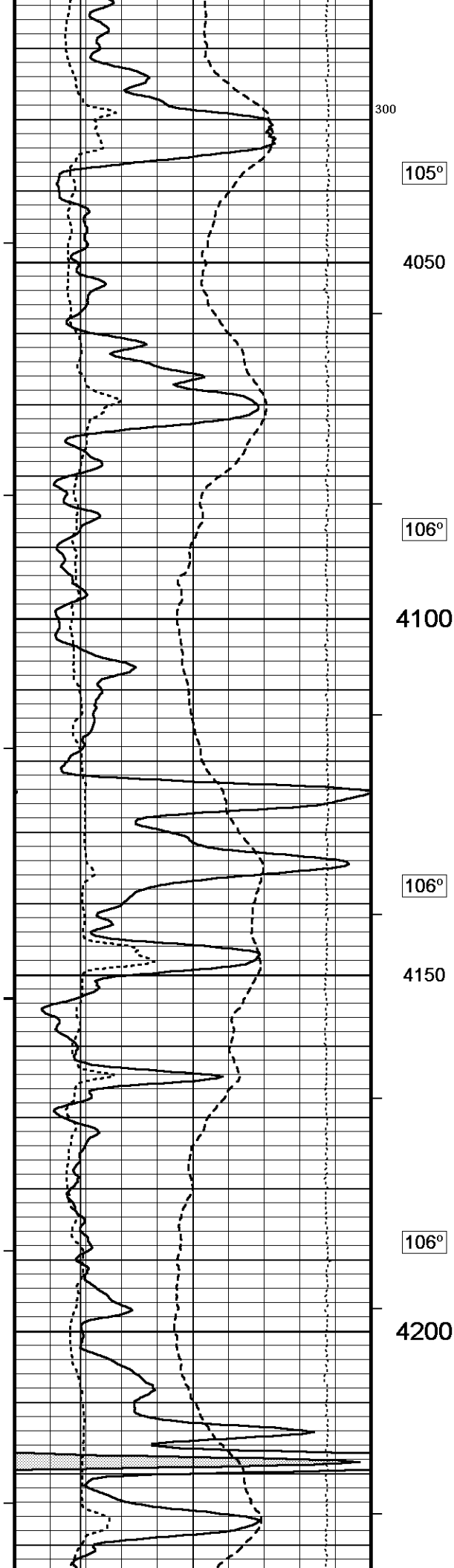
- JUNIOR FIELD ENGINEER: JAKE HINES

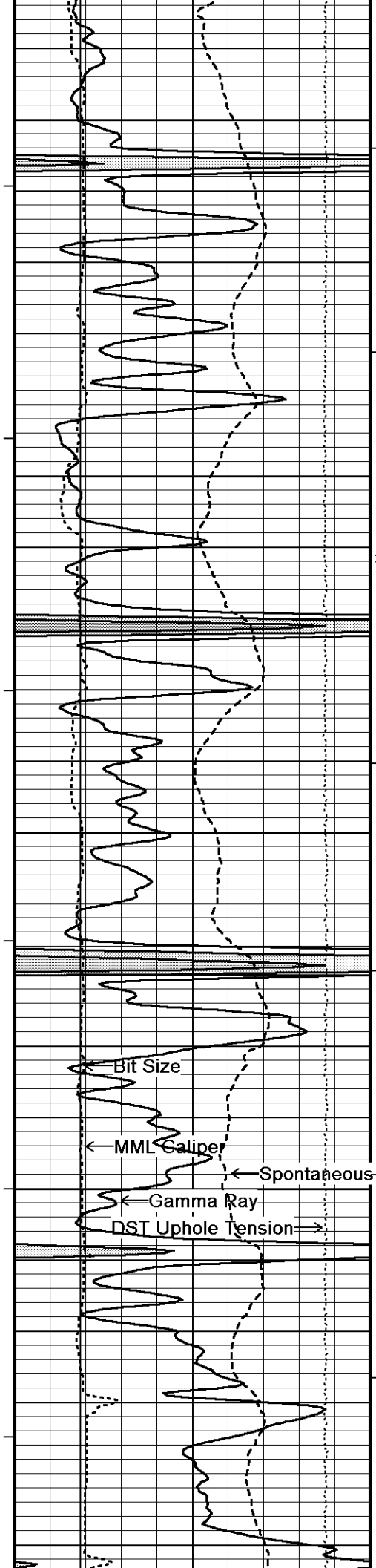
- OPERATORS: CARLOS RAMIREZ

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.

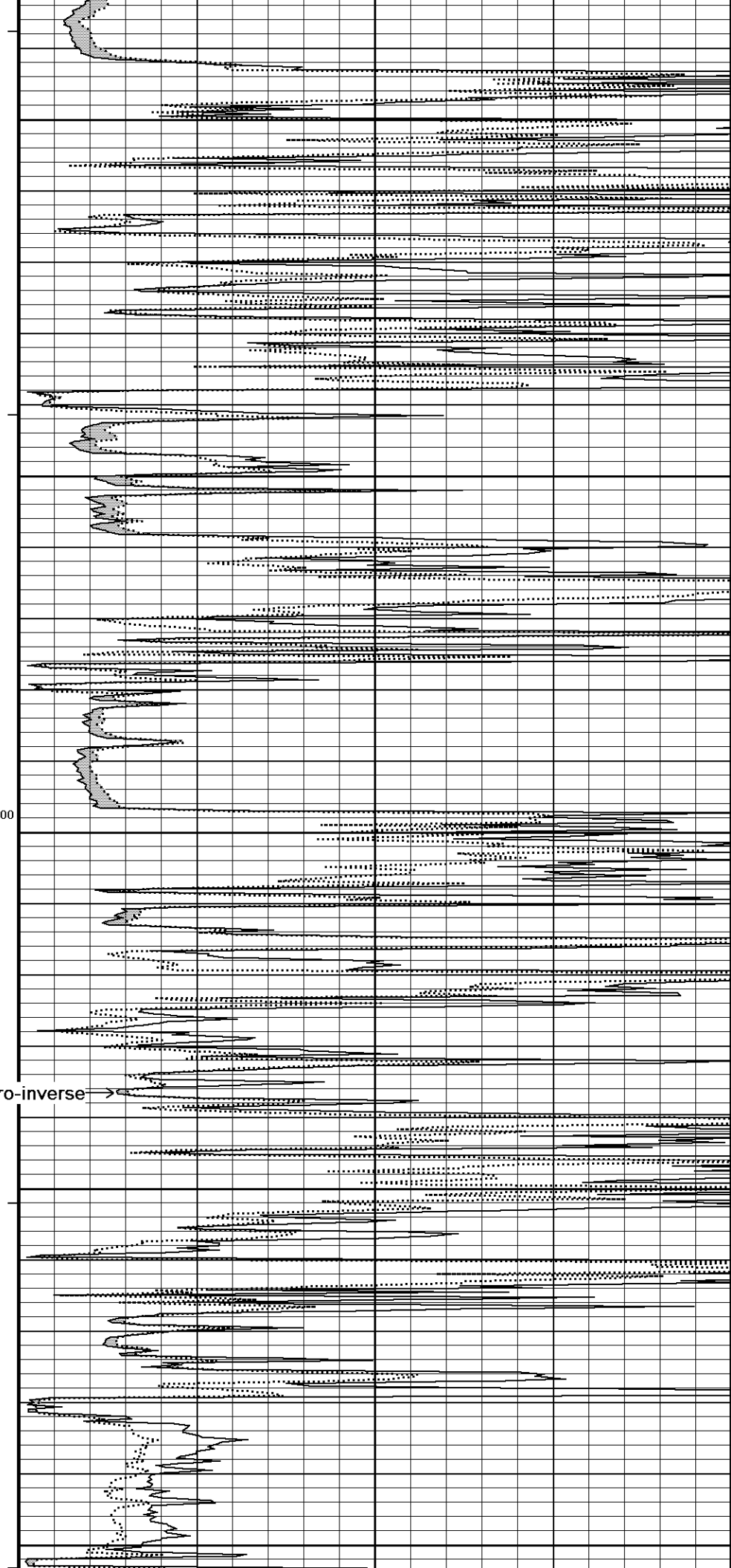


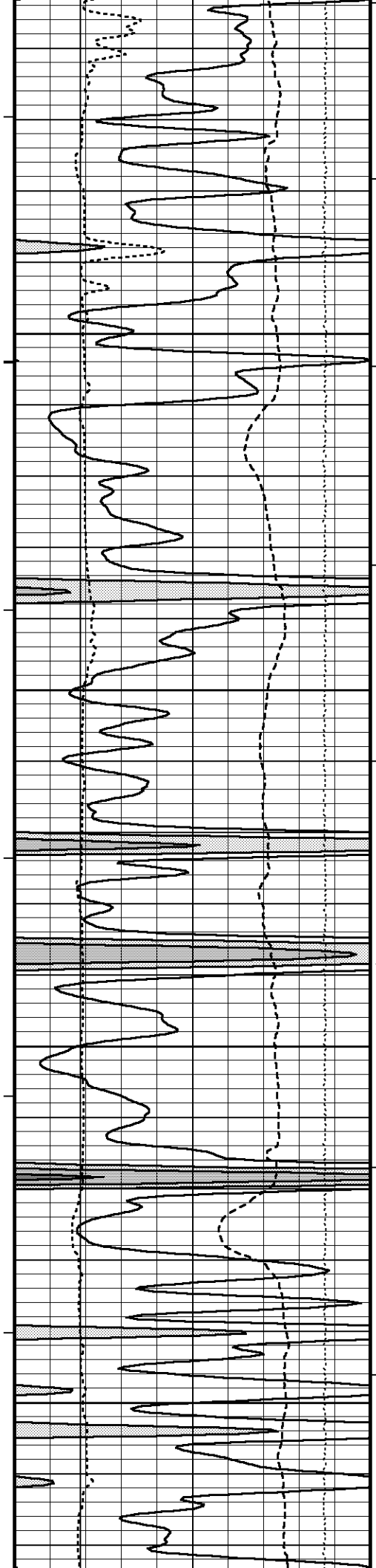






106°
4250
107°
4300
200
107°
4350
100
4400
107°
4450





108°

4500

109°

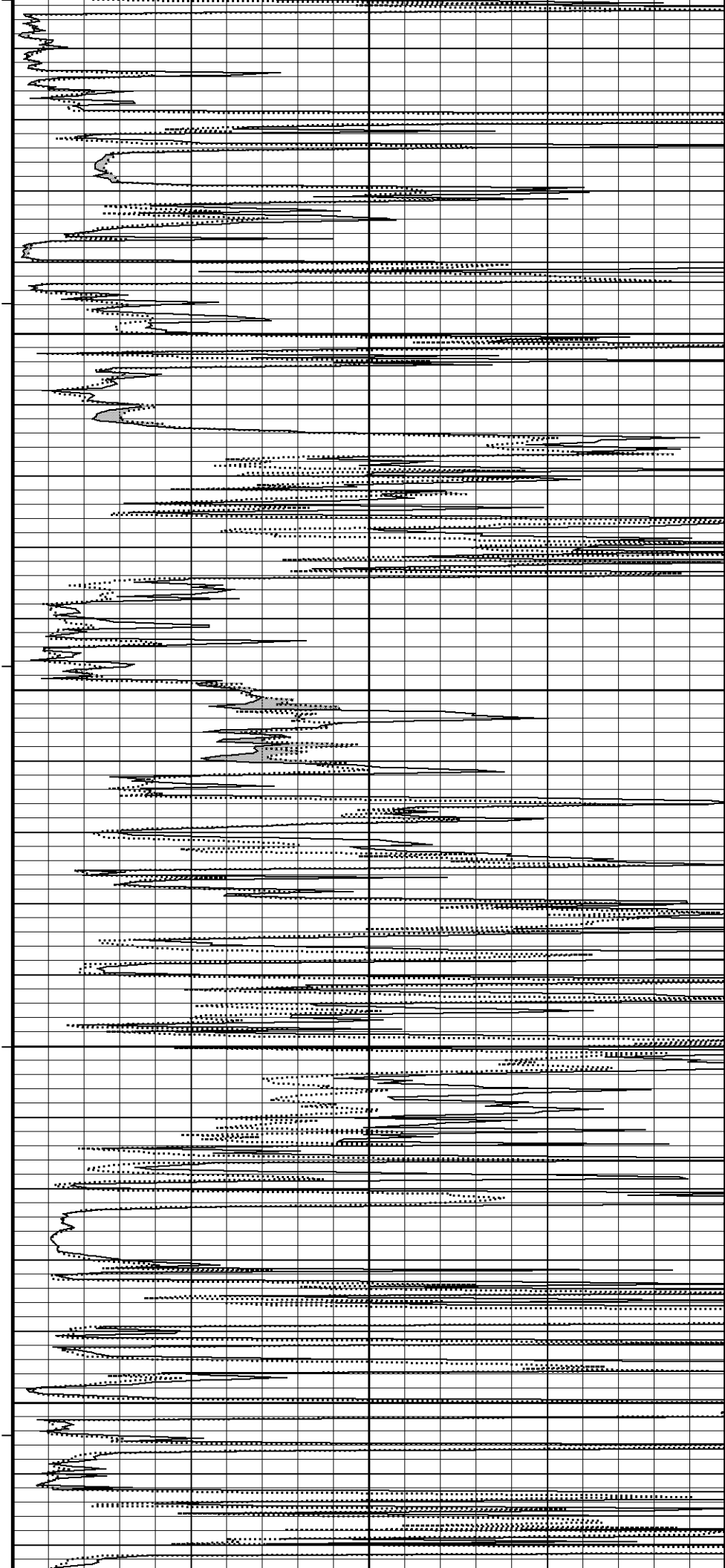
4550

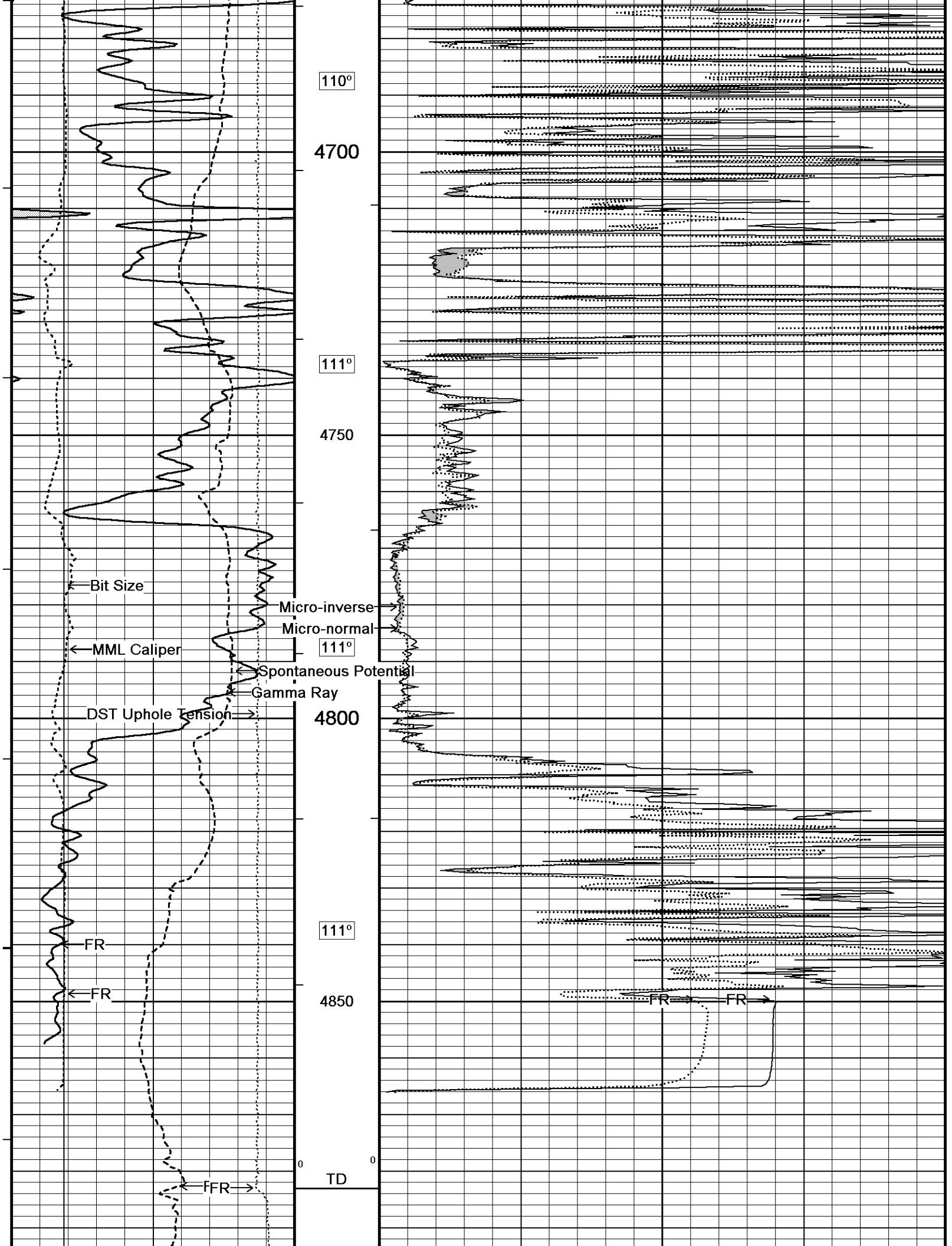
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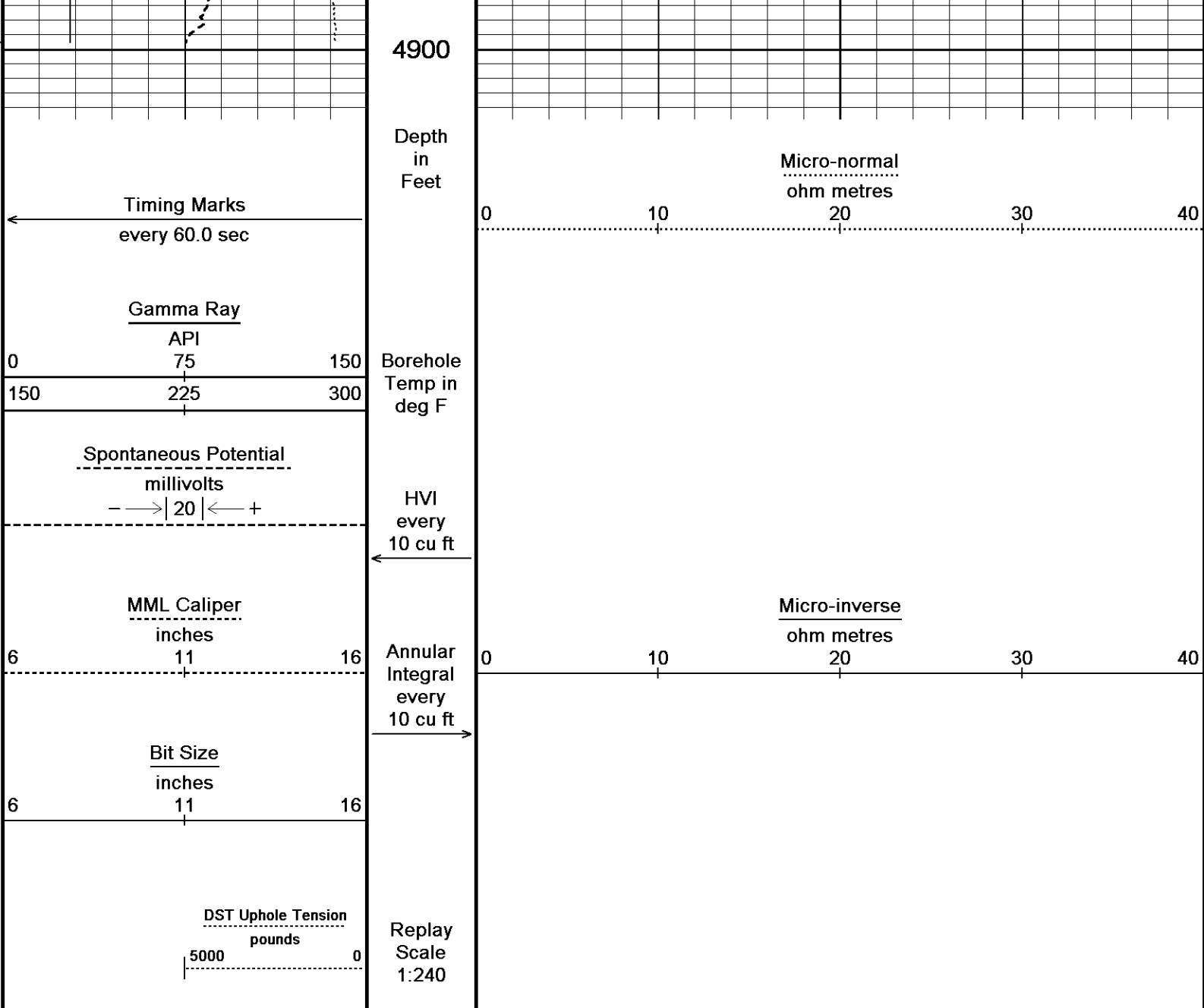
4600

109°

4650





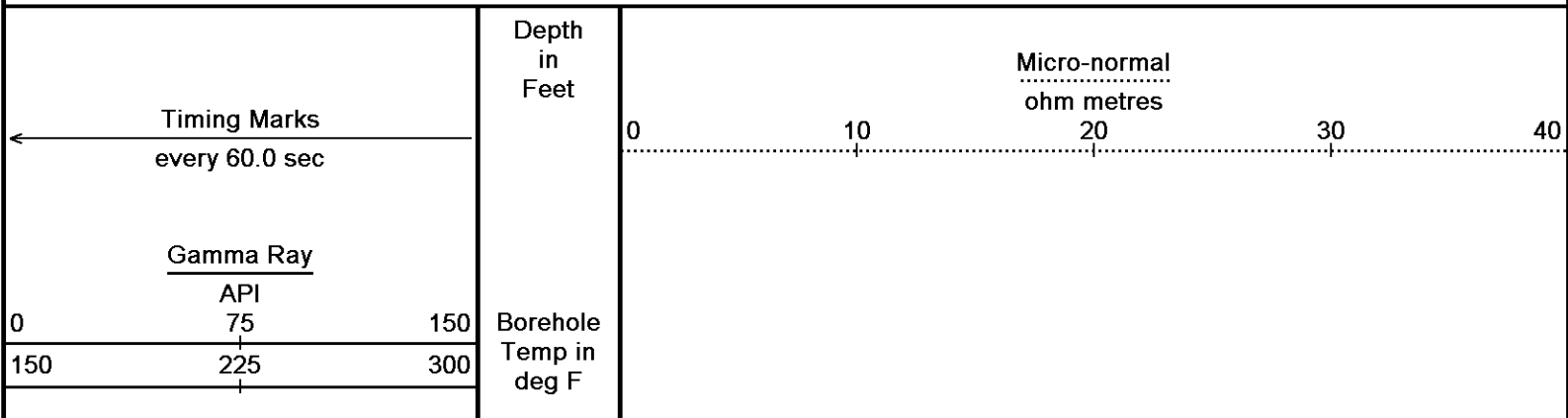


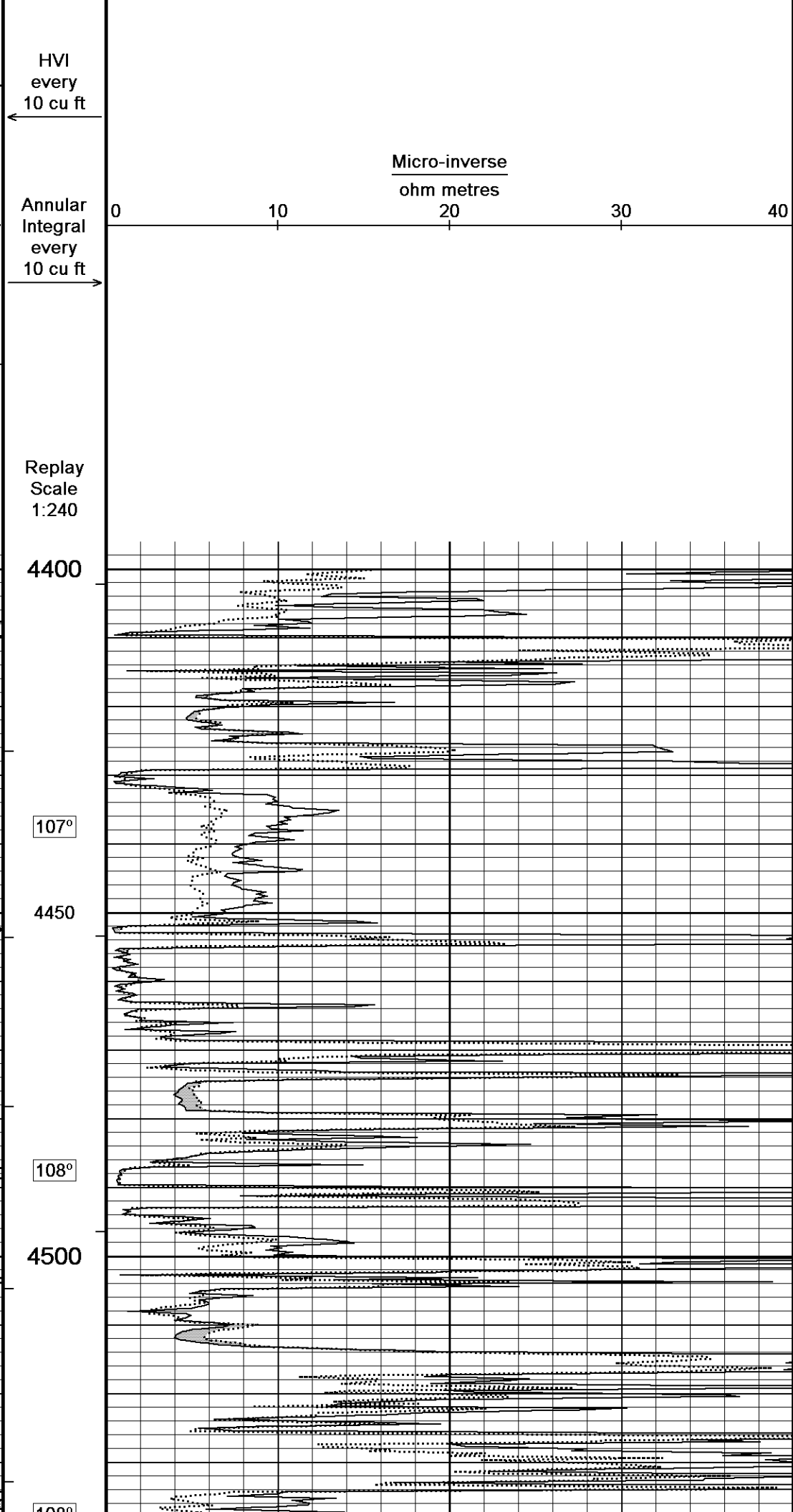
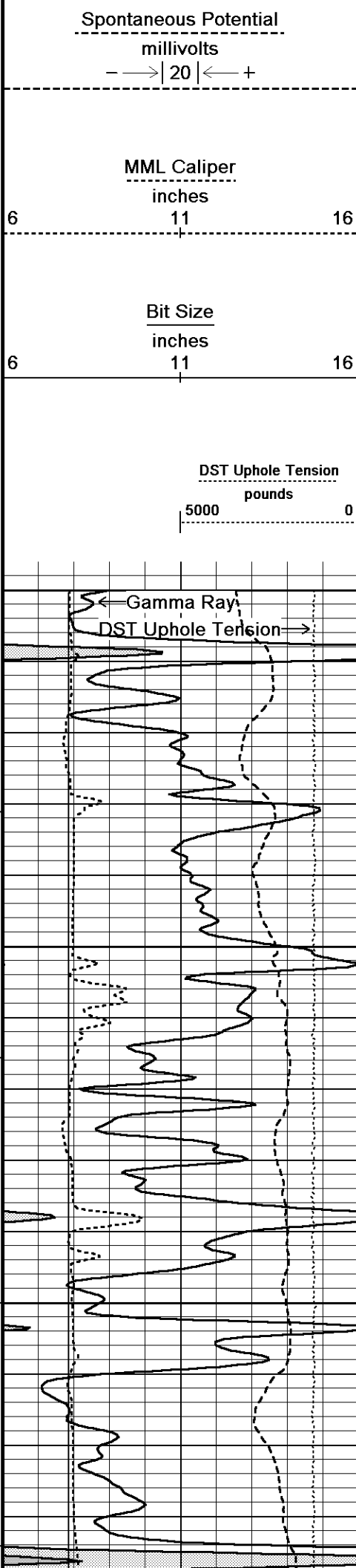
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Filename: C:\Minimus 13.08.2113\Log Data\Shake...\Shakespeare Church of God #2-27 Main Detail.dta	Recorded on 18-SEP-2014 16:29
System Versions: Logged with 13.08.2113 Plotted with 13.08.2113	

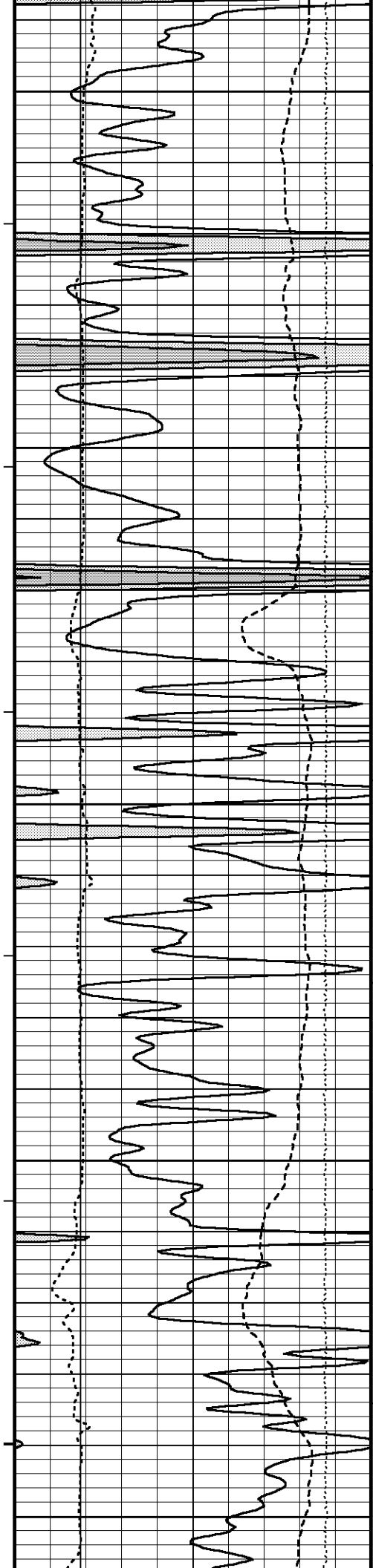
↑	5 INCH MAIN	↑
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↓	REPEAT SECTION	↓
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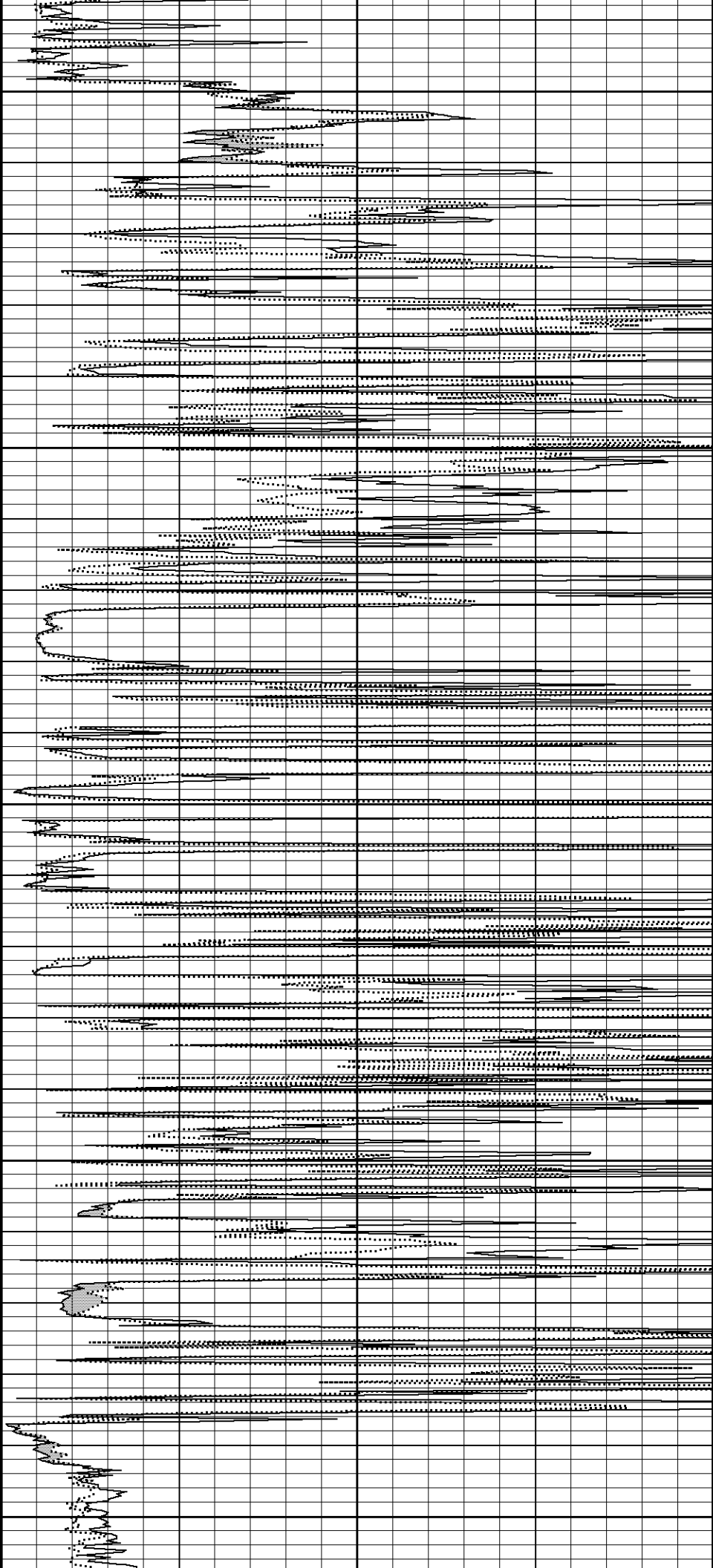
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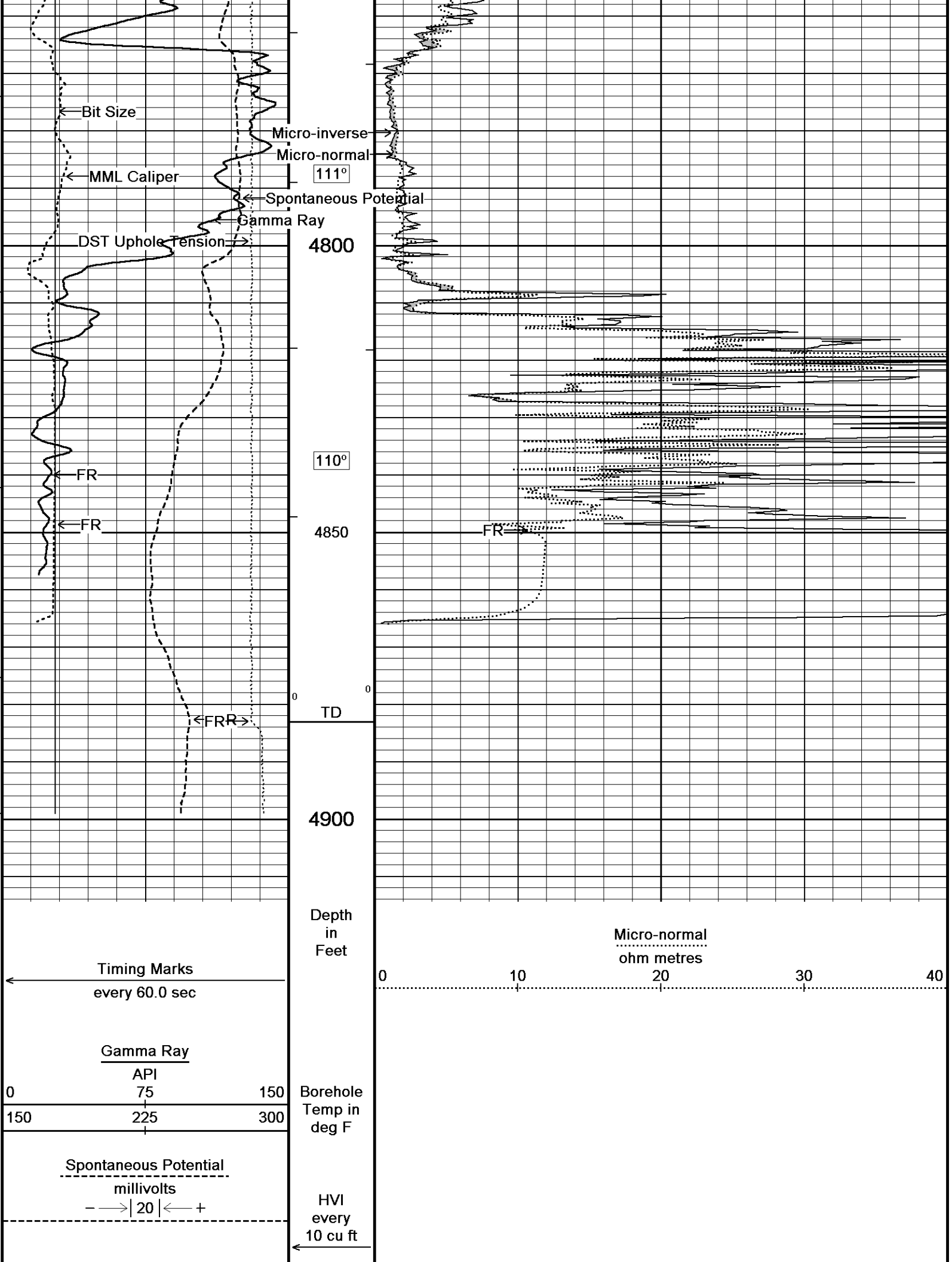


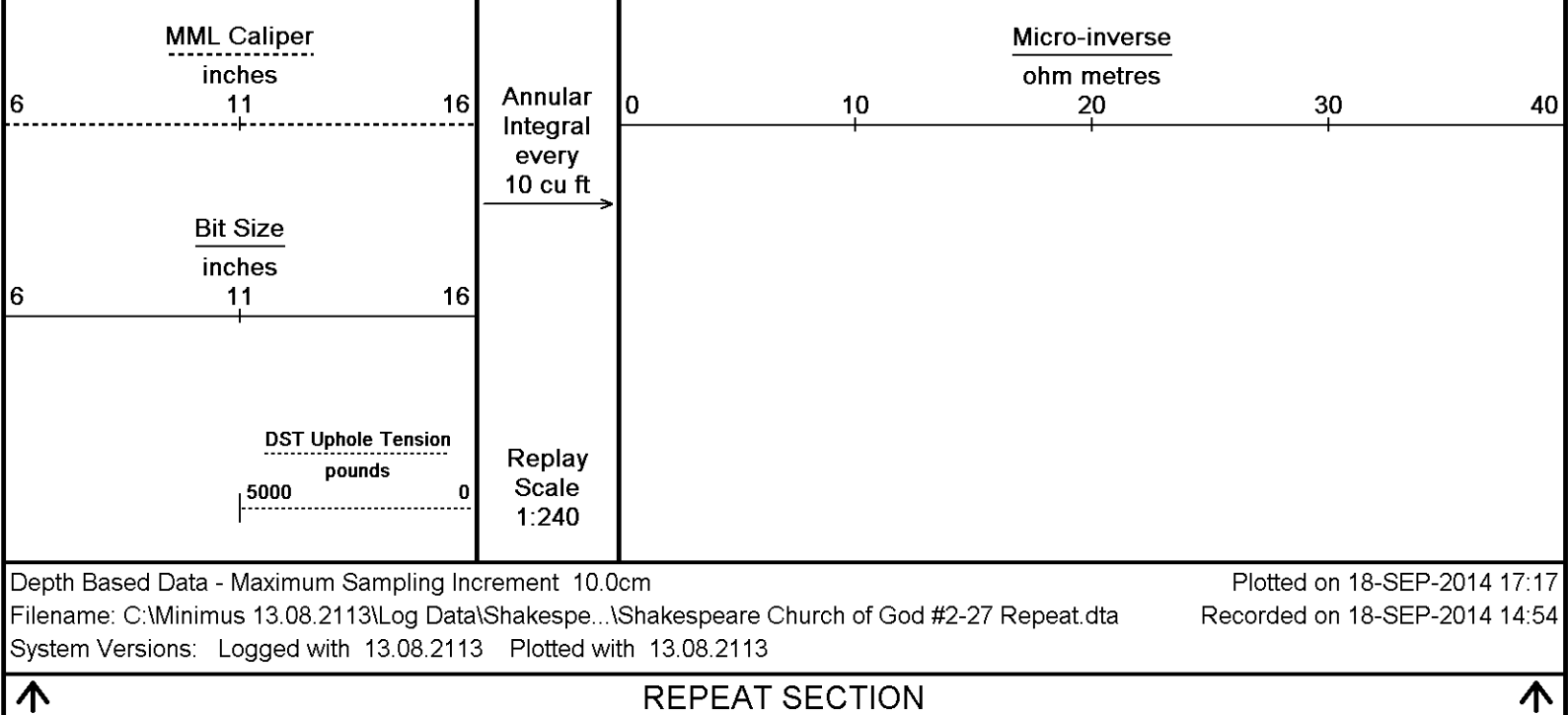




108°
4550
108°
100
4600
109°
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110°
4750







BEFORE SURVEY CALIBRATION				
C:\Minimus 13.08.2113\Log Data\Shakespeare Church of God #2-27\Shakespeare Church of God #2-27 Main.dta				
General Constants All 000			Last Edited on 18-SEP-2014,13:21	
General Parameters				
Mud Resistivity	0.600		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	0.610			
RWA Constant M	2.150			
SW/APOR Tool Source	0.000			
Caliper Calibration MML-A 3			Base Calibration on 16-SEP-2014 15:24 Field Calibration on 16-SEP-2014 15:25	
Base Calibration				
Reading No	Measured		Calibrator Size (in)	
1	15130		5.98	
2	18353		7.97	
3	21569		9.86	
4	25528		11.92	
5	0		0.00	
6	N/A		N/A	
Field Calibration				
	Measured Caliper (in)		Actual Caliper (in)	
	7.97		7.97	
Micro Normal and Micro Inverse Calibration MML-A 3			Base Calibration on 16-SEP-2014 15:32 Field Check on 16-SEP-2014 15:34	
Base Calibration				
Channel	Resistor 1	Measured Resistor 2	Calibrated (ohm-m)	
			Resistor 1	Resistor 2

Channel	Micro Normal	10.0	50.0	5.1	25.6
	Micro Inverse	10.0	49.9	3.4	16.9
Channel	Base Check (ohm-m)		Field Check (ohm-m)		
	Micro Normal		77.3		77.3
	Micro Inverse		51.2		51.2
Micro Normal and Micro Inverse Constants MML-A 3					Last Edited on 16-SEP-2014,15:26
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				
Gamma Calibration MCG-D.K 469					Field Calibration on 19-AUG-2014 08:47
	Measured	Calibrated (API)			
Background	68	46			
Calibrator (Gross)	1127	771			
Calibrator (Net)	1059	725			
Gamma Constants MCG-D.K 469					Last Edited on 17-SEP-2014,20:44
Gamma Calibrator Number	GRC038				
Mud Density	1.10	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 13-JUL-2014,14:53
Pre-filter Length	11				
SP Calibration MCG-D.K 469					Field Calibration on 12-AUG-2014 12:46
	Measured	Calibrated (mV)			
Reference 1	98.8	100.0			
Reference 2	-100.9	-100.1			
Caliper Calibration MPD-C.A 216					Base Calibration on 04-SEP-2014 11:25 Field Calibration on 11-SEP-2014 11:15
Base Calibration					
Reading No	Measured	Calibrator Size (in)			
1	17824	3.99			
2	27984	5.98			
3	38032	7.97			
4	47728	9.86			
5	58896	11.92			
6	N/A	N/A			
Field Calibration					
	Measured Caliper (in)	Actual Caliper (in)			
	7.92	7.97			

DOWNHOLE EQUIPMENT

C:\Minimus 13.08.2113\Log Data\Shakespeare Church of God #2-27\Shakespeare Church of God #2-27 Main.dta

3/8" Triple Cone Cable Head (MCB C A)
MCB-C.A 234 LG: 1.58 ft WT: 15.4 lb OD: 2.240 in

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



42.87 ft GRGC - Gamma Ray
39.96 ft CGXT - MCG External Temperature

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

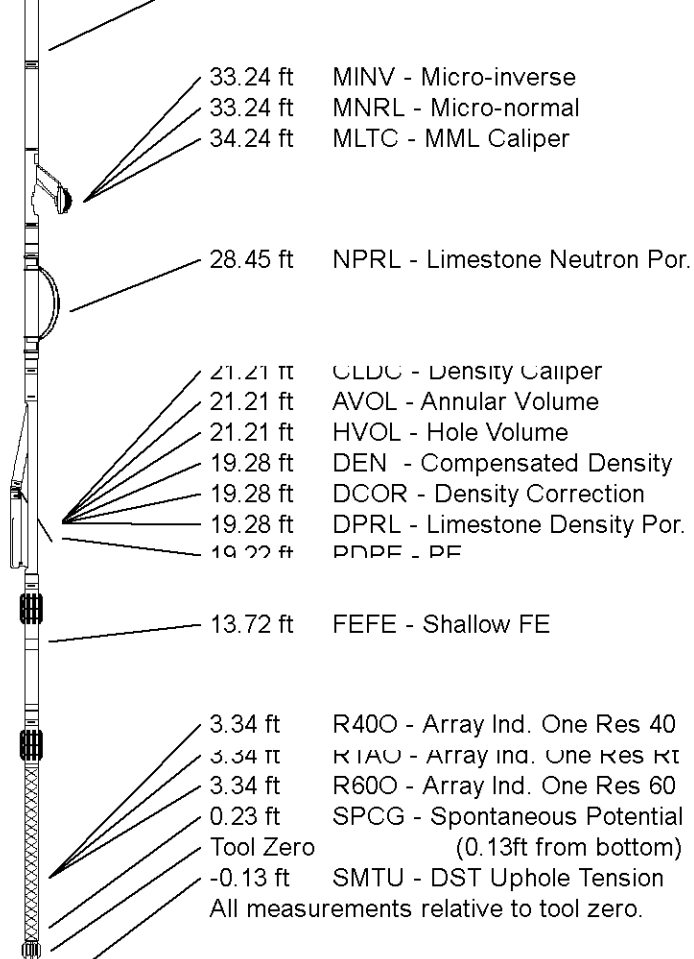
Compact Neutron
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

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

Compact Focussed Electric
MFE-B.J 353 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Induction
MAI-A.A 178 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 49.73 ft Weight: 399.0 lb



COMPANY	SHAKESPEARE OIL CO., INC.
WELL	CHURCH OF GOD #2-27
FIELD	PENCE
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	3129.00	feet	First Reading	3800.00	feet
Elevation Drill Floor	3127.00	feet	Depth Driller	4890.00	feet
Elevation Ground Level	3119.00	feet	Depth Logger	4883.00	feet



Weatherford®

MICRORESISTIVITY LOG