KOLAR Document ID: 1375527

Confidentiality Requested:
☑ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1
January 2018
Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 31885
Name: M & M Exploration, Inc.
Address 1: 4257 MAIN ST., #230
Address 2:
City: WESTMINSTER State: CO Zip: 80031 + __ __ __ __
Contact Person: Michael N. Austin
Phone: (303) 438-1991
CONTRACTOR: License # 31548
Name: Discovery Drilling
Wellsite Geologist: Justin Carter
Purchaser:

Designate Type of Completion:
☑ New Well ☐ Re-Entry ☐ Workover

☐ Oil ☐ WSW ☐ SWD
☐ Gas ☑ DH ☐ EOR
☐ OG ☐ GSW
☐ CM *(Coal Bed Methane)*
☐ Cathodic ☐ Other *(Core, Expl., etc.)*:

If Workover/Re-entry: Old Well Info as follows:
Operator:
Well Name:
Original Comp. Date: Original Total Depth:

☐ Deepening ☐ Re-perf. ☐ Conv. to EOR ☐ Conv. to SWD
☐ Plug Back ☐ Liner ☐ Conv. to GSW ☐ Conv. to Producer

☐ Commingled Permit #:
☐ Dual Completion Permit #:
☐ SWD Permit #:
☐ EOR Permit #:
☐ GSW Permit #:

10/23/2017	10/30/2017	10/31/2017
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No.: 15-079-20715-00-00
Spot Description:
NW - NW - SW - NE Sec. 15 Twp. 24 S. R. 2 ☐ East ☑ West
1381 Feet from ☑ North / ☐ South Line of Section
2350 Feet from ☑ East / ☐ West Line of Section

Footages Calculated from Nearest Outside Section Corner:
☑ NE ☐ NW ☐ SE ☐ SW

GPS Location: Lat: *(e.g. xx.xxxxx)* , Long: *(e.g. -xxx.xxxxx)*
Datum: ☐ NAD27 ☐ NAD83 ☐ WGS84
County: Harvey
Lease Name: STUTZMAN Well #: 1
Field Name:
Producing Formation: None
Elevation: Ground: 1402 Kelly Bushing: 410
Total Vertical Depth: 4000 Plug Back Total Depth:
Amount of Surface Pipe Set and Cemented at: 266 Feet
Multiple Stage Cementing Collar Used? ☐ Yes ☑ No
If yes, show depth set: Feet
If Alternate II completion, cement circulated from:
feet depth to: w/ sx cmt.

Drilling Fluid Management Plan
(Data must be collected from the Reserve Pit)

Chloride content: 26000 ppm Fluid volume: 1300 bbls
Dewatering method used: Hauled to Disposal

Location of fluid disposal if hauled offsite:
Operator Name: Kanter Oil Company
Lease Name: Bott C #5 SWD License #: 7116
Quarter NE Sec. 7 Twp. 23 S. R. 3 ☐ East ☑ West
County: Harvey Permit #: D-18536

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

☑ **Confidentiality Requested**
Date: 12/07/2017
☑ **Confidential Release Date:** 12/07/2019
☑ **Wireline Log Received** ☑ **Drill Stem Tests Received**
☑ **Geologist Report / Mud Logs Received**
☐ **UIC Distribution**
ALT ☑ **I** ☐ **II** ☐ **III** **Approved by:** Karen Ritter **Date:** 12/12/2017

Operator Name: M & M Exploration, Inc. Lease Name: STUTZMAN Well #: 1

Sec. 15 Twp. 24 S. R. 2 ☐ East ☑ West County: Harvey

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken *(Attach Additional Sheets)*	☑ Yes	☐ No
Samples Sent to Geological Survey	☐ Yes	☑ No
Cores Taken	☐ Yes	☑ No
Electric Log Run	☑ Yes	☐ No
Geologist Report / Mud Logs	☑ Yes	☐ No

List All E. Logs Run:

Induction
Density Neutron-Micrologl

☑ Log Formation (Top), Depth and Datum ☐ Sample

Name	Top	Datum
Mississippian	3307	-1897
Hunton	3778	-2368
Viola	3855	-2445
Arbuckle	3956	-2546

CASING RECORD ☑ New ☐ Used

Report all strings set-conductor, surface, intermediate, production, etc.

Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives
Surface	12.25	8.625	23	266	Common	250	2%gel&3%cc

ADDITIONAL CEMENTING / SQUEEZE RECORD

Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
☐ Perforate ☐ Protect Casing ☐ Plug Back TD ☐ Plug Off Zone	-			
	-			

1. Did you perform a hydraulic fracturing treatment on this well? ☐ Yes ☑ No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? ☐ Yes ☐ No *(If No, skip question 3)*
3. Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? ☐ Yes ☐ No *(If No, fill out Page Three of the ACO-1)*

Date of first Production/Injection or Resumed Production/ Injection:	Producing Method: ☐ Flowing ☐ Pumping ☐ Gas Lift ☐ Other *(Explain)*

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

DISPOSITION OF GAS:	METHOD OF COMPLETION:	PRODUCTION INTERVAL:
☐ Vented ☐ Sold ☐ Used on Lease *(If vented, Submit ACO-18.)*	☐ Open Hole ☐ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)*	Top / Bottom

Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record *(Amount and Kind of Material Used)*

TUBING RECORD: Size: Set At: Packer At:

Mail to: KCC - Conservation Division, 266 N. Main, Suite 220, Wichita, Kansas 67202

Form	ACO1 - Well Completion
Operator	M & M Exploration, Inc.
Well Name	STUTZMAN 1
Doc ID	1375527

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Surface	12.25	8.625	23	266	Common	250	2%gel&3 %cc

ARRAY INDUCTION SHALLOW FOCUSED ELECTRIC LOG

Weatherford®

COMPANY	M & M EXPLORATION, INC.
WELL	STUTZMAN #1
FIELD	KISIWA
PROVINCE/COUNTY	HARVEY
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	1381' FNL & 2350' FEL

SEC	TWP	RGE
15	24S	2W

Other Services
MDN/MPD MML

Latitude
Longitude
API Number 15-079-20715

Permanent Datum GL, Elevation 1402 feet
Log Measured From KB, 8.00 feet above Permanent Datum
Drilling Measured From KB

Elevations:	feet
KB	1410.00
DF	1408.00
GL	1402.00

Date	30-OCT-2017			
Run Number	ONE			
Service Order	4558-196549519			
Depth Driller	4000.00	feet		
Depth Logger	4000.00	feet		
First Reading	3997.00	feet		
Last Reading	267.00	feet		
Casing Driller	266.00	feet		
Casing Logger	267.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.10 lb/USg		52.00 CP	
PH / Fluid Loss	9.50		8.00 ml/30Min	
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.89 @ 75.0	ohm-m		
Rmf @ Measured Temp	0.71 @ 75.0	ohm-m		
Rmc @ Measured Temp	1.07 @ 75.0	ohm-m		
Source Rmf / Rmc	CALC		CALC	
Rm @ BHT	0.59 @114.0	ohm-m		
Time Since Circulation	4 HOURS			
Max Recorded Temp	114.00	deg F		
Equipment / Base	13096		LIB	
Recorded By	ADAM SILL			
Witnessed By	JUSTIN CARTER			

BOREHOLE RECORD

Last Edited: 30-OCT-2017 12:40

Bit Size inches	Depth From feet	Depth To feet
7.875	266.00	4000.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	266.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 17.03.9700.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MAI RUN IN COMBINATION.
  - HARDWARE: DUAL BOWSPRING USED ON MDN.
  0.5 INCH STANDOFF USED ON MFE.
  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: 1685 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3000 FEET: 179 CU.FT.
- RIG: DISCOVERY #2

- RIG: DISCOVERY #2.

- ENGINEER: A. SILL.

- OPERATOR: B. TOVAR.

2 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-OCT-2017 16:29

Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_002.dta — Recorded on 30-OCT-2017 13:39

System Versions: Logged with 17.03.9700 Plotted with 17.03.9700

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
− → | 20 | ← +

Depth In Feet

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

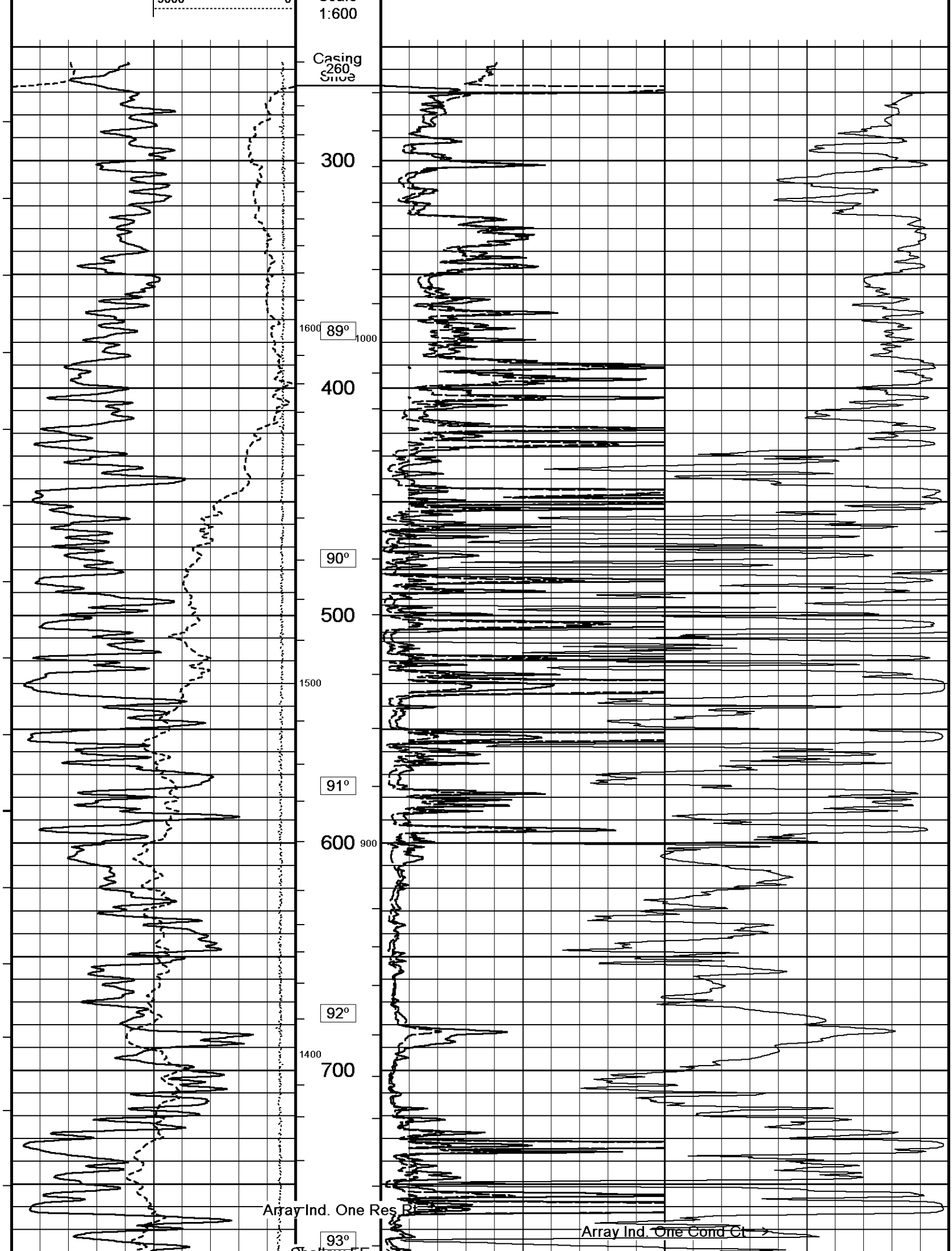
DST Uphole Tension
pounds
5000 0

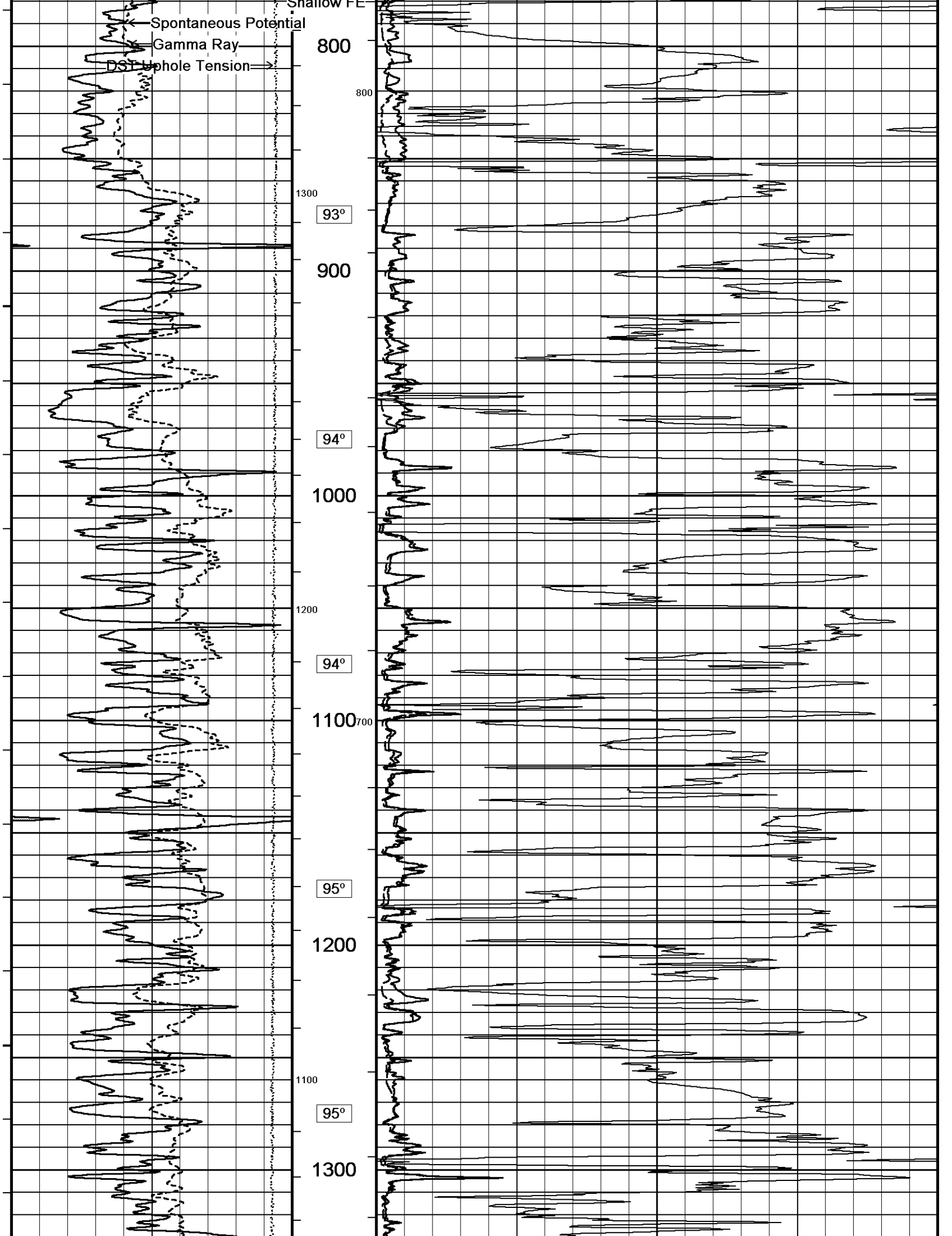
Replay Scale

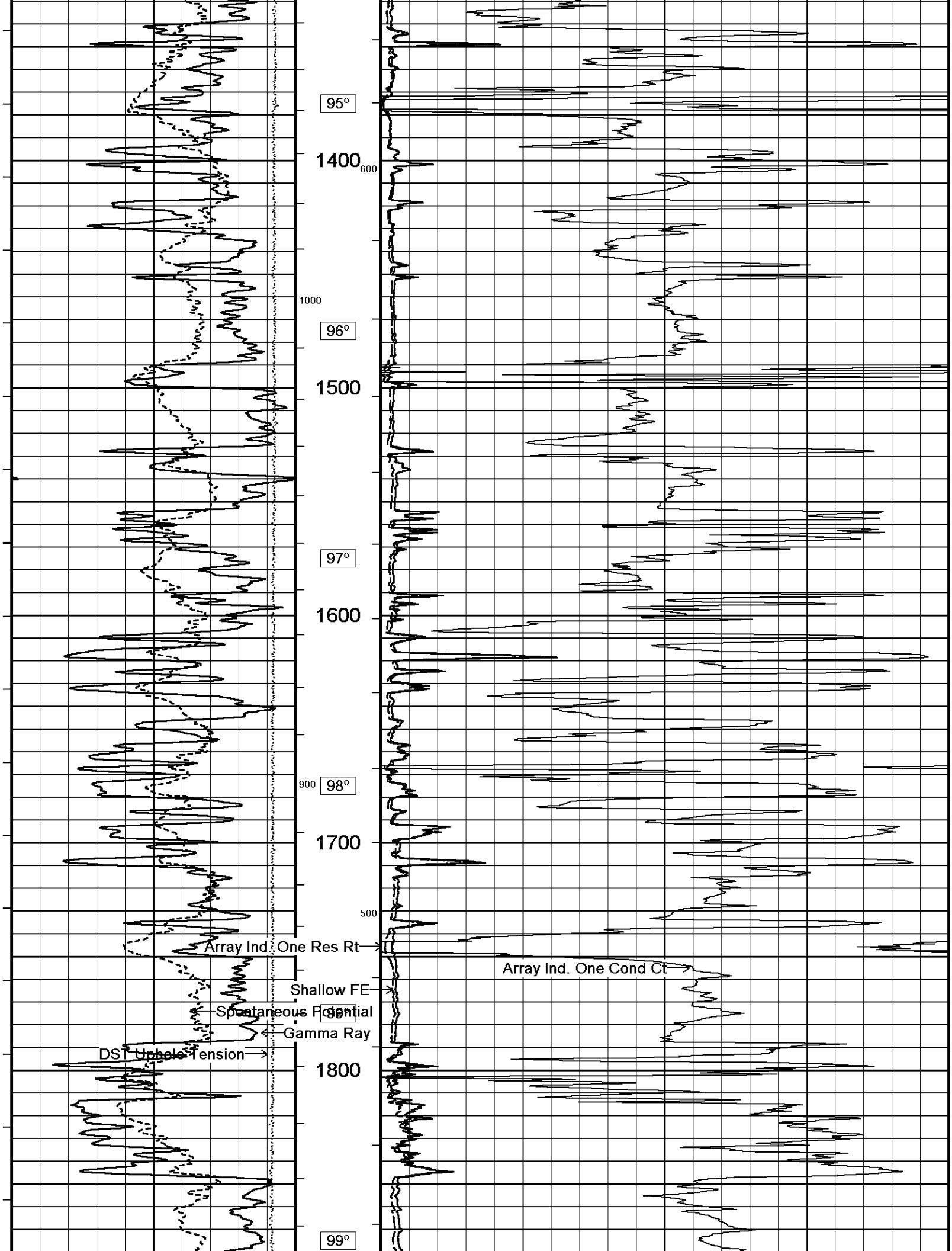
Array Ind. One Cond Ct
mmhos/metre
1000 750 500 250 0
2000 1750 1500 1250 1000

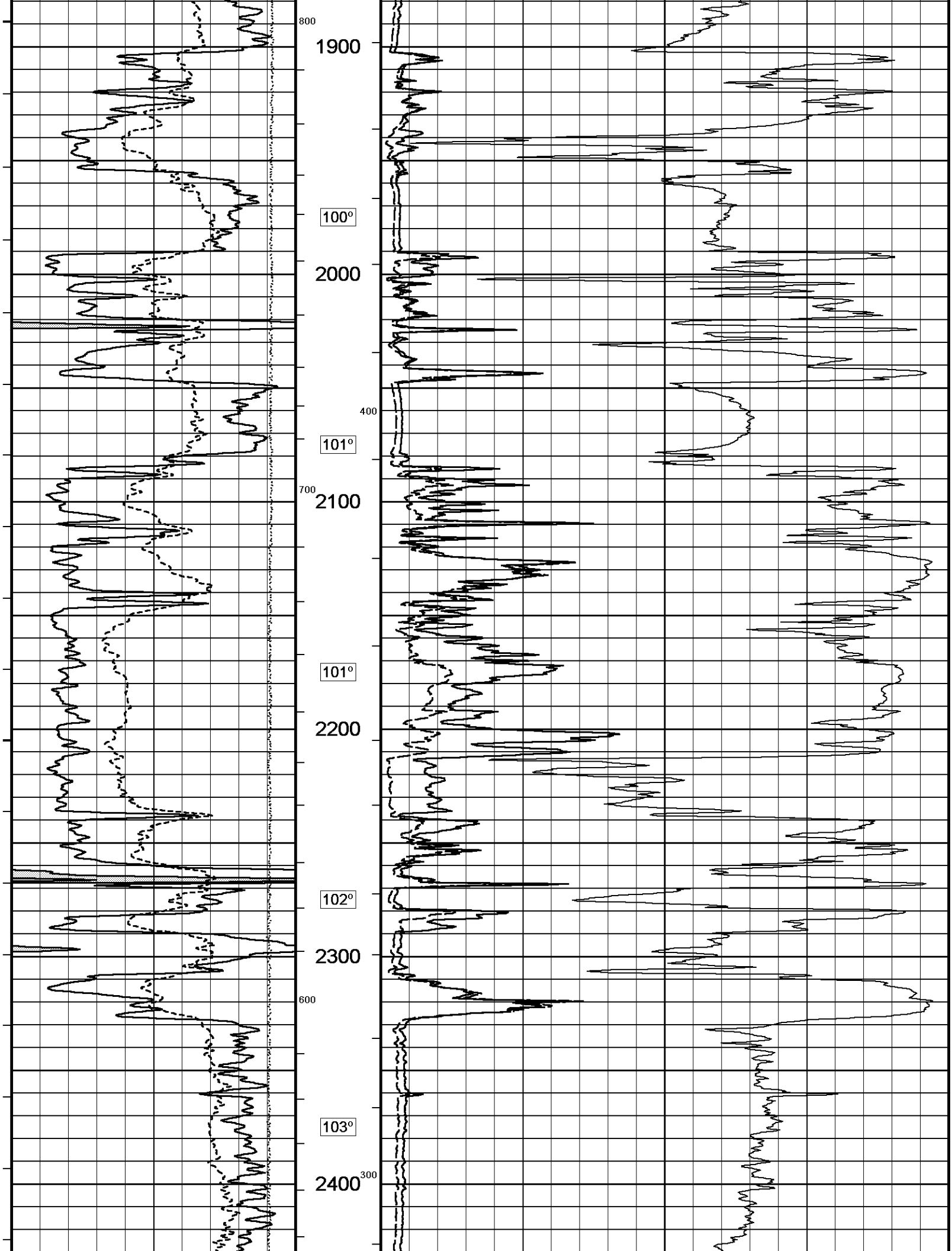
Shallow FE
ohm metres
0 25 50
0 250 500

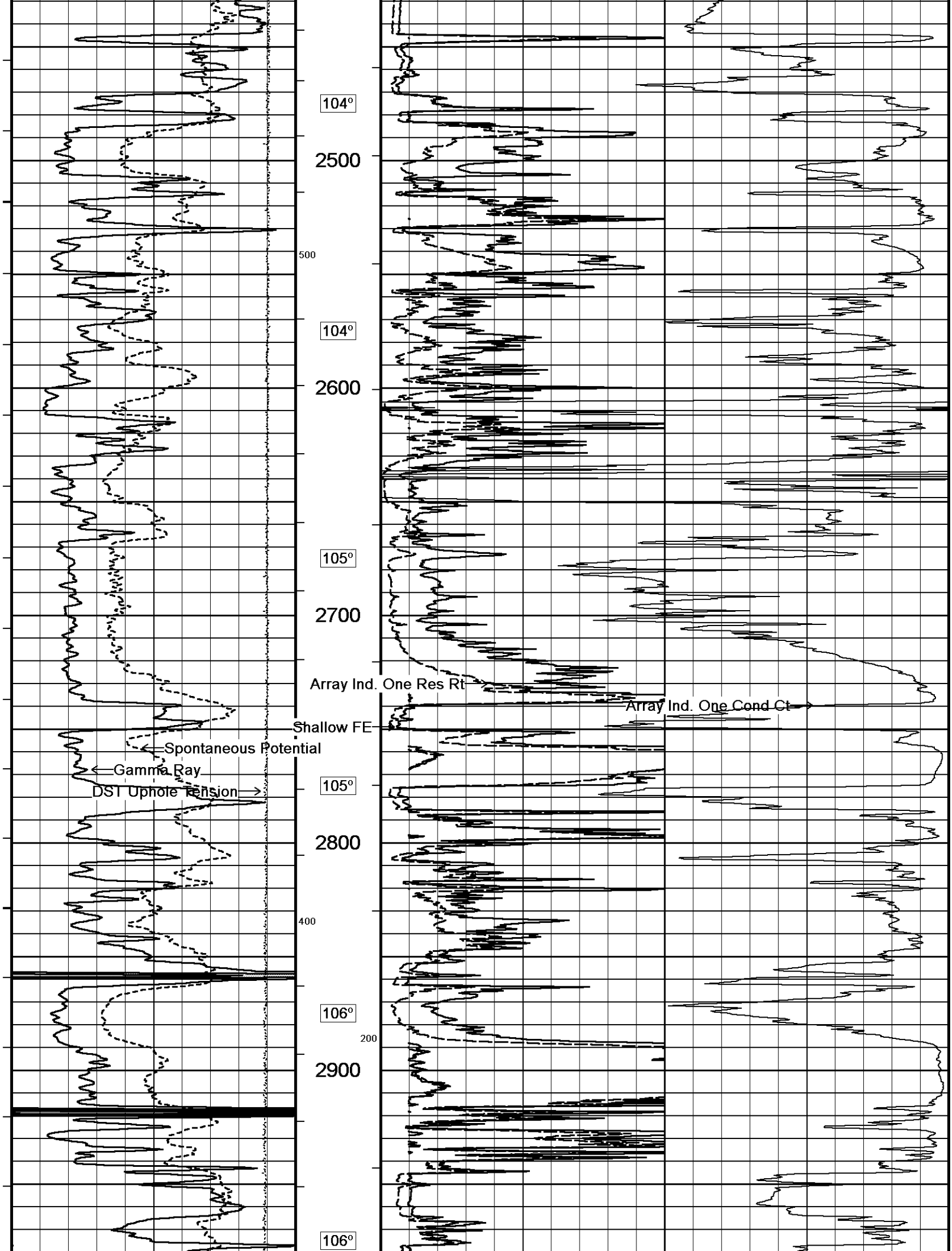
Array Ind. One Res Rt
ohm metres
0 25 50
0 250 500

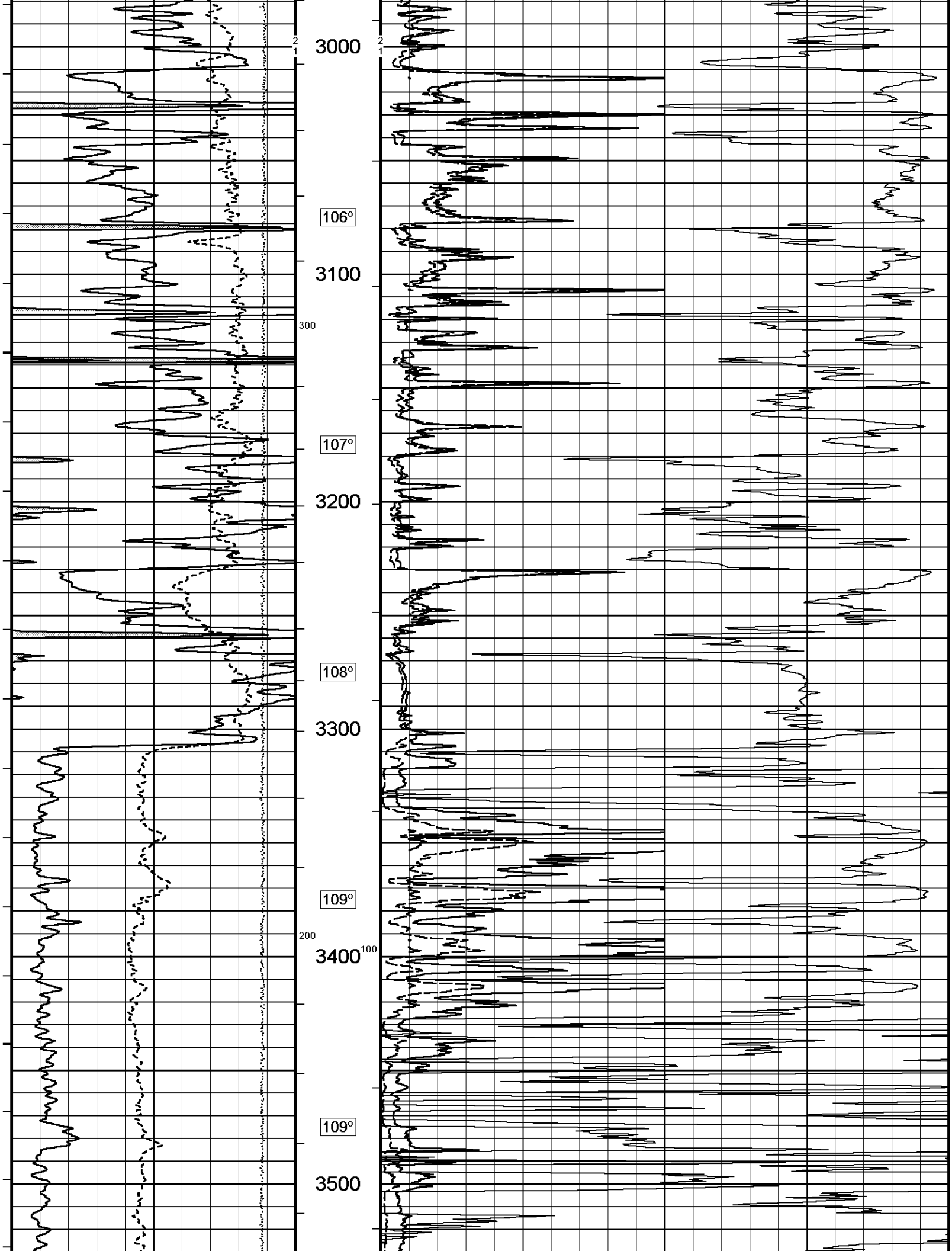

1:600
Casing Shoe
260
300
1600
89°
1000
400
90°
500
1500
91°
600
900
92°
1400
700
93°
Array Ind. One Res
Array Ind. One Cond Ct

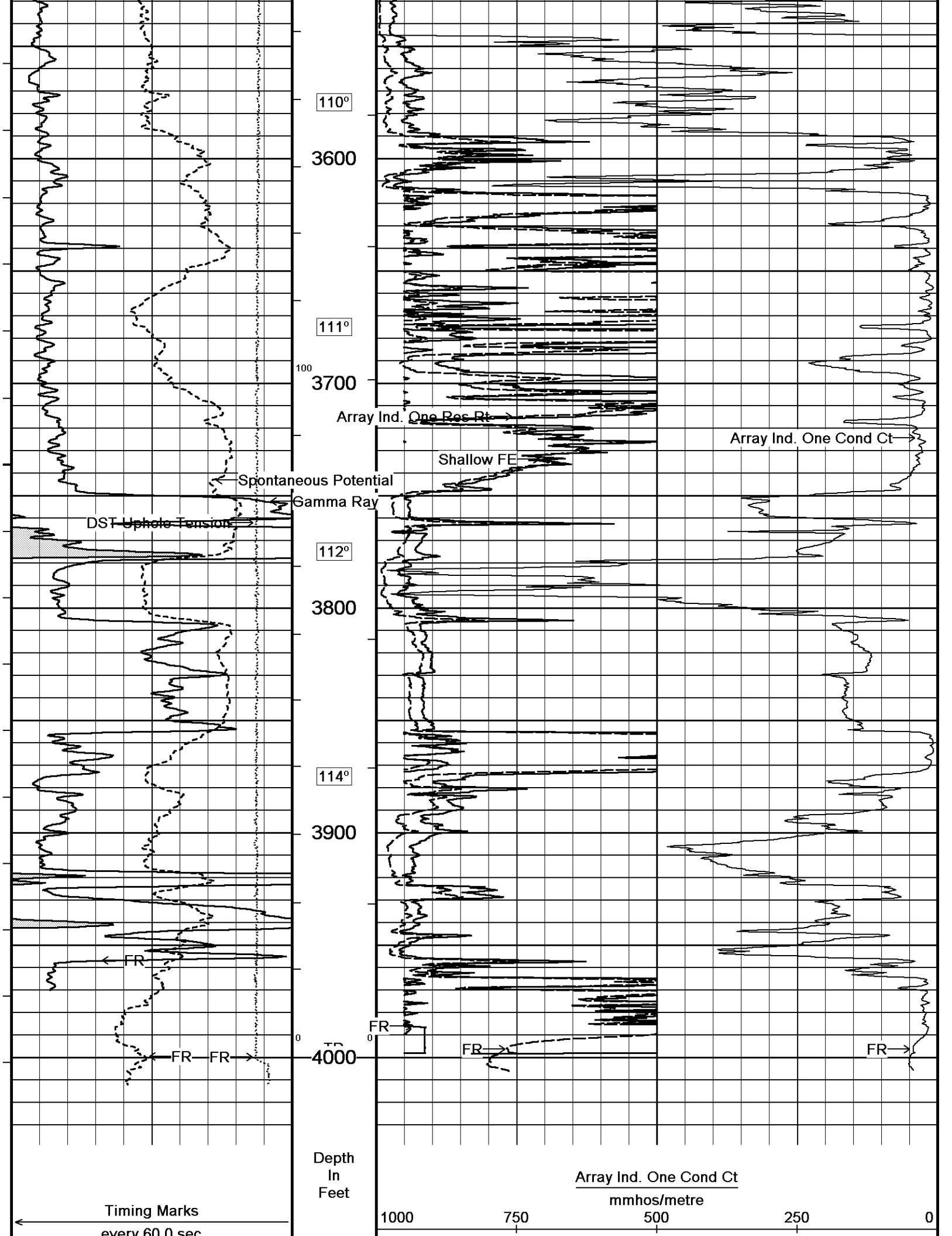

Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
800
800
1300
93°
900
94°
1000
1200
94°
1100
700
95°
1200
1100
95°
1300

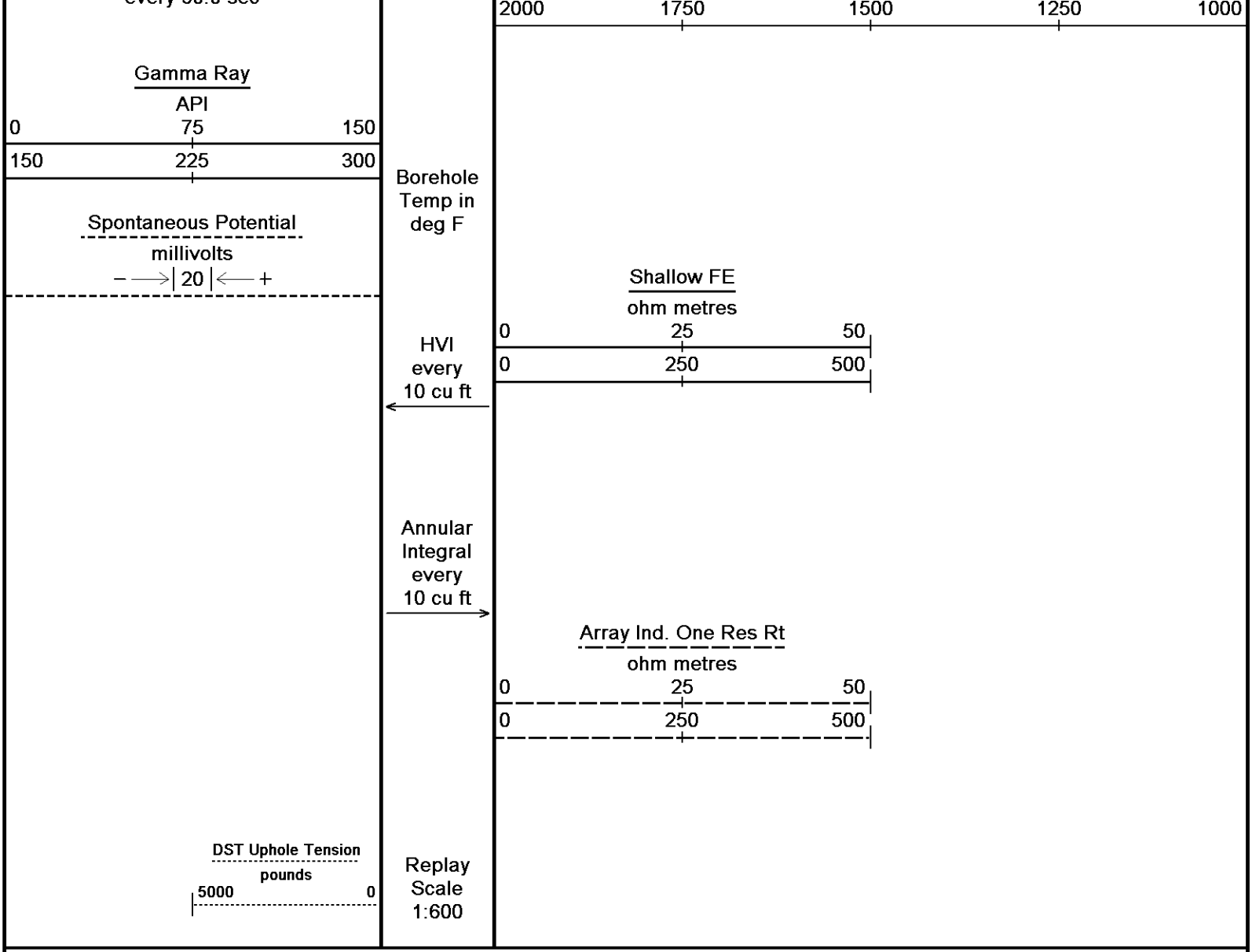

95°
1400
600
1000
96°
1500
97°
1600
900
98°
1700
500
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
1800
99°

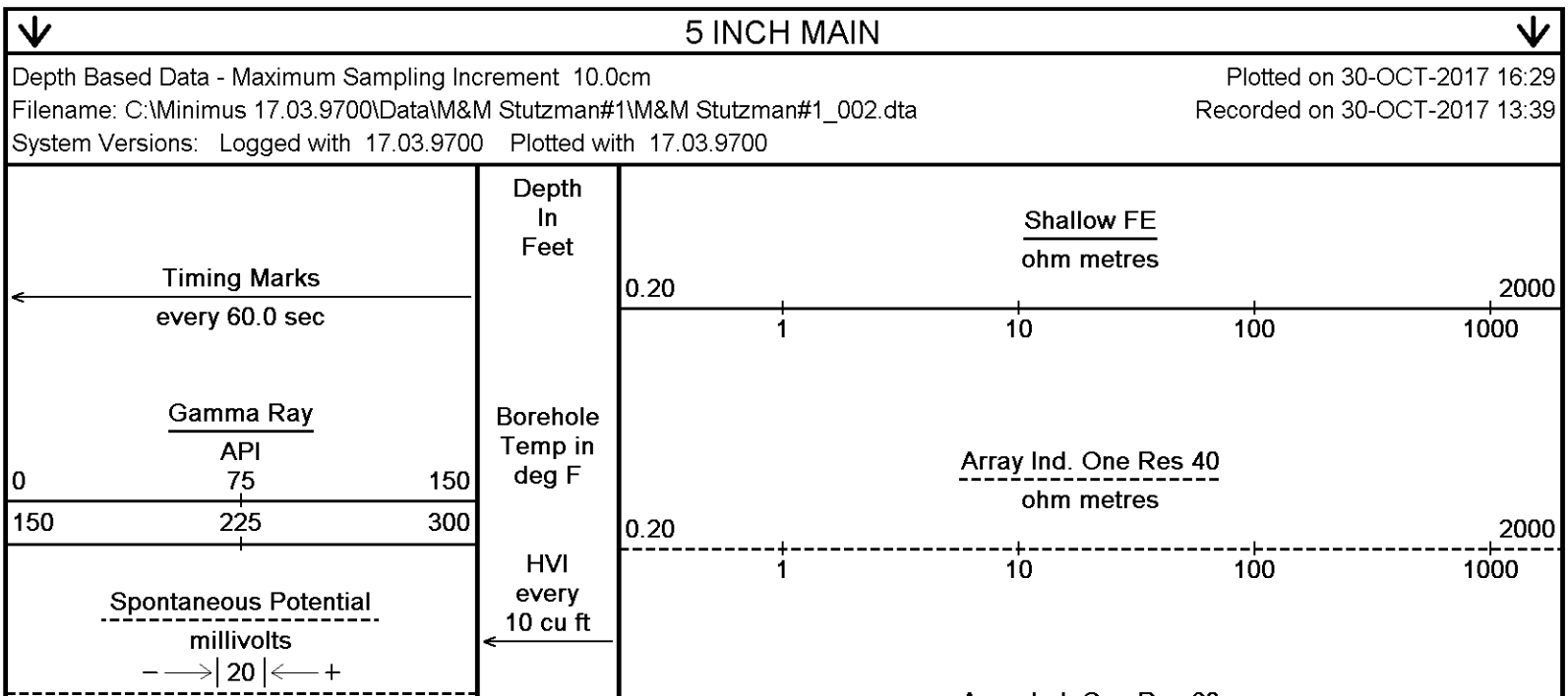

800
1900
100°
2000
400
101°
700
2100
101°
2200
102°
2300
600
103°
2400
300

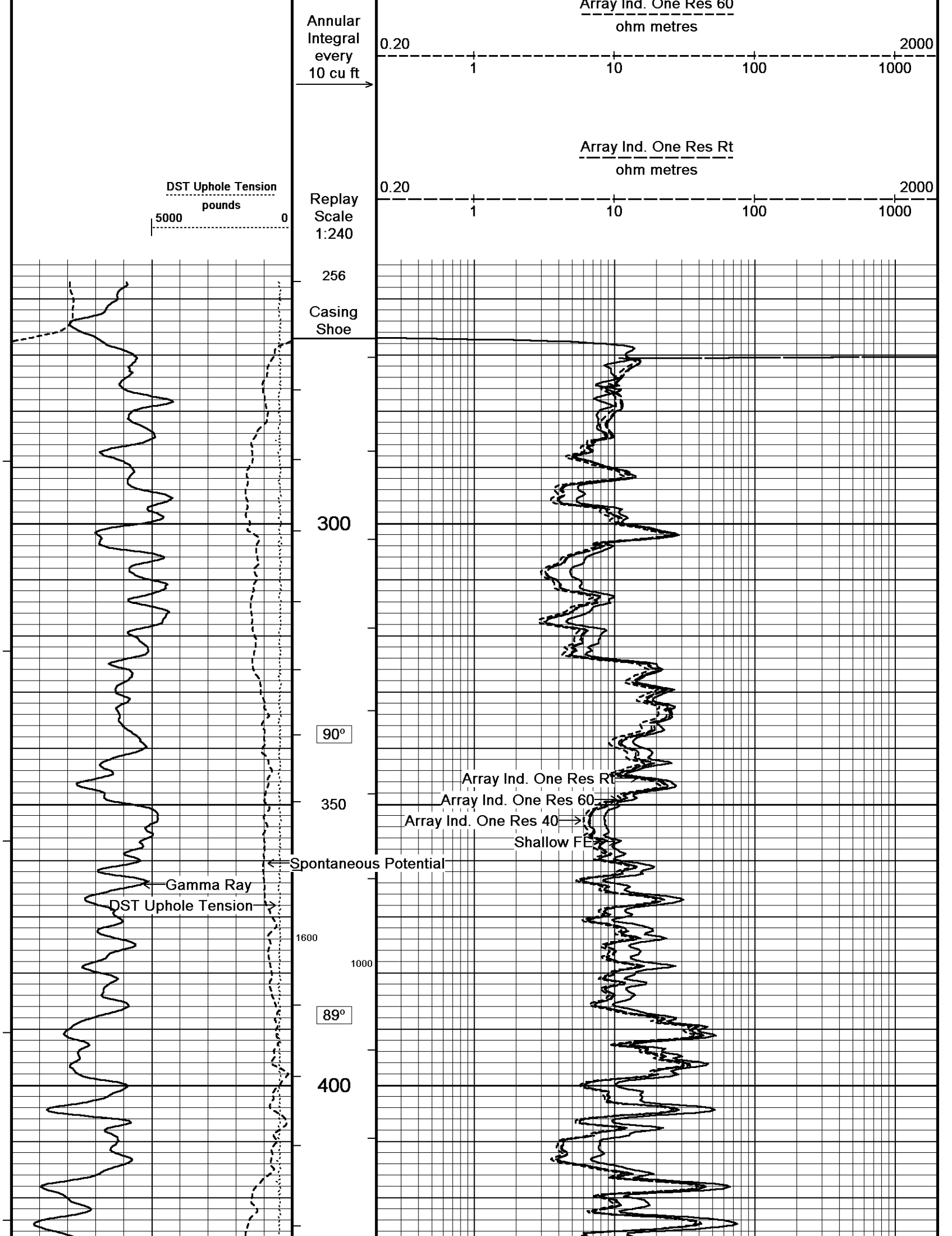

104°
2500
500
104°
2600
105°
2700
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
105°
2800
400
106°
200
2900
106°

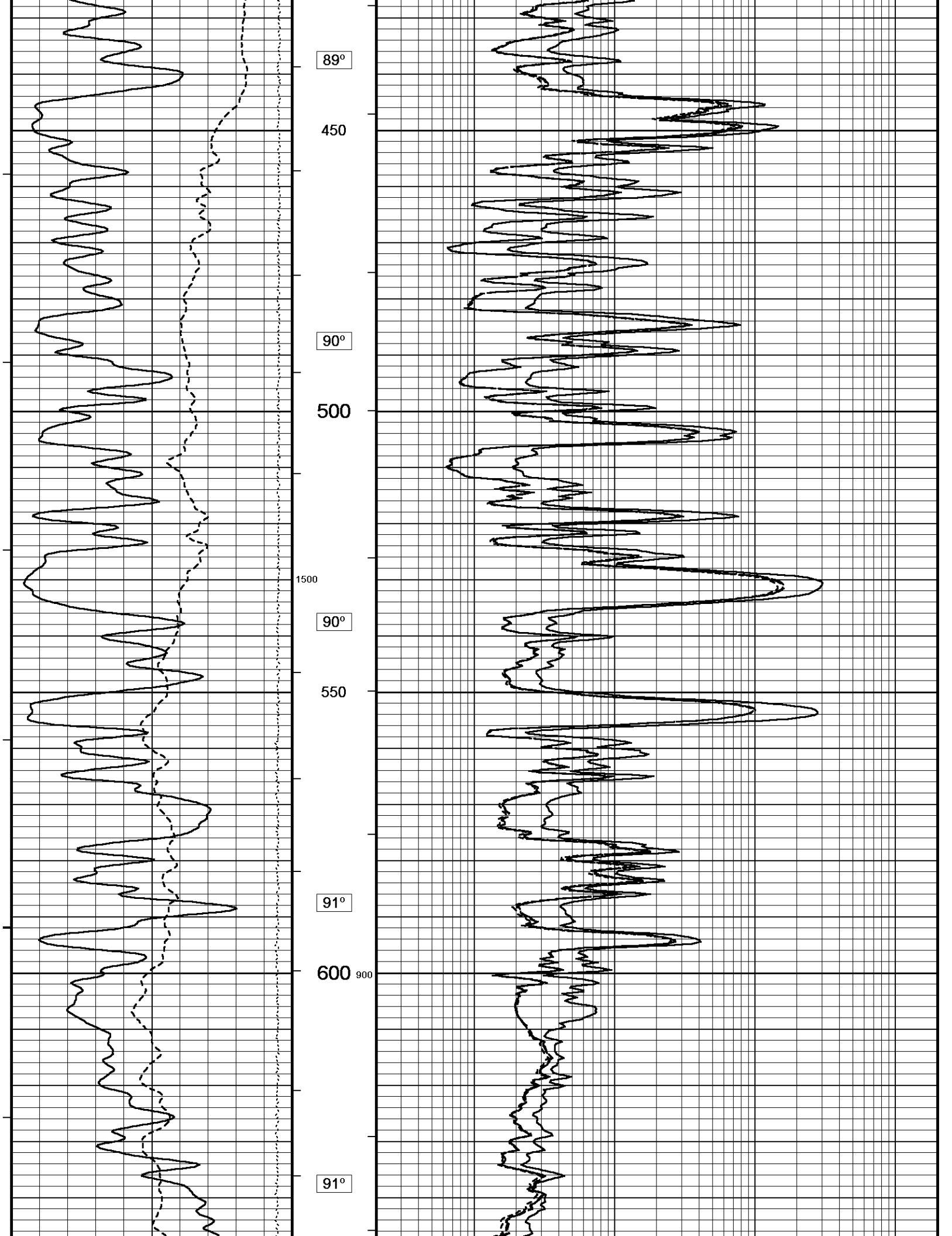

2
1
3000
106°
3100
300
107°
3200
108°
3300
109°
200
3400
100
109°
3500

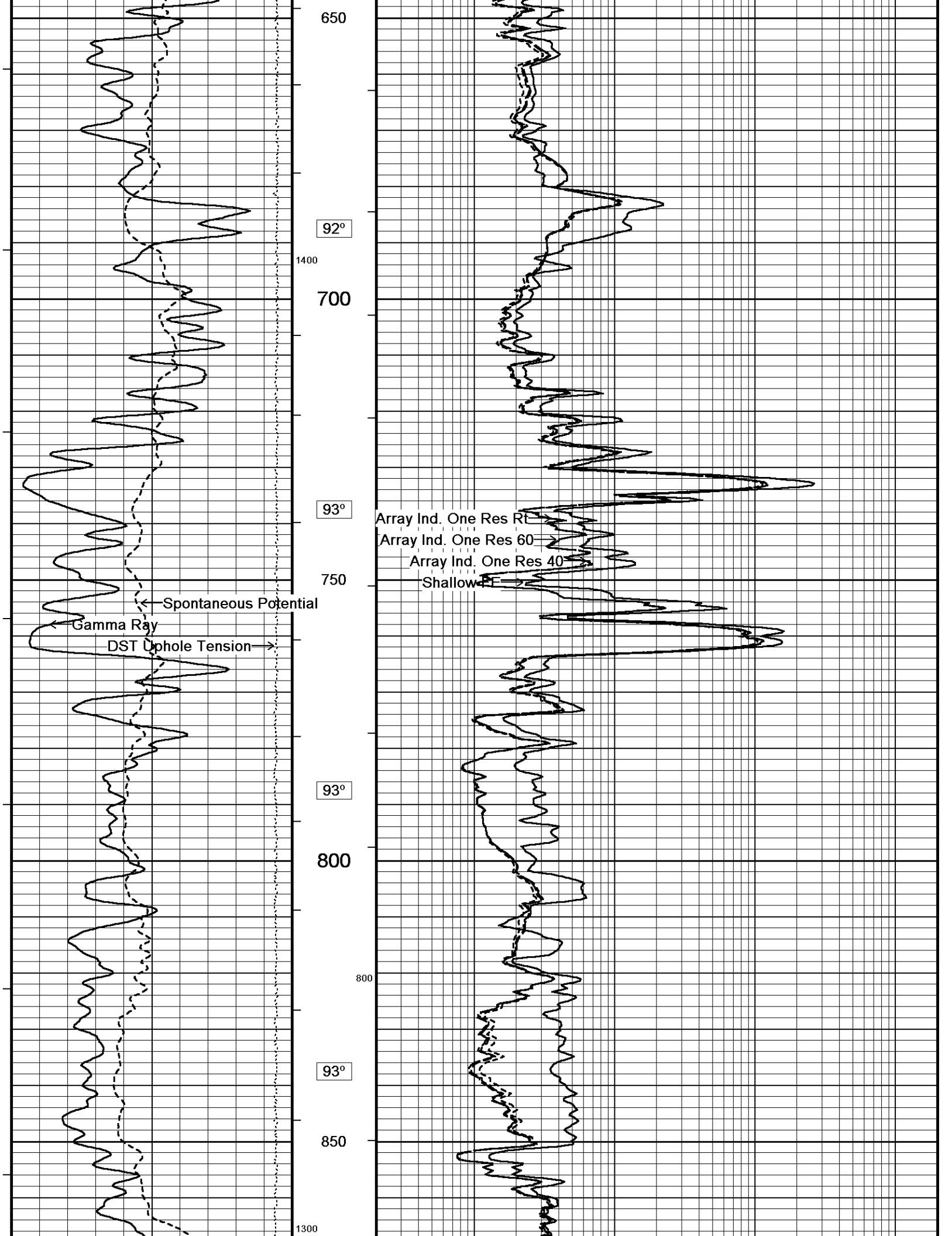

110°
3600
111°
100
3700
Array Ind. One Res Rt
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
112°
3800
114°
3900
FR
0
4000
Array Ind. One Cond Ct
Depth
In
Feet
Timing Marks
every 60.0 sec
Array Ind. One Cond Ct
mmhos/metre
1000
750
500
250
0

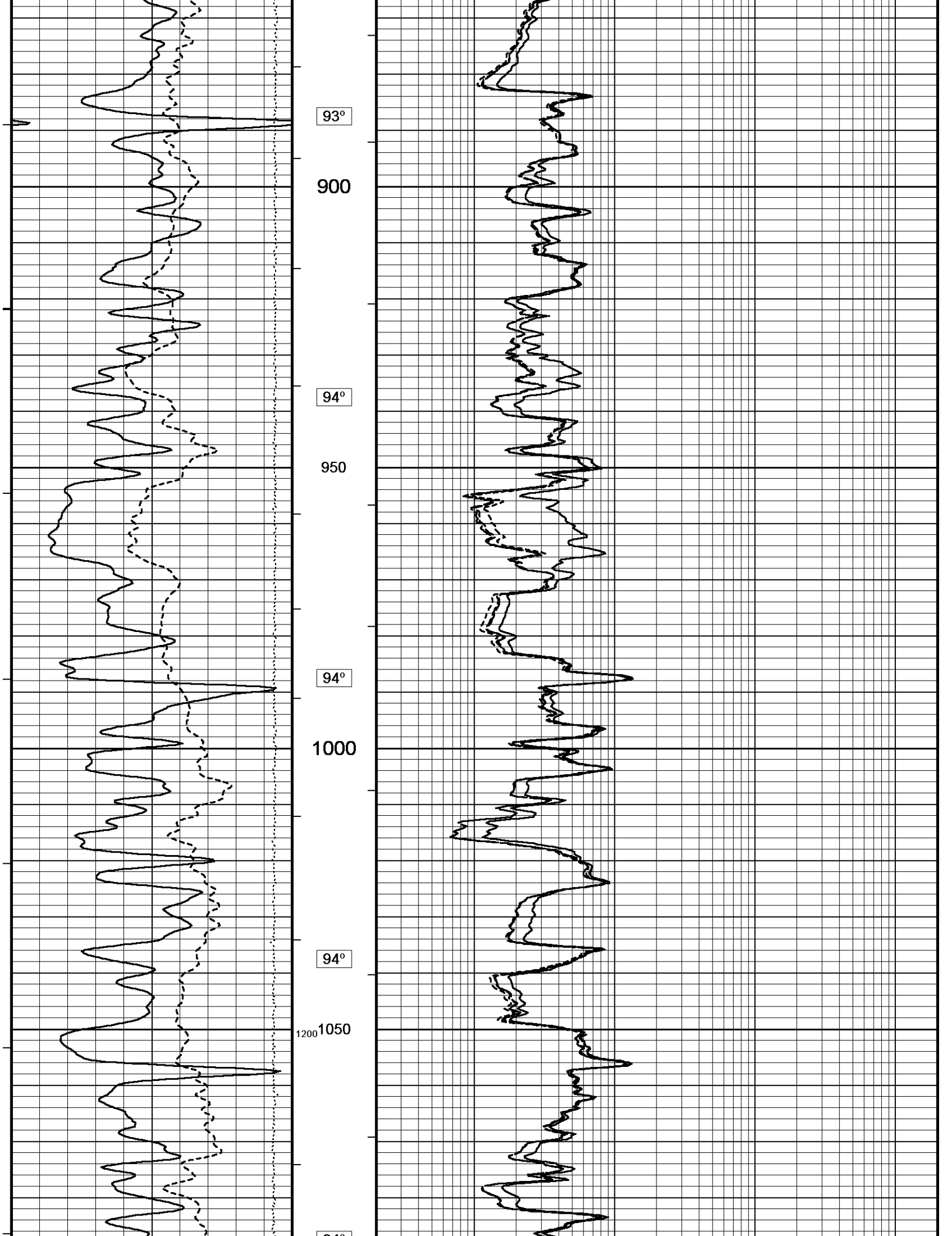

2000
1750
1500
1250
1000
Gamma Ray
API
0
75
150
150
225
300
Borehole Temp in deg F
Spontaneous Potential
millivolts
– 20 +
Shallow FE
ohm metres
0
25
50
0
250
500
HVI every 10 cu ft
Annular Integral every 10 cu ft
Array Ind. One Res Rt
ohm metres
0
25
50
0
250
500
DST Uphole Tension
pounds
5000
0
Replay Scale 1:600
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 30-OCT-2017 16:29
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_002.dta
Recorded on 30-OCT-2017 13:39
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700
2 INCH MAIN

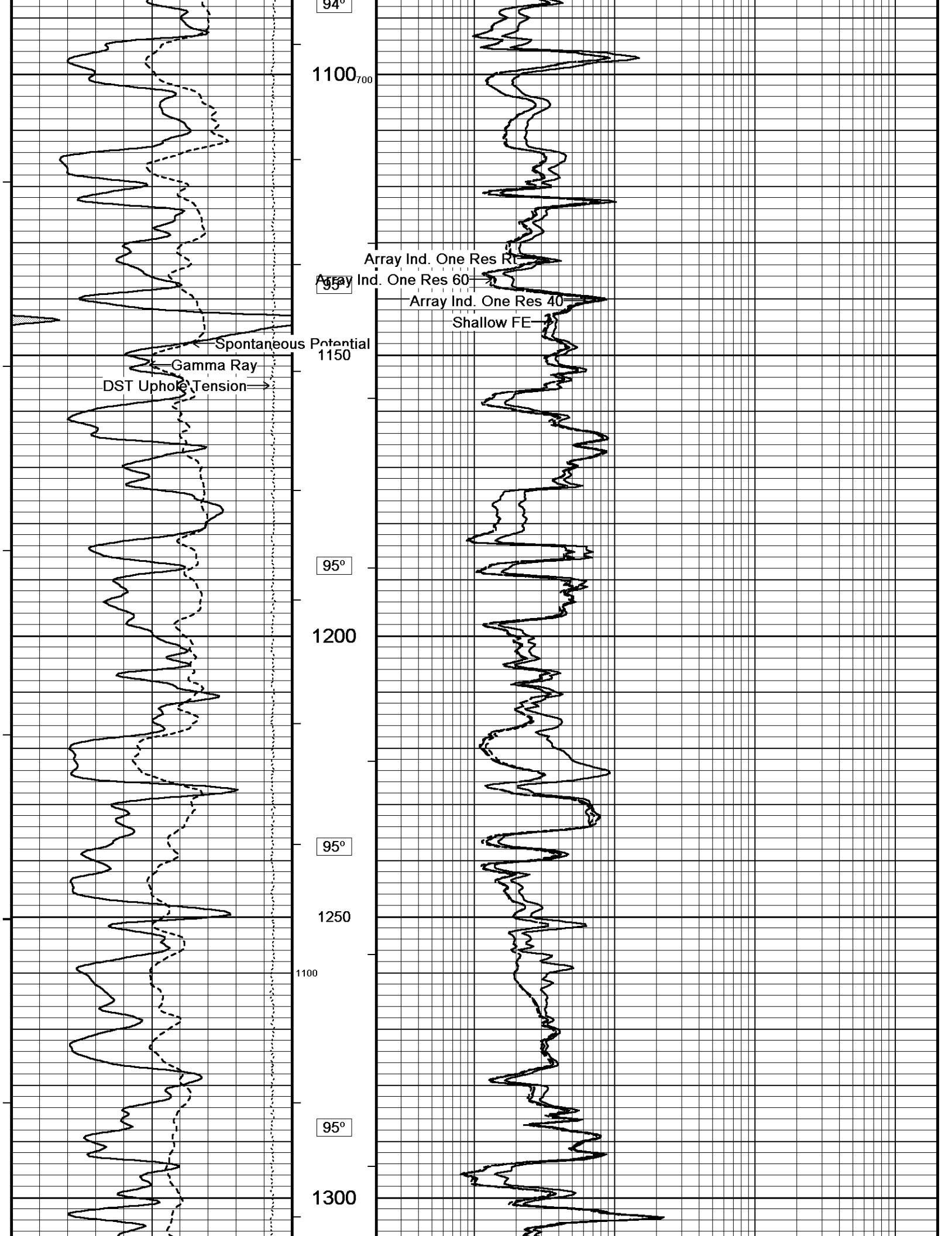

5 INCH MAIN
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 30-OCT-2017 16:29
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_002.dta
Recorded on 30-OCT-2017 13:39
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700
Depth In Feet
Timing Marks
every 60.0 sec
Shallow FE
ohm metres
0.20
2000
1
10
100
1000
Gamma Ray
API
0
75
150
150
225
300
Borehole Temp in deg F
Array Ind. One Res 40
ohm metres
0.20
2000
1
10
100
1000
Spontaneous Potential
millivolts
– 20 +
HVI every 10 cu ft

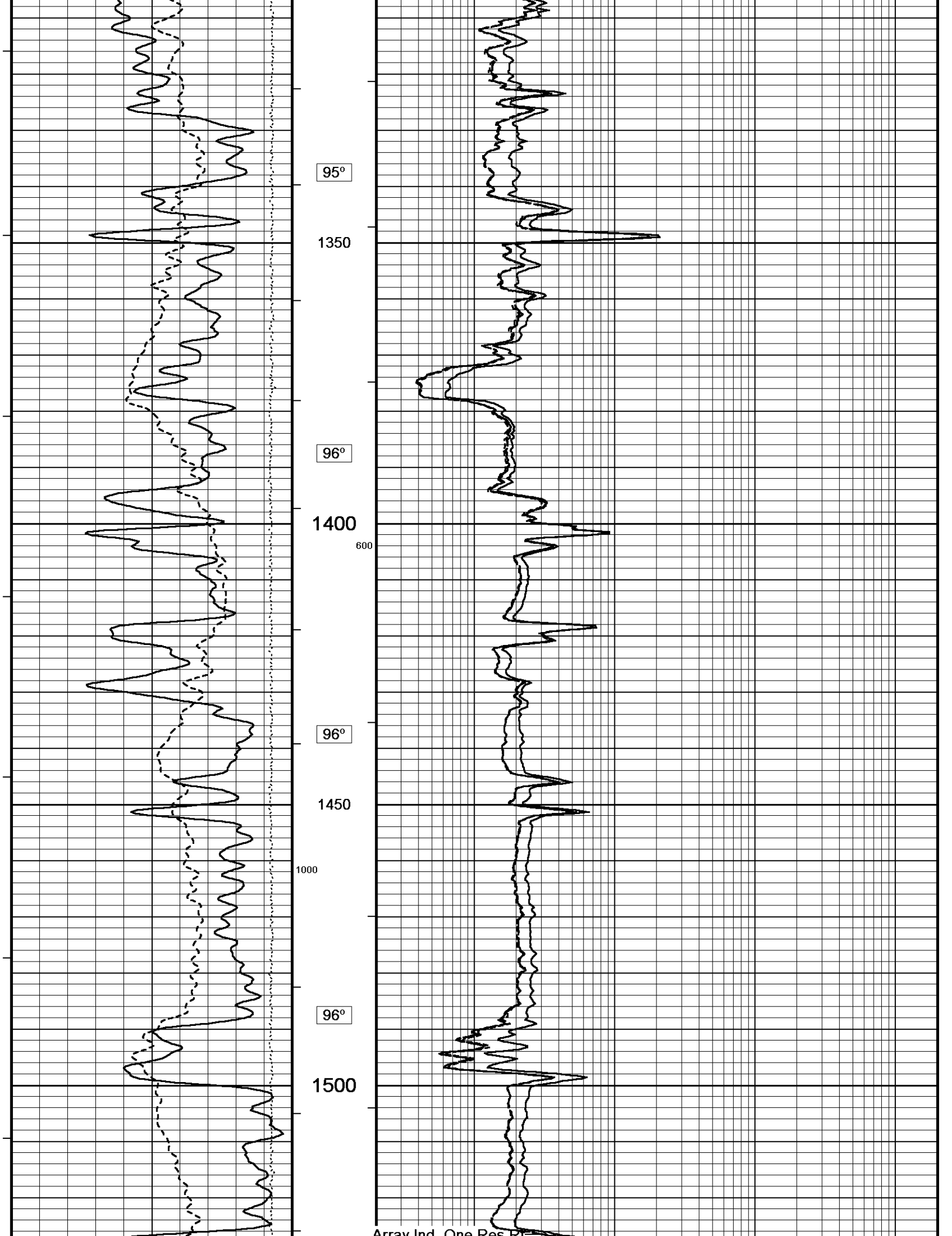

Annular Integral every 10 cu ft
Array Ind. One Res 60
ohm metres
0.20
2000
1
10
100
1000
Array Ind. One Res Rt
ohm metres
0.20
2000
1
10
100
1000
DST Uphole Tension
pounds
5000
0
Replay Scale 1:240
256
Casing Shoe
300
90°
350
1600
1000
89°
400
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension

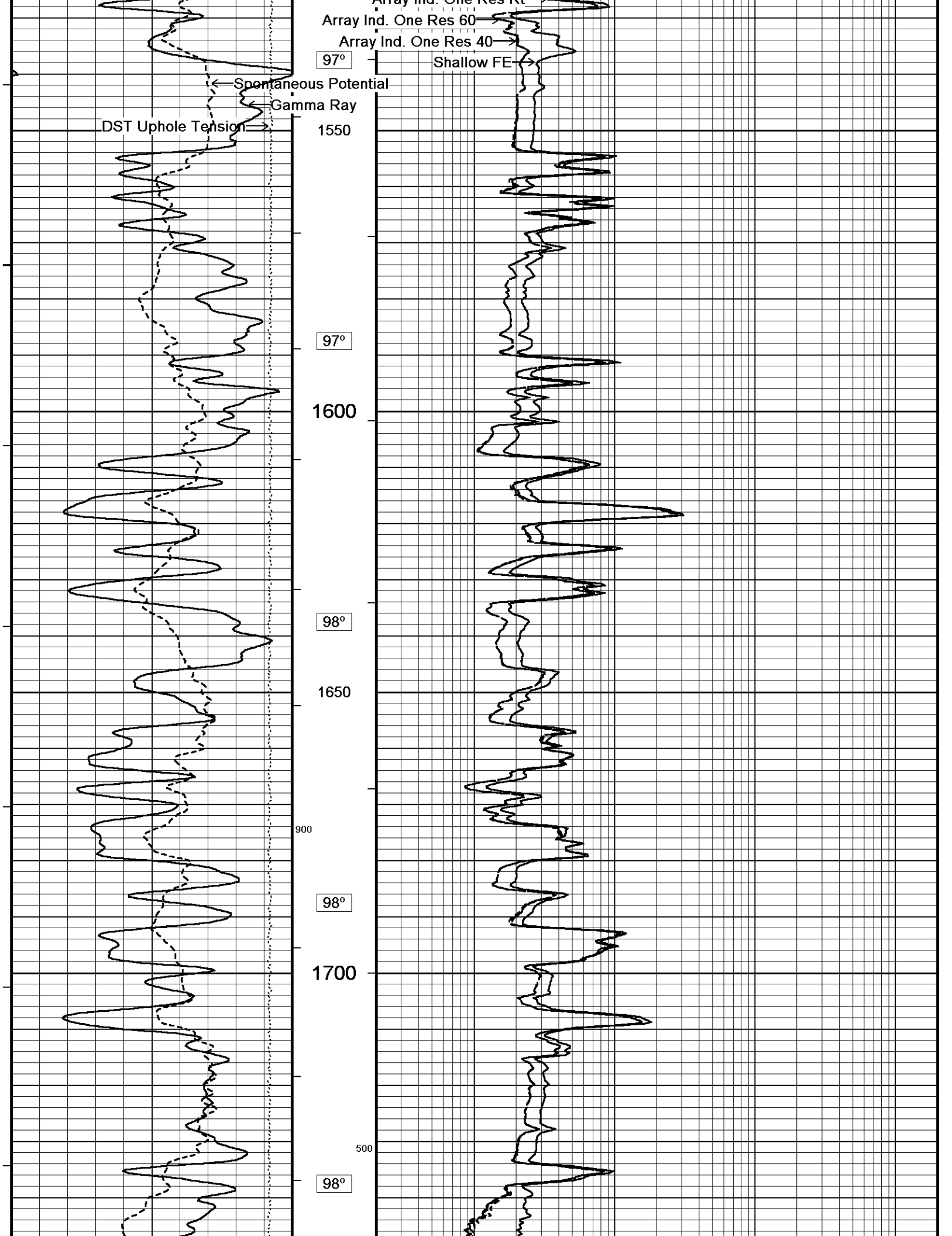

89°
450
90°
500
1500
90°
550
91°
600
900
91°


650
92°
1400
700
93°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow
750
Spontaneous Potential
Gamma Ray
DST Uphole Tension
93°
800
800
93°
850
1300


93°
900
94°
950
94°
1000
94°
1200
1050


94°
1100
700
Array Ind. One Res Rt
Array Ind. One Res 60
95°
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
1150
Gamma Ray
DST Uphole Tension
95°
1200
95°
1250
1100
95°
1300


95°
1350
96°
1400
600
96°
1450
1000
96°
1500


Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
97°
Spontaneous Potential
Gamma Ray
DST Uphole Tension
1550
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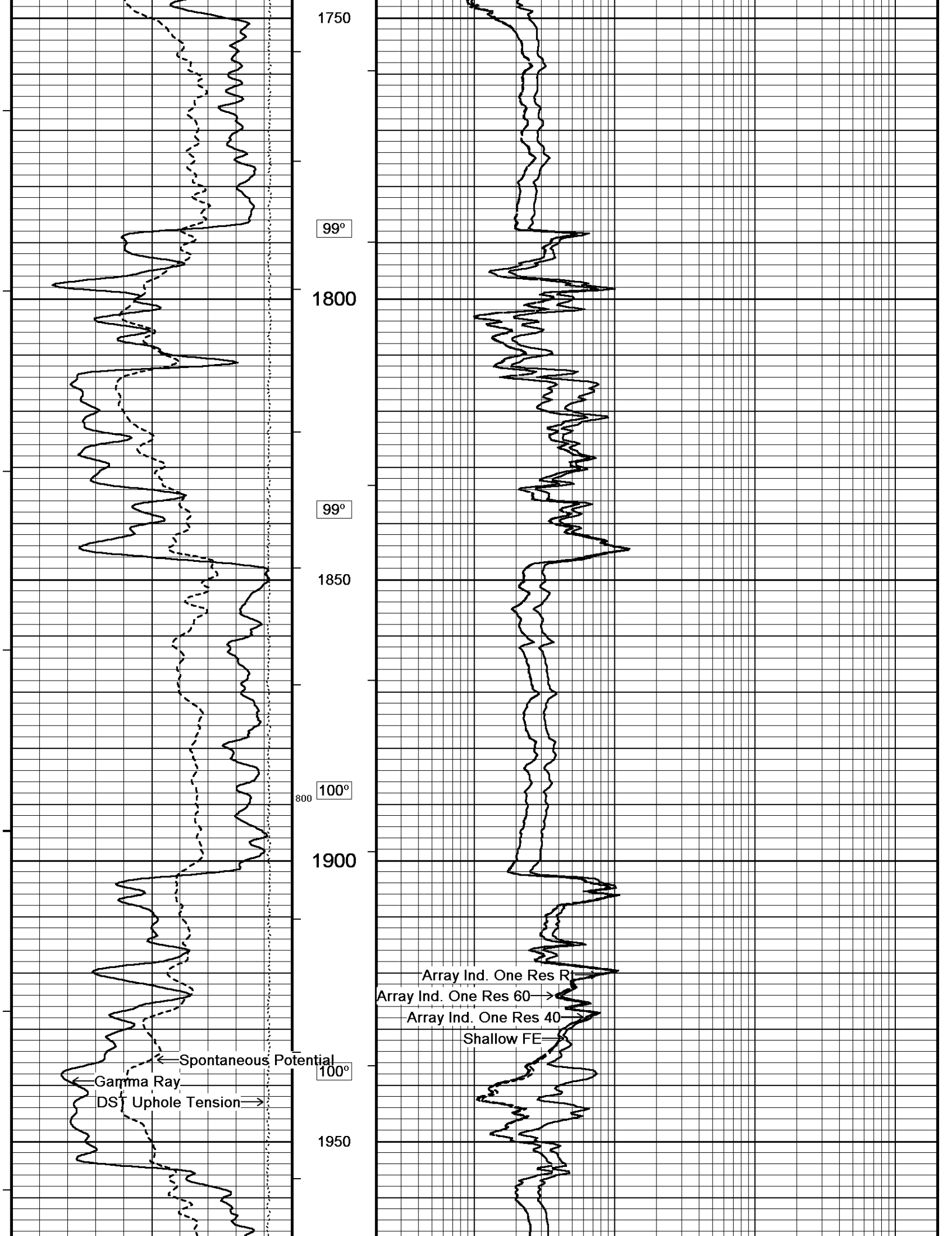
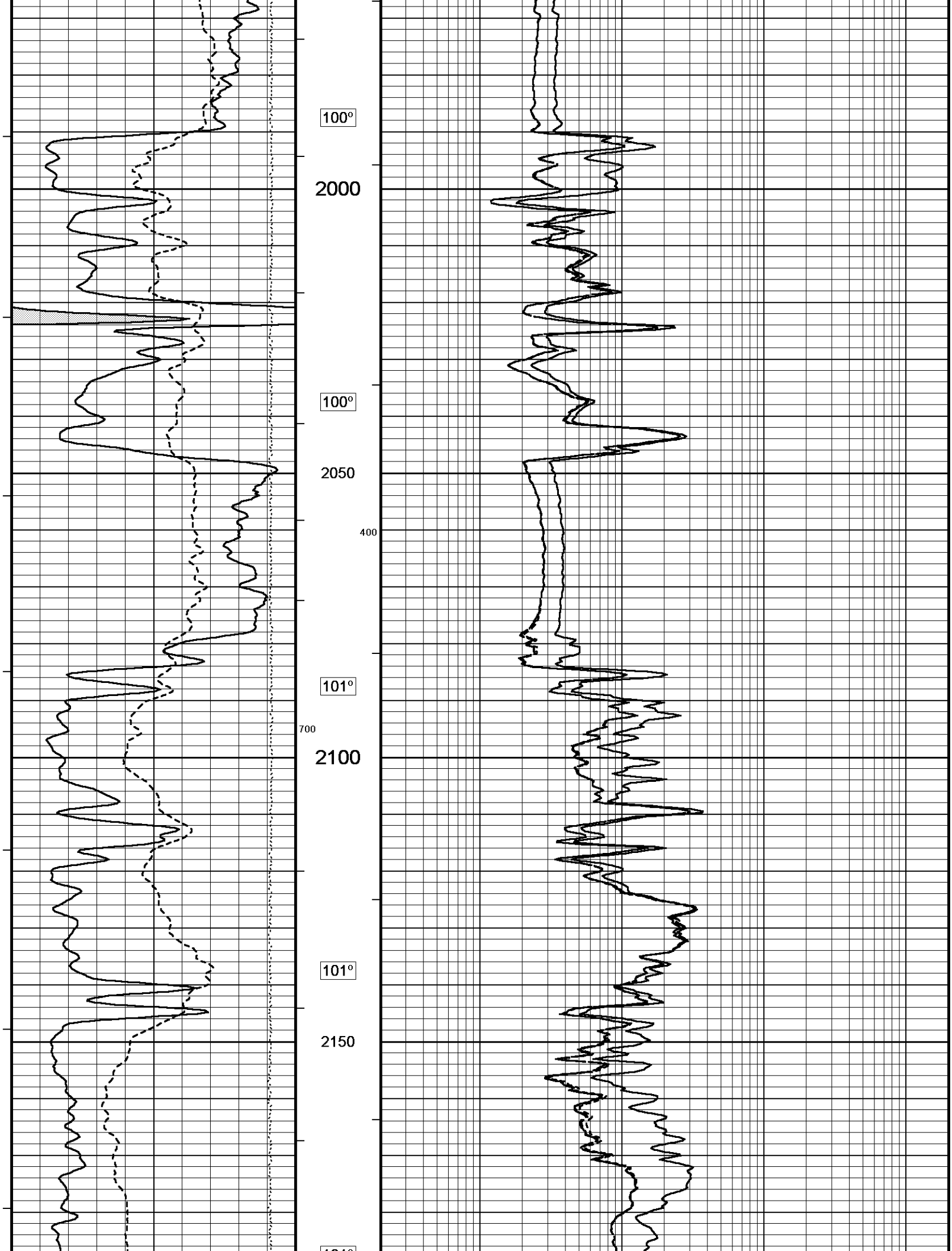
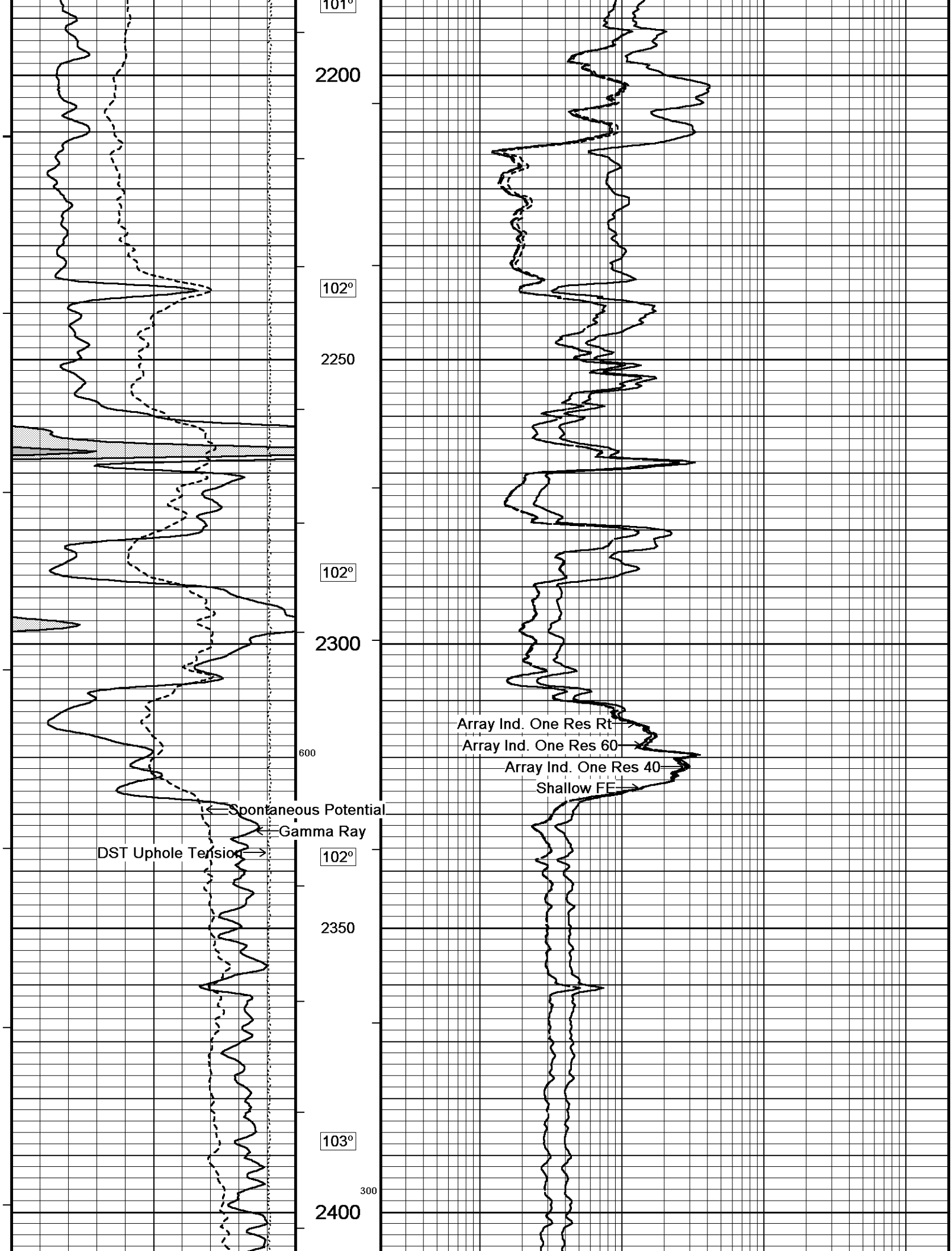
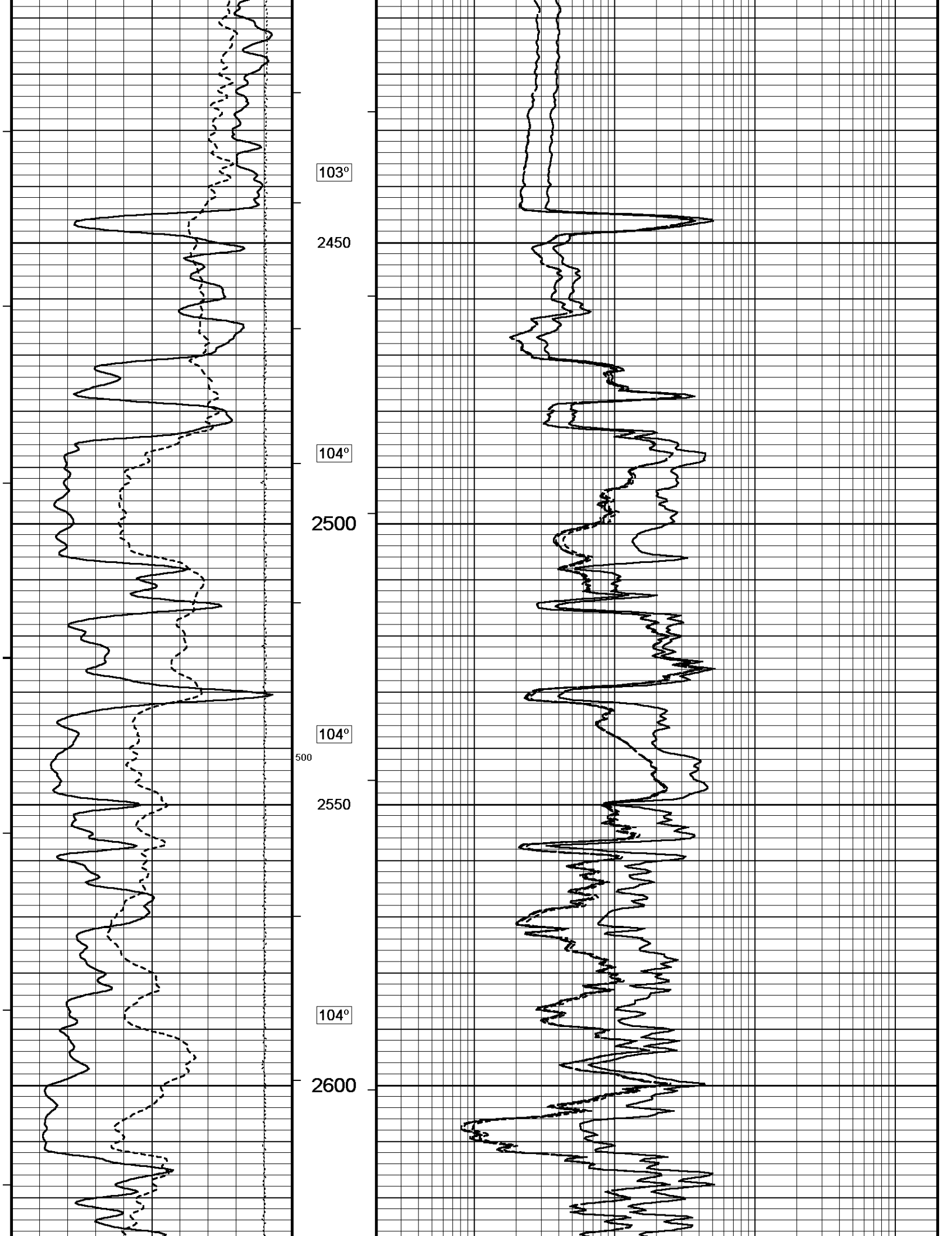
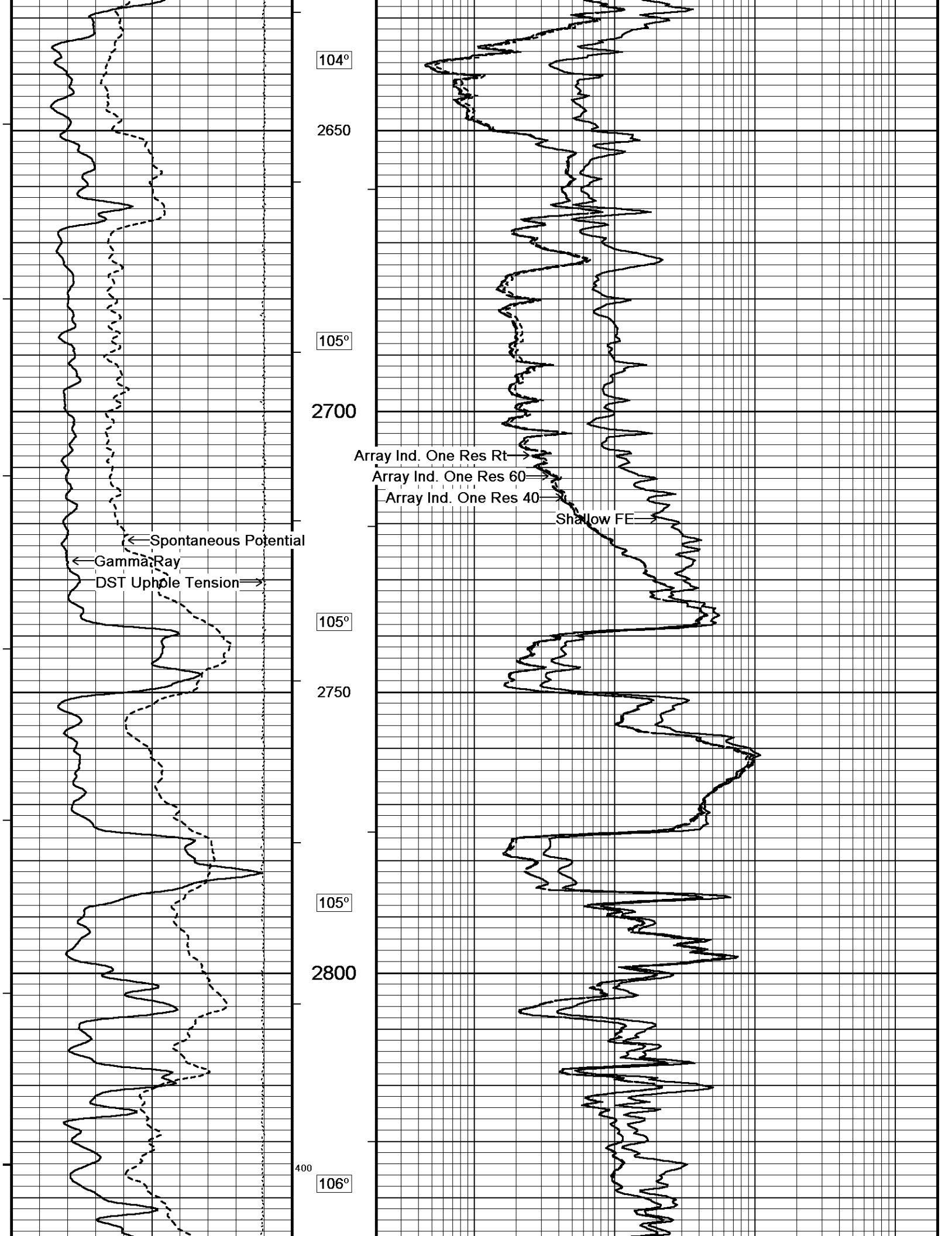
1600
98°
1650
900
98°
1700
500
98°

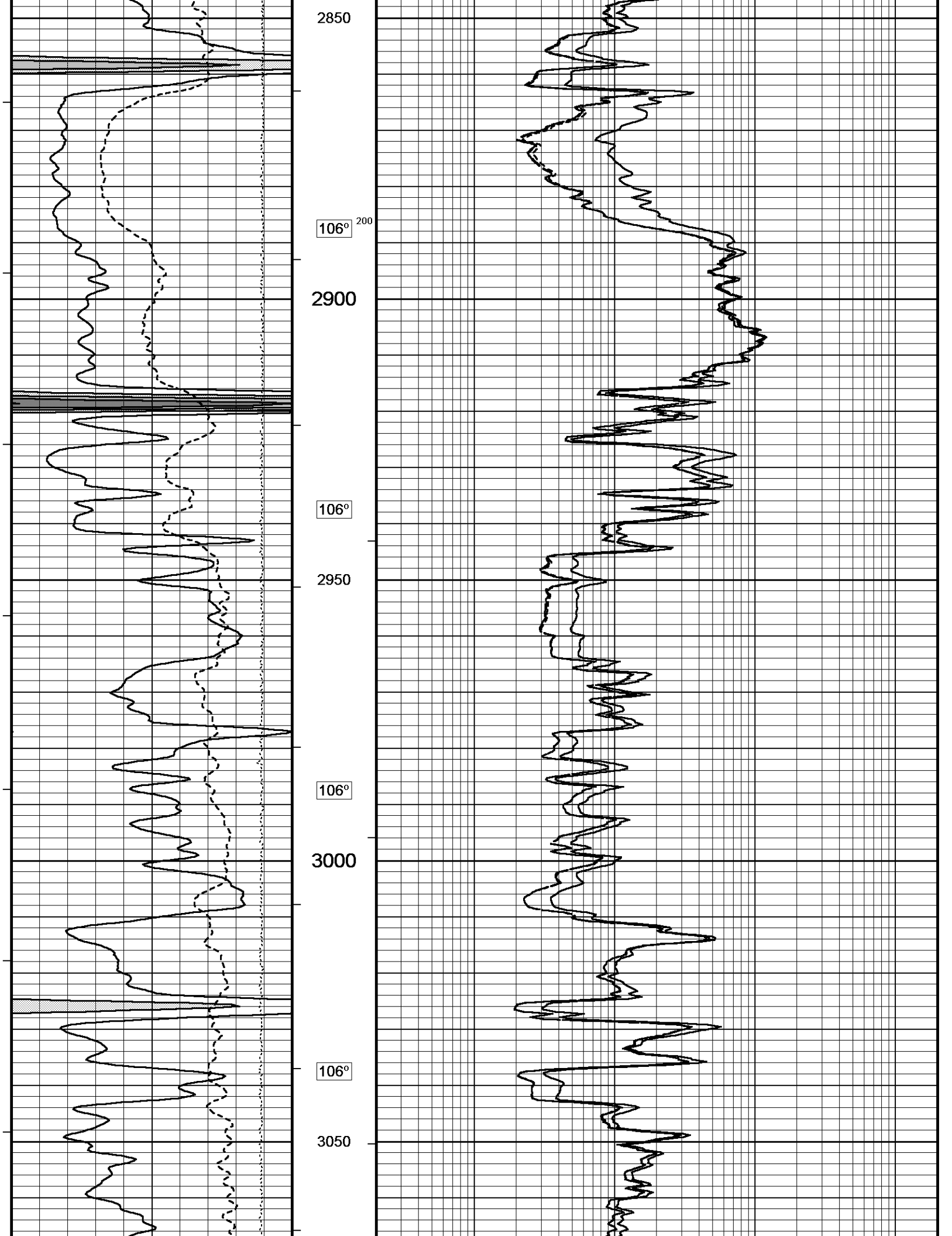

1750
99°
1800
99°
1850
800
100°
1900
100°
1950
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension

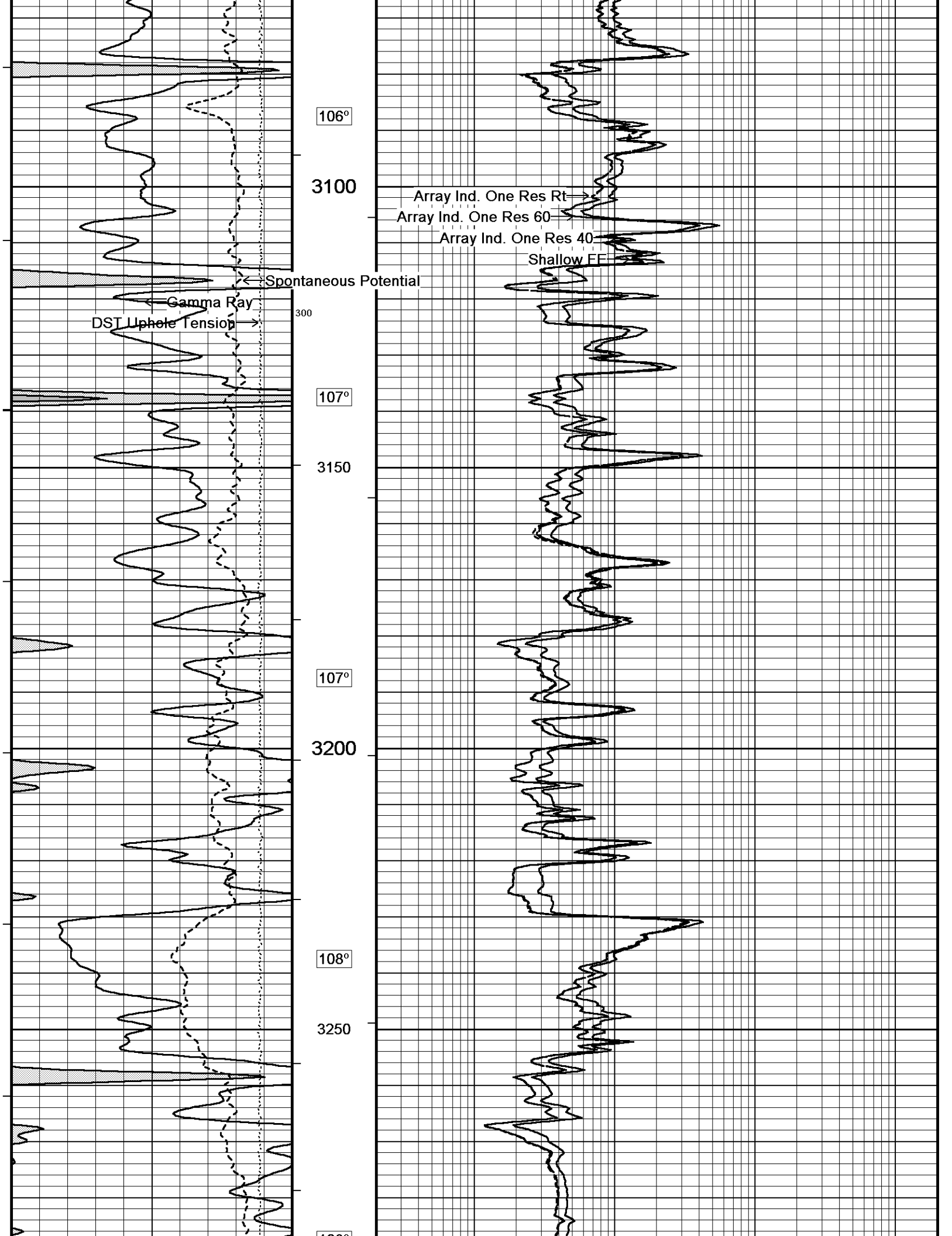

100°
2000
100°
2050
400
101°
700
2100
101°
2150

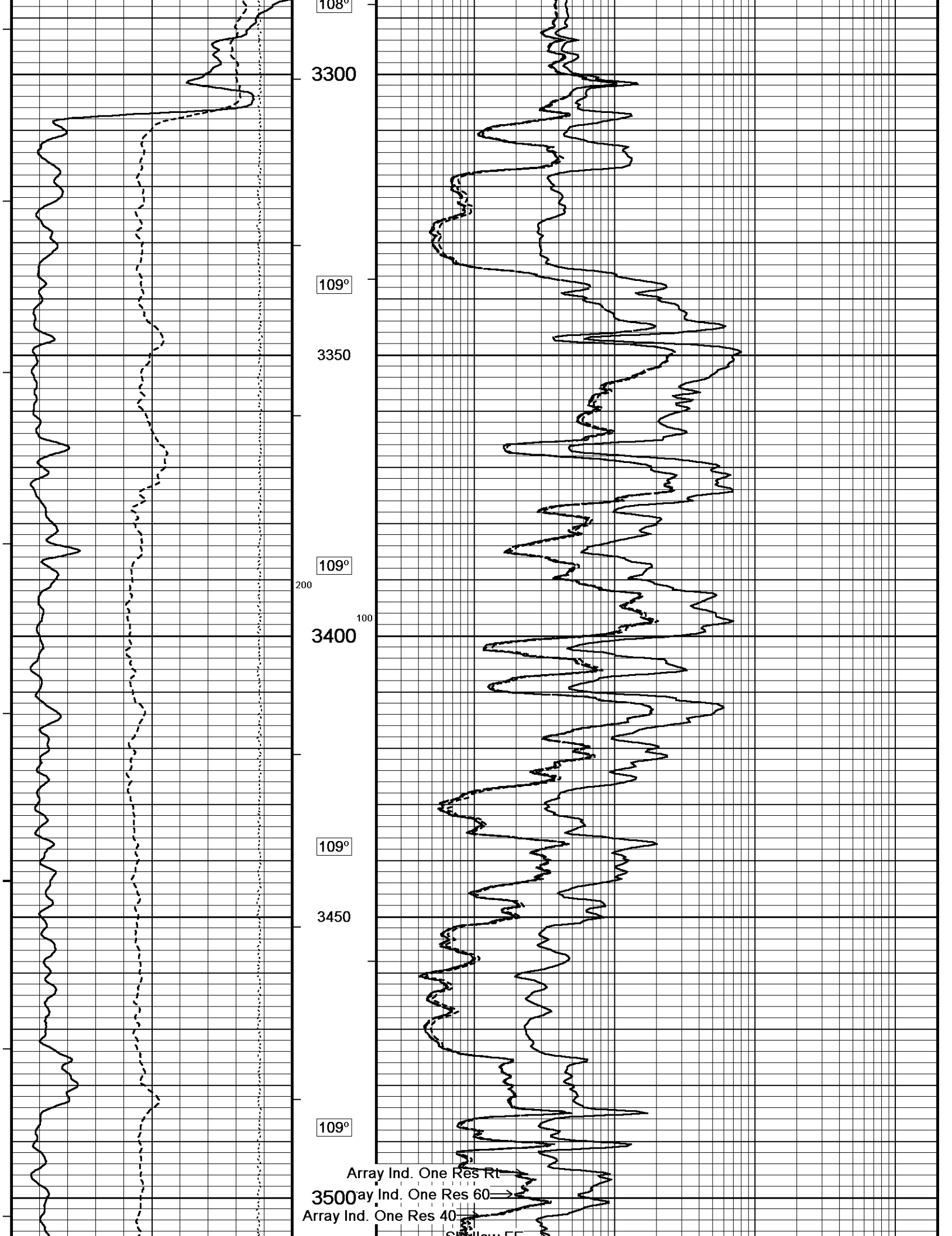

101°
2200
102°
2250
102°
2300
600
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
102°
2350
103°
300
2400

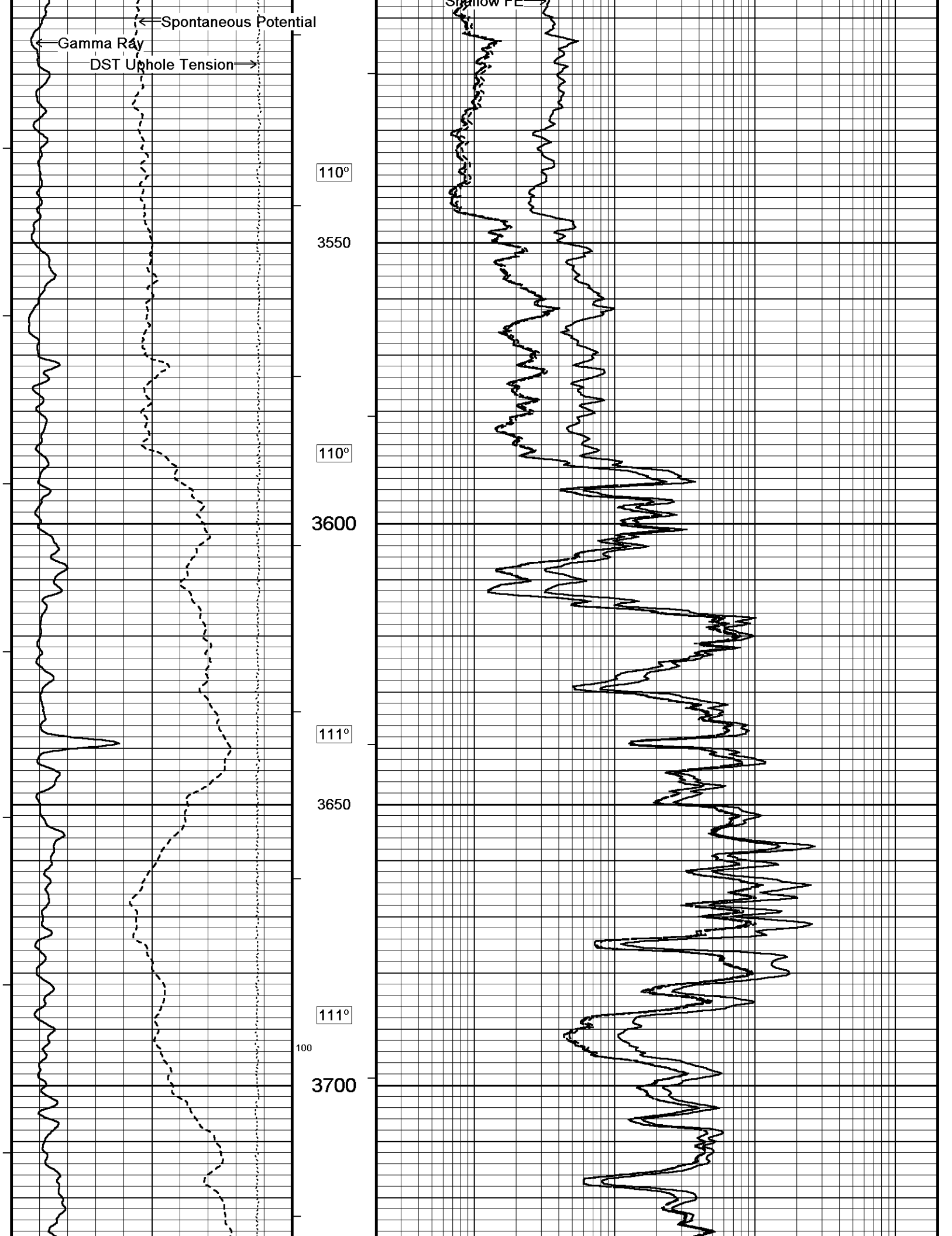

103°
2450
104°
2500
104°
500
2550
104°
2600

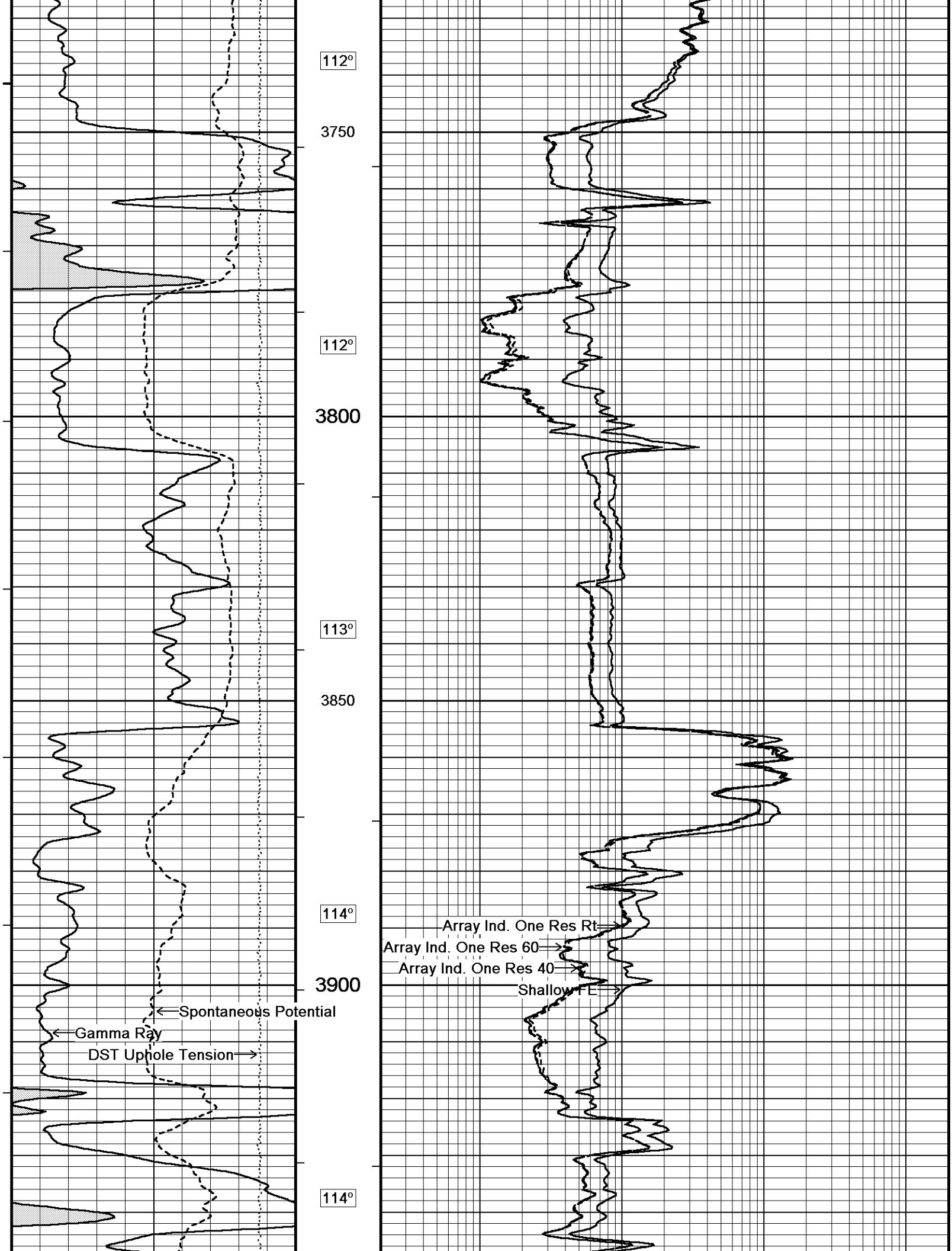

104°
2650
105°
2700
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
105°
2750
105°
2800
400
106°

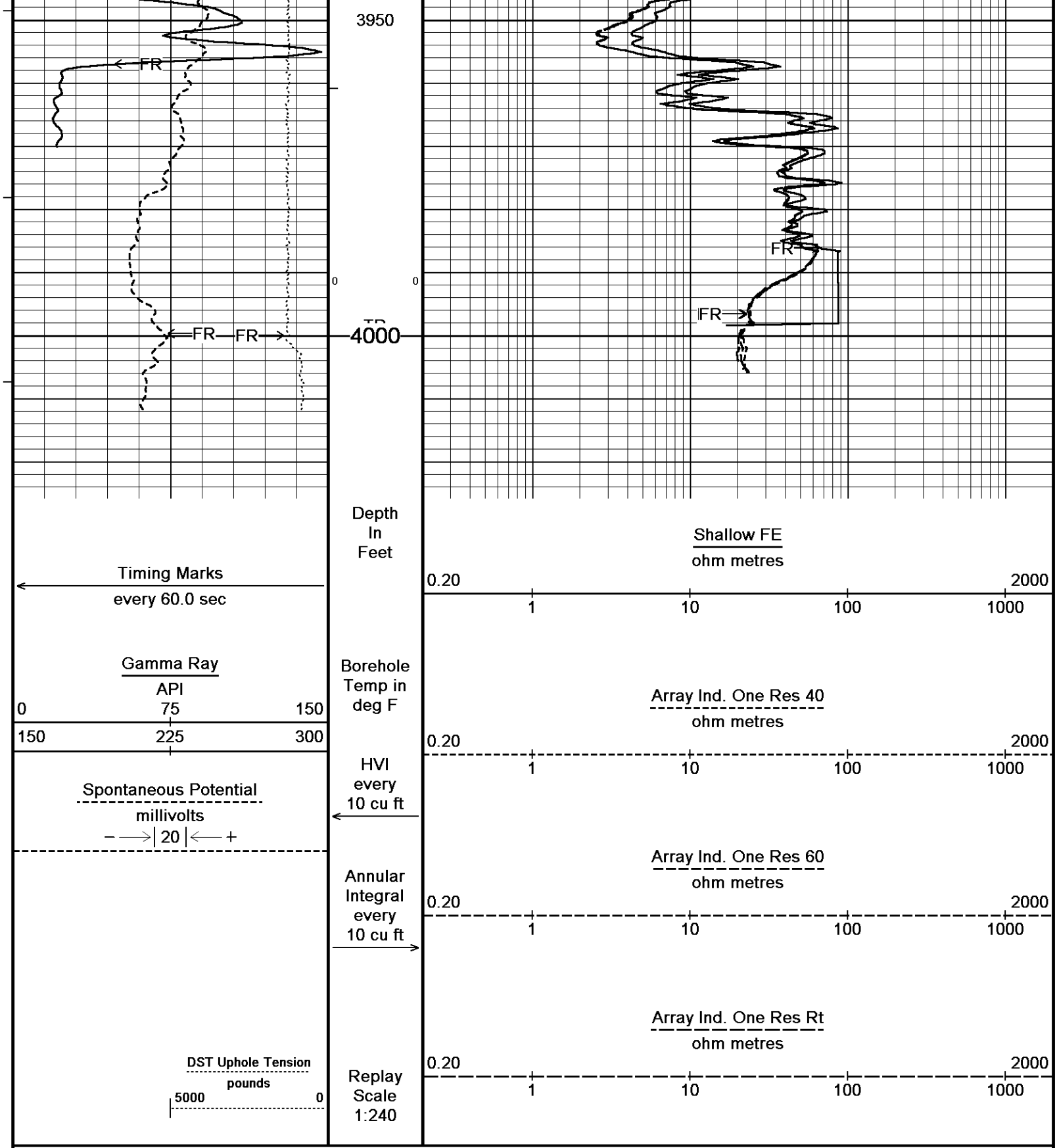

2850
106°
200
2900
106°
2950
106°
3000
106°
3050


106°
3100
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
Gamma Ray
300
DST Uphole Tension
107°
3150
107°
3200
108°
3250


108°
3300
109°
3350
109°
200
100
3400
109°
3450
109°
Array Ind. One Res Rt
3500
ay Ind. One Res 60
Array Ind. One Res 40


Spontaneous Potential
Gamma Ray
DST Uphole Tension
Shallow FE
110°
3550
110°
3600
111°
3650
111°
100
3700


112°
3750
112°
3800
113°
3850
114°
3900
114°
Spontaneous Potential
Gamma Ray
DST Uphole Tension
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE



Depth In Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Spontaneous Potential
millivolts
− → | 20 | ← +

DST Uphole Tension
pounds
5000 0

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240

Shallow FE
ohm metres
0.20 1 10 100 1000 2000

Array Ind. One Res 40
ohm metres
0.20 1 10 100 1000 2000

Array Ind. One Res 60
ohm metres
0.20 1 10 100 1000 2000

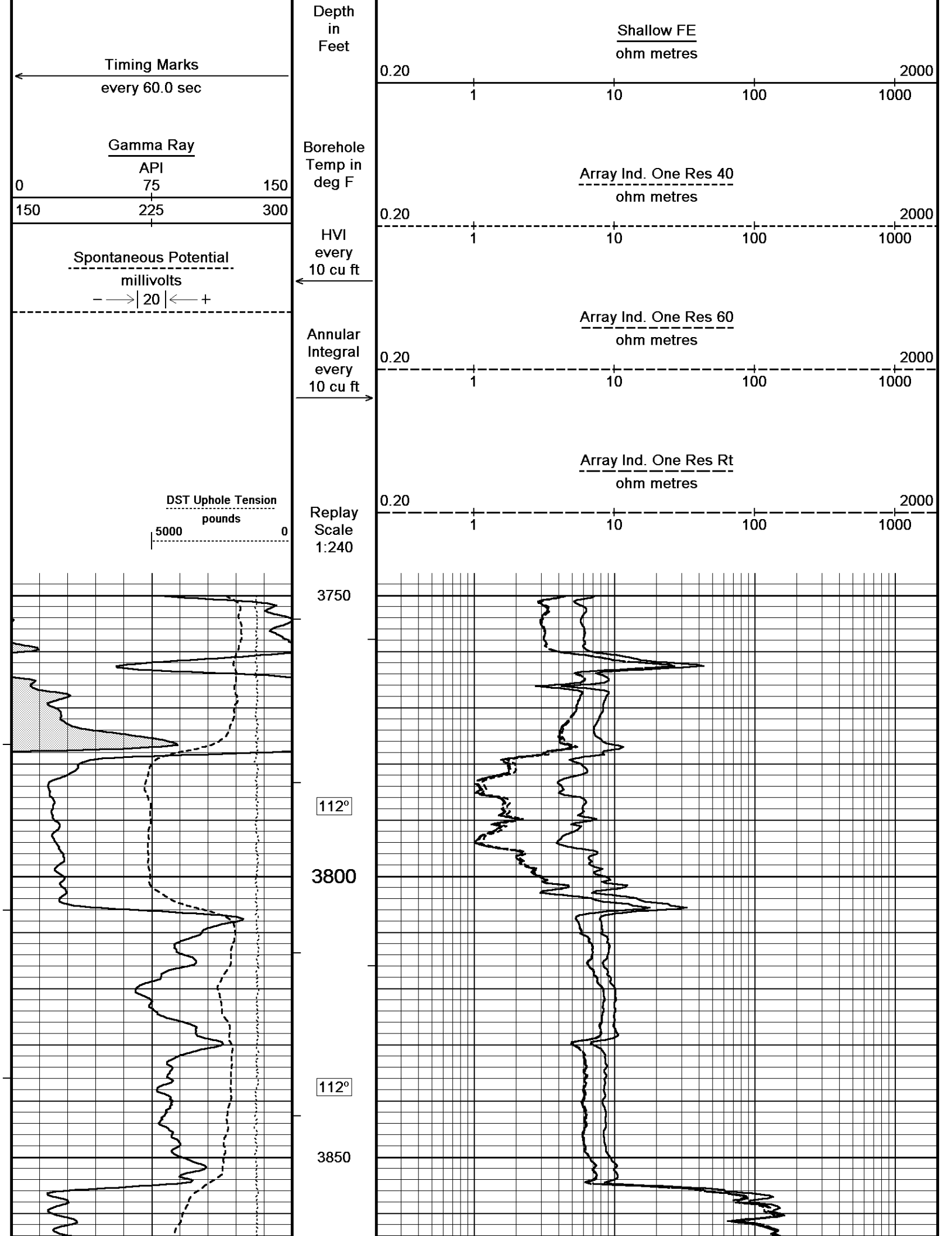
Array Ind. One Res Rt
ohm metres
0.20 1 10 100 1000 2000

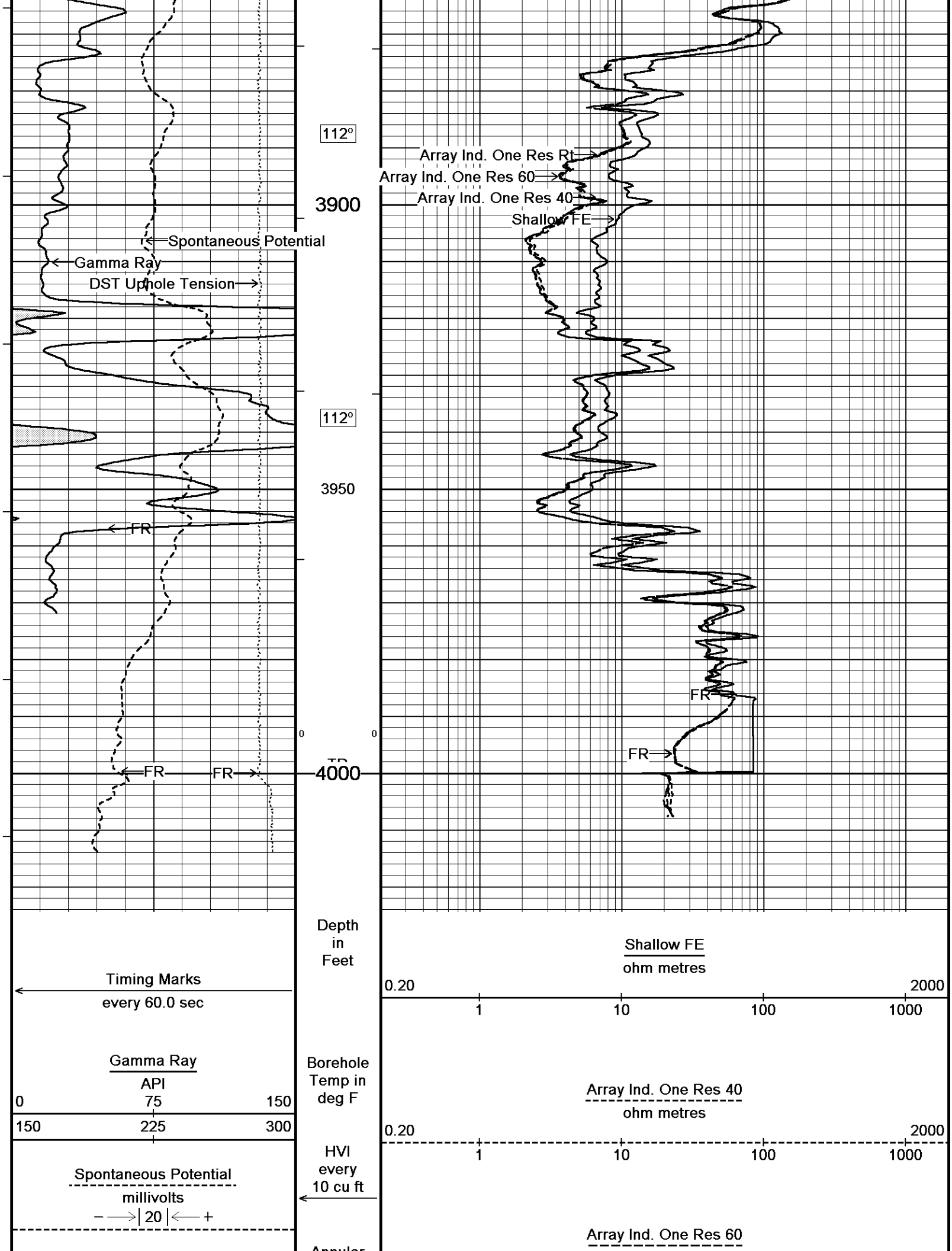
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_002.dta
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700
Plotted on 30-OCT-2017 16:29
Recorded on 30-OCT-2017 13:39

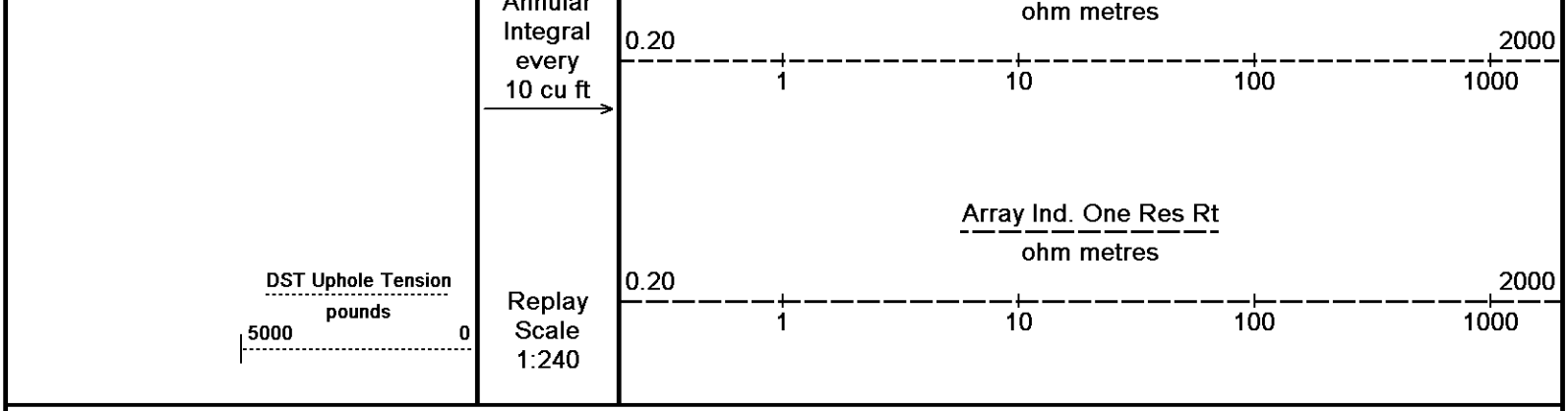
5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_001.dta
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700
Plotted on 30-OCT-2017 16:29
Recorded on 30-OCT-2017 13:19


Depth in Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Spontaneous Potential
millivolts
– 20 +
DST Uphole Tension
pounds
5000
0
Borehole Temp in deg F
HVI every 10 cu ft
Annular Integral every 10 cu ft
Replay Scale 1:240
Shallow FE
ohm metres
0.20
2000
1
10
100
1000
Array Ind. One Res 40
ohm metres
Array Ind. One Res 60
ohm metres
Array Ind. One Res Rt
ohm metres
3750
112°
3800
112°
3850


112°
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
3900
Spontaneous Potential
Gamma Ray
DST Uphole Tension
112°
3950
FR
FR
FR
FR
4000
Depth
in
Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Spontaneous Potential
millivolts
20
Borehole
Temp in
deg F
HVI
every
10 cu ft
Shallow FE
ohm metres
0.20
2000
1
10
100
1000
Array Ind. One Res 40
ohm metres
0.20
2000
1
10
100
1000
Array Ind. One Res 60



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-OCT-2017 16:29
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_001.dta — Recorded on 30-OCT-2017 13:19
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_001.dta

General Constants All 000

Last Edited on 30-OCT-2017,12:50

General Parameters		
Mud Resistivity	0.890	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	0.620	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

Down-hole Tension Calibration SMS 0

Field Calibration on 08-OCT-2017 14:52

Reading No	Measured	Calibrated (lbs)
1	459.59	0.00
2	-1870.04	220.00

Gamma Calibration MCG-C 84

Field Calibration on 27-OCT-2017 07:35

	Measured	Calibrated (API)
Background	105	73
Calibrator (Gross)	762	529
Calibrator (Net)	657	456

Gamma Calibration Tolerances MCG-C 84

Ratio 1.442 (1.40 | 1.475 | 1.55) Counts/API

Gamma Constants MCG-C 84

Last Edited on 30-OCT-2017,11:37

Gamma Calibrator Number	MCGGRCC141	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.09	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	

Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

SP Calibration MCG-C 84

Field Calibration on 27-OCT-2017,07:20

	Measured	Calibrated (mV)
Reference 1	104.4	100.1
Reference 2	-95.8	-100.1

High Resolution Temperature Calibration MCG-C 84

Field Calibration on 27-OCT-2017,07:21

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

High Resolution Temperature Constants MCG-C 84

Last Edited on 30-AUG-2017,13:52

Pre-filter Length	11

Micro Normal and Micro Inverse Calibration MML-A 7

Base Calibration on 23-OCT-2017 14:05
Field Check on 30-OCT-2017 12:39

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

Base Calibration

	Measured		Calibrated (ohm-m)	
Micro Normal	10.1	50.4	5.1	25.6
Micro Inverse	10.0	50.1	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	76.7	76.7
Micro Inverse	51.0	51.0

Micro Normal & Micro Inverse Calibration Tolerance MML-A 7

Micro Normal Res. 1	10.1	-5% 10.0 +5%	ohm	Micro Normal Res. 2	50.4	-5% 50.0 +5% ohm
Micro Inverse Res. 1	10.0	-5% 10.0 +5%	ohm	Micro Inverse Res. 2	50.1	-5% 50.0 +5% ohm
Micro Normal Base Check	76.7	-2% 76.57 +2%	ohm-m			
Micro Inverse Base Check	51.0	-2% 50.96 +2%	ohm-m			
Micro Normal Field Check	76.7	-2% 76.7 +2%	ohm-m			
Micro Inverse Field Check	51.0	-2% 51.0 +2%	ohm-m			

Micro Normal and Micro Inverse Constants MML-A 7

Last Edited on 30-OCT-2017,12:39

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 MML-A 7

Base Calibration on 23-OCT-2017 13:59
Field Calibration on 30-OCT-2017 12:38

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14085	5.98
2	17580	7.97
3	20846	9.86
4	24750	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.00	8.10

Caliper Calibration Tolerances MML-A 7

Short Arm Field Cal.	8.00	7.90 8.10 8.30	in

Neutron Calibration MDN-A.B 114

Base Calibration on 25-OCT-2017 16:20
Field Check on 27-OCT-2017 07:40

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3039	94	3714	110
Ratio	32.458		33.764	

Field Calibrator at Base	Calibrated (cps)	
	2150	3142
Ratio	0.684	

Field Check	Calibrated (cps)	
	2143	3109
Ratio	0.689	

Neutron Calibration Tolerances MDN-A.B 114

		-5%	33	+5%
Ratio	32.458			

		0.65	0.7	0.75
Base Check	0.684			

		0.664	0.684	0.704
Field Check	0.689			

Neutron Constants MDN-A.B 114

Last Edited on 30-OCT-2017,11:37

Neutron Source Id	P0204NN	
Neutron Jig Number	NJ5736	
Air Hole Processing	Modified Ratio	
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	

FE Calibration MFE-B.J 352

Base Calibration on 23-OCT-2017 13:20
Field Check on 30-OCT-2017 12:25

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

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	963.8	126.8
Base Check		281.3
Field Check		281.4

FE Calibration Tolerances MFE-B.J 352

		-3%	980.0	+3%	
Reference 2	963.8				ohm

		-2%	277.0	+2%	
Base Check	281.3				ohm-m

		-2%	281.3	+2%	
Field Check	281.4				ohm-m

FE Constants MFE-B.J 352

Last Edited on 30-OCT-2017,12:24

Running Mode	No Sleeve
MFE K Factor	0.1268

Parabola Correction Constants

Borehole Correction Constants

Sonde Position	0.5	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	

High Resolution Temperature Calibration MAI-A.A 111

Field Calibration on 01-OCT-2017,14:58

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

High Resolution Temperature Constants MAI-A.A 111

Last Edited on 26-JUN-2014,15:06

Pre-filter Length	11

Induction Calibration MAI-A.A 111

Factory Loop Calibration 25-OCT-2017 15:40
Field Check on 30-OCT-2017 12:35

Factory Loop Calibration

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

	Measured Signal (unitless)		Reference Conductivity (mmho/m)		Calibration	
Array	Low	High	Low	High	Gain	Offset
1 (near)	17.6	473.6	9.3	966.2	0.0	0.0
2	6.4	385.9	7.6	821.4	0.0	0.0
3	3.2	264.0	5.2	566.0	0.0	0.0
4 (far)	2.1	135.5	2.6	279.2	0.0	0.0

Array Temperature	23.0	Deg F

Tool Checks

	Factory Reference (mmho/m)		Before Survey (mmho/m)		
Array	Low	High	Low	High	
1 (near)	11.4	3842.3	13.8	3843.4	
2	29.3	3499.9	31.5	3501.6	
3	28.7	2997.0	30.6	2998.7	
4 (far)	18.9	2041.5	20.1	2043.1	
Array Temperature	90.7		69.6		Deg F

Induction Check Tolerances MAI-A.A 111

Low Array 1	13.8	9.9 11.4 12.9	mmho/m	High Array 1	3843.4	3840.8 3842.3 3843.8 mmho/m
Low Array 2	31.5	27.8 29.3 30.8	mmho/m	High Array 2	3501.6	3498.4 3499.9 3501.4 mmho/m
Low Array 3	30.6	27.2 28.7 30.2	mmho/m	High Array 3	2998.7	2995.5 2997.0 2998.5 mmho/m
Low Array 4	20.1	17.4 18.9 20.4	mmho/m	High Array 4	2043.1	2040.0 2041.5 2043.0 mmho/m

Induction Constants MAI-A.A 111

Last Edited on 30-OCT-2017,12:33

Induction Model	RtAP-WBM	
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	

Photo Density Calibration MPD-C.A 216

Base Calibration on 23-OCT-2017 14:37
Field Check on 30-OCT-2017 12:24

Density Calibration

Base Calibration	Measured Near	Measured Far	Calibrated (sdu) Near	Calibrated (sdu) Far
Background	1025	1218		
Reference 1	51146	24580	59556	30836
Reference 2	20383	2310	24941	2541
Field Check at Base	1024.7	1217.9		
Field Check	1024.3	1212.0		

PE Calibration

Base Calibration	Measured WS	Measured WH	Ratio	Calibrated Ratio
Background	187	916		
Reference 1	21227	50978	0.420	0.371
Reference 2	5863	20269	0.293	0.272
Field Check at Base	187.1	916.4		
Field Check	186.0	916.1		

Photo Density Calibration Tolerances MPD-C.A 216

Near Density Ratio	2.59	-5% 2.52 +5%	Far Density Ratio	21.38	-5% 21.00 +5%
PE Calibration	0.118	0.089 0.110 0.131			
Near Den. Field Check	1024.3	-3% 1024.7 +3%	Far Den. Field Check	1212.0	-3% 1217.9 +3%
PE WS Field Check	186.0	-6% 187.1 +6%	PE WH Field Check	916.1	-6% 916.4 +6%

Density Constants MPD-C.A 216

Last Edited on 30-OCT-2017,12:24

Density Source Id	P50557B
Nylon Calibrator Number	DNCE695
Aluminium Calibrator Number	DACD698
Density Shoe Profile	8 inch

Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.09	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	Not 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

Caliper Calibration MPD-C.A 216

Base Calibration on 23-OCT-2017 14:16
Field Calibration on 30-OCT-2017 12:36

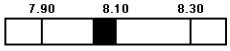
Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16832	3.99
2	27040	5.98
3	37135	7.97
4	46864	9.86
5	58032	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.03	8.10

Caliper Calibration Tolerances MPD-C.A 216

Short Arm Field Cal. 8.03 

in

DOWNHOLE EQUIPMENT

C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_001.dta

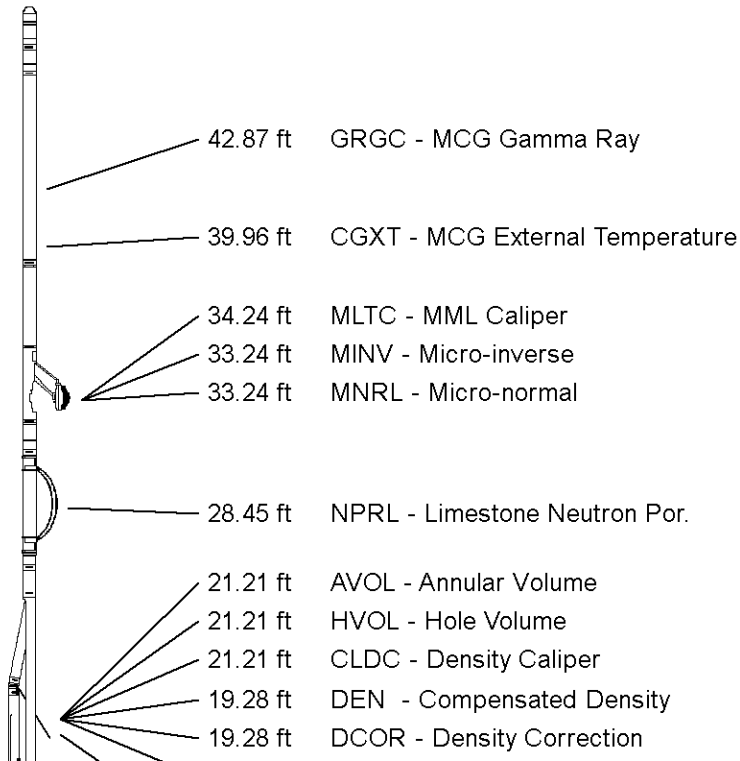
Cablehead, 11 pin
CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma
MCG-C 84 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-log
MML-A 7 LG: 7.97 ft WT: 81.6 lb OD: 2.244 in

Compact Neutron
MDN-A.B 114 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

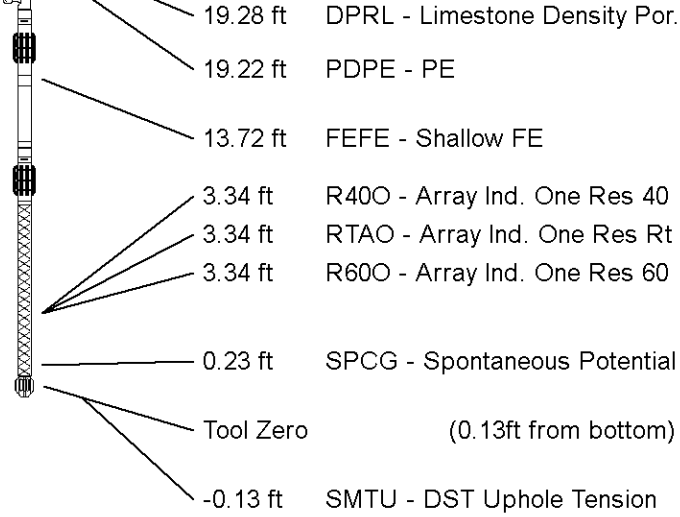
Compact Density/Caliper
MPD-C.A 216 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in



Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 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: 50.55 ft Weight: 407.9 lb



All measurements relative to tool zero.

COMPANY	M & M EXPLORATION, INC.
WELL	STUTZMAN #1
FIELD	KISIWA
PROVINCE/COUNTY	HARVEY
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1410	feet	First Reading	3997.00	feet
Elevation Drill Floor	1408	feet	Depth Driller	4000.00	feet
Elevation Ground Level	1402	feet	Depth Logger	4000.00	feet

Weatherford®

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

Weatherford

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

COMPANY	M & M EXPLORATION, INC.
WELL	STUTZMAN #1
FIELD	KISIWA
PROVINCE/COUNTY	HARVEY
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	138' FNL & 2350' FEL
SEC 15 TWP 24S RGE 2W	Other Services: MDN/MFD
Latitude	
Longitude	
API Number	15-079-20715
Permanent Datum	GL Elevation 1402 feet
Log Measured From	KB 8.00 feet above Permanent Datum
Drilling Measured From	KB
Date	30-OCT-2017
Run Number	ONE
Service Order	4558-19654519
Depth Driller	4000.00 feet
Depth Logger	4000.00 feet
First Reading	3997.00 feet
Last Reading	267.00 feet
Casing Driller	266.00 feet
Casing Logger	267.00 feet
Bit Size	7.875 inches
Hole Fluid Type	CHEMICAL
Density/Viscosity	9.10 lbUSg 52.00 CP
PH/Fluid Loss	9.50 8.00 ml/30Min
Sample Source	FLOWLINE
Rm @ Measured Temp	0.89 @ 75.0 ohm-m
Rmf @ Measured Temp	0.71 @ 75.0 ohm-m
Rmc @ Measured Temp	1.07 @ 75.0 ohm-m
Source Rmf/Rmc	CALC CALC
Rm @ BHT	0.59 @ 114.0 ohm-m
Time Since Circulation	4 HOURS
Max Recorded Temp	114.00 deg F
Equipment/Base	LIB
Recorded By	ADAM SILL
Witnessed By	JUSTIN CARTER

Elevations: KB 1410.00 feet; DF 1408.00; GL 1402.00

MNML

1 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_002.dta
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700

Plotted on 30-OCT-2017 16:29
Recorded on 30-OCT-2017 13:39

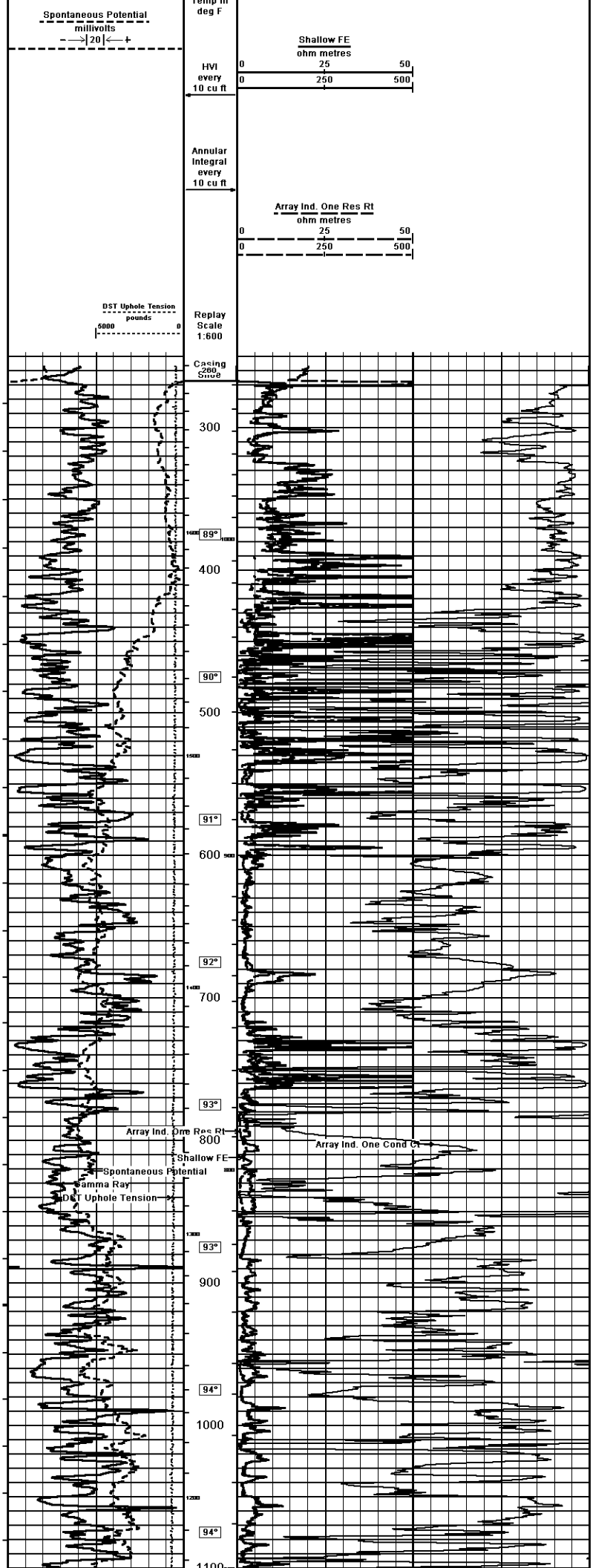
Timing Marks
every 60.0 sec

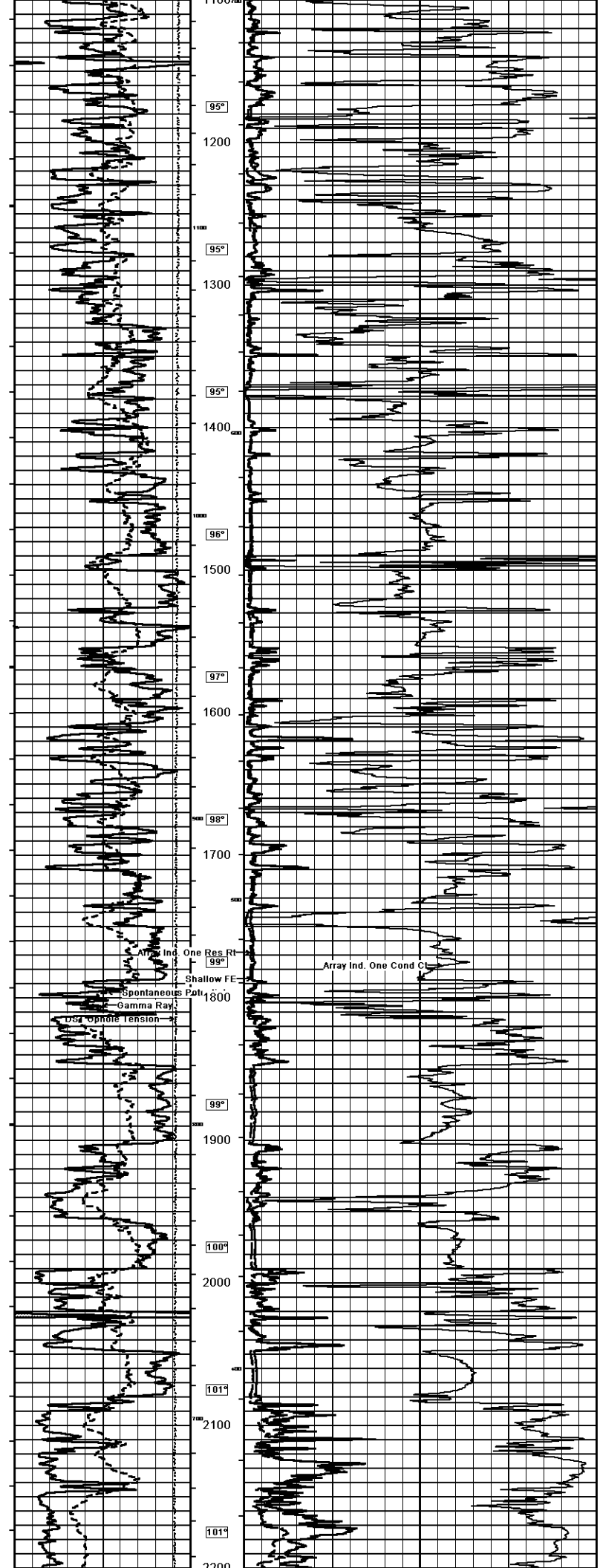
Gamma Ray
API
0 75 150
150 225 300

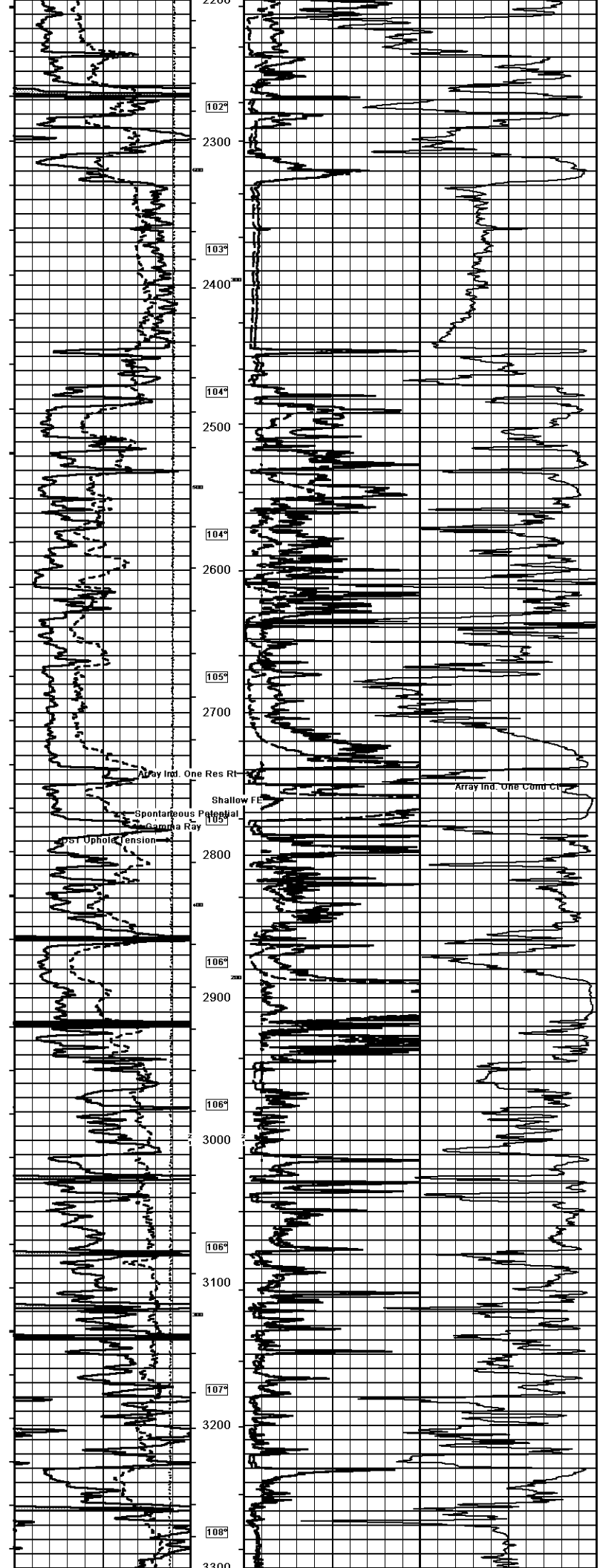
Depth In Feet

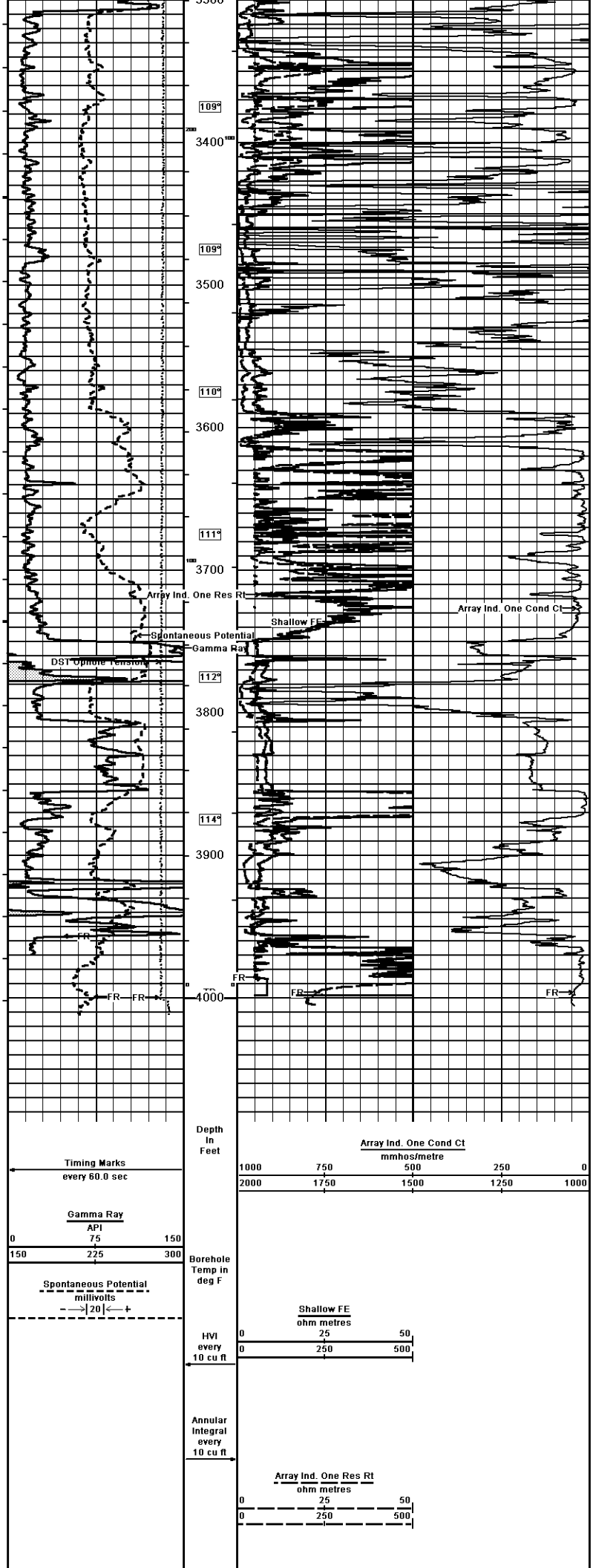
Borehole Temp in

Array Ind. One Cond Ct
mmhos/metre
1000 750 500 250 0
2000 1750 1500 1250 1000


Temp in deg F
Spontaneous Potential
millivolts
20
Shallow FE
ohm metres
0
25
50
0
250
500
HVI
every
10 cu ft
Annular
Integral
every
10 cu ft
Array Ind. One Res Rt
ohm metres
0
25
50
0
250
500
DST Uphole Tension
pounds
5000
0
Replay
Scale
1:600
Casing
260
Shoe
300
89°
400
90°
500
91°
600
92°
700
93°
Array Ind. One Res Rt
800
Array Ind. One Cond Ct
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
93°
900
94°
1000
94°
1100


95°
1200
95°
1300
95°
1400
96°
1500
97°
1600
98°
1700
99°
1800
99°
1900
100°
2000
101°
2100
101°
2200
Array Ind. One Res Rt
Shallow FE
Spontaneous Pote
Gamma Ray
DSA Cphole Tension
Array Ind. One Cond Ct


2200
102°
2300
103°
2400
104°
2500
104°
2600
105°
2700
Array Ind. One Res Rt
Shallow FE
105°
Spontaneous Potential
Gamma Ray
DST Uphole Tension
2800
106°
2900
106°
3000
106°
3100
107°
3200
108°
3300
Array Ind. One Cond Ct


109°
3400
109°
3500
110°
3600
111°
3700
Array Ind. One Res Rt
Shallow FE
Spontaneous Potential
Gamma Ray
DST Opnote Tension
Array Ind. One Cond Ct
112°
3800
114°
3900
FR
4000
Depth
In
Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0 75 150
150 225 300
Spontaneous Potential
millivolts
20
Borehole
Temp in
deg F
HVI
every
10 cu ft
Annular
Integral
every
10 cu ft
Array Ind. One Cond Ct
mmhos/metre
1000 750 500 250 0
2000 1750 1500 1250 1000
Shallow FE
ohm metres
0 25 50
0 250 500
Array Ind. One Res Rt
ohm metres
0 25 50
0 250 500

DST Uphole Tension
pounds
5000 0

Replay
Scale
1:600

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_002.dta
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700

Plotted on 30-OCT-2017 16:29
Recorded on 30-OCT-2017 13:39

1 INCH MAIN

COMPANY	M & M EXPLORATION, INC.
WELL	STUTZMAN #1
FIELD	KISIWA
PROVINCE/COUNTY	HARVEY
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1410	feet	First Reading	3997.00	feet
Elevation Drill Floor	1408	feet	Depth Driller	4000.00	feet
Elevation Ground Level	1402	feet	Depth Logger	4000.00	feet

Weatherford

ARRAY INDUCTION
SHALLOW FOCUSED
ELECTRIC LOG

Weatherford

COMPENSATED NEUTRON
COMPACT PHOTO DENSITY
MICRORESISTIVITY LOG

COMPANY	M & M EXPLORATION, INC.
WELL	STUTZMAN #1
FIELD	KISIWA
PROVINCE/COUNTY	HARVEY
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	1381' FNL & 2350' FEL

SEC	TWP	RGE	Other Services
15	24S	2W	MAI/MFE

Latitude
Longitude
API Number 15-079-20715

Permanent Datum GL, Elevation 1402 feet
Log Measured From KB, 8.00 feet above Permanent Datum
Drilling Measured From KB

Elevations:	feet
KB	1410.00
DF	1408.00
GL	1402.00

Date	30-OCT-2017			
Run Number	ONE			
Service Order	4558-196549519			
Depth Driller	4000.00	feet		
Depth Logger	4000.00	feet		
First Reading	3981.00	feet		
Last Reading	2500.00	feet		
Casing Driller	266.00	feet		
Casing Logger	267.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.10 lb/USg		52.00 CP	
PH / Fluid Loss	9.50		8.00 ml/30Min	
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.89 @ 75.0	ohm-m		
Rmf @ Measured Temp	0.71 @ 75.0	ohm-m		
Rmc @ Measured Temp	1.07 @ 75.0	ohm-m		
Source Rmf / Rmc	CALC		CALC	
Rm @ BHT	0.59 @114.0	ohm-m		
Time Since Circulation	4 HOURS			
Max Recorded Temp	114.00	deg F		
Equipment / Base	13096		LIB	
Recorded By	ADAM SILL			
Witnessed By	JUSTIN CARTER			

BOREHOLE RECORD

Last Edited: 30-OCT-2017 12:40

Bit Size inches	Depth From feet	Depth To feet
7.875	266.00	4000.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	266.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 17.03.9700.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MAI RUN IN COMBINATION.
  - HARDWARE: DUAL BOWSPRING USED ON MDN.
  0.5 INCH STANDOFF USED ON MFE.
  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: 1685 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3000 FEET: 179 CU.FT.
- RIG: DISCOVERY #2

- RIG: DISCOVERY #2.

- ENGINEER: A. SILL.

- OPERATOR: B. TOVAR.

5 INCH MAIN - ANHYDRITE

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-OCT-2017 16:27
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_002.dta — Recorded on 30-OCT-2017 13:39
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Density 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

700

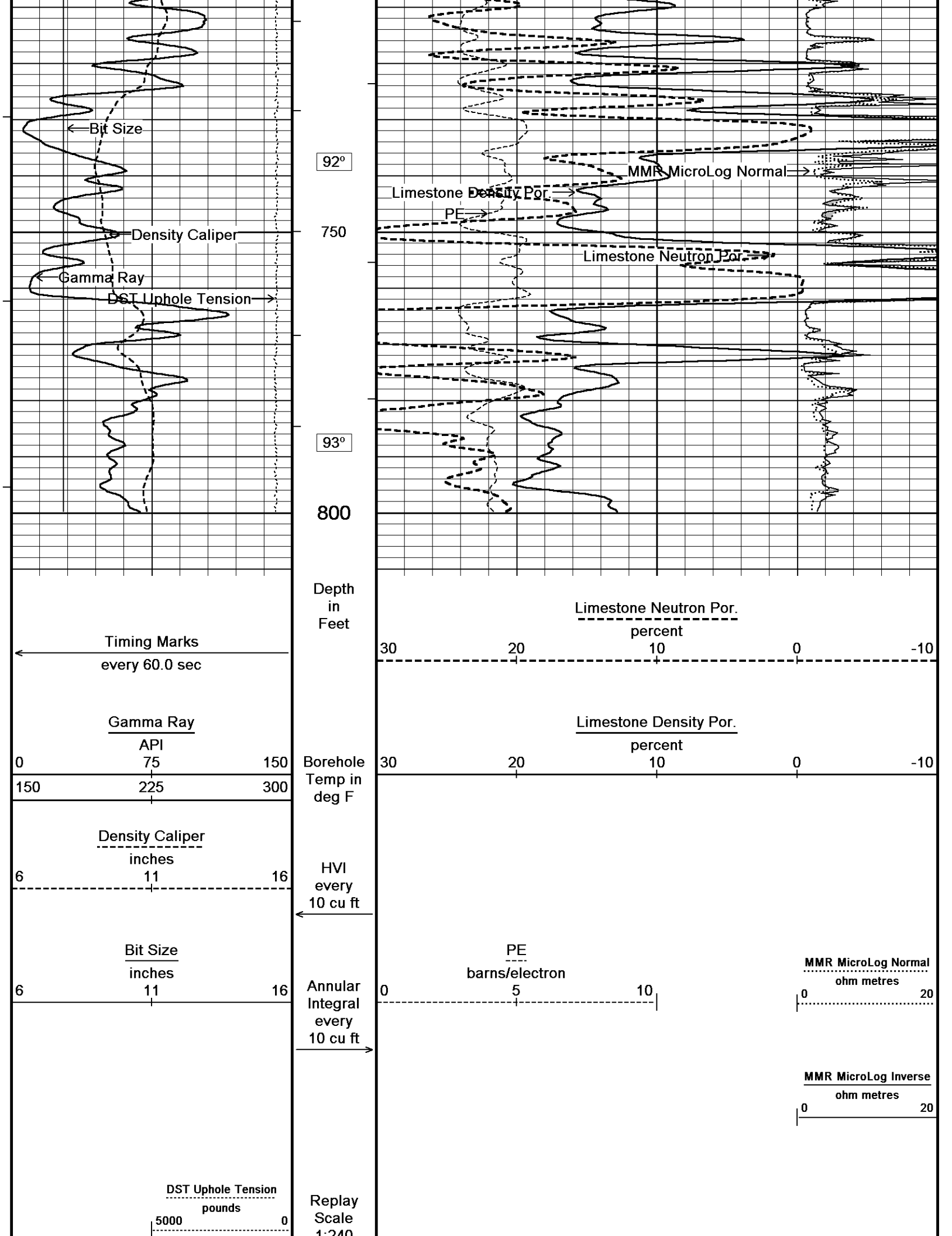
Limestone Neutron Por.
percent
30 20 10 0 -10

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10

MMR MicroLog Normal
ohm metres
0 20

MMR MicroLog Inverse
ohm metres
0 20


Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
92°
750
93°
800
MMR MicroLog Normal
Limestone Density Por.
PE
Limestone Neutron Por.
Depth in Feet
Timing Marks
every 60.0 sec
Limestone Neutron Por.
percent
30 20 10 0 -10
Gamma Ray
API
0 75 150
150 225 300
Borehole Temp in deg F
Limestone Density Por.
percent
30 20 10 0 -10
Density Caliper
inches
6 11 16
HVI every 10 cu ft
Bit Size
inches
6 11 16
Annular Integral every 10 cu ft
PE
barns/electron
0 5 10
MMR MicroLog Normal
ohm metres
0 20
MMR MicroLog Inverse
ohm metres
0 20
DST Uphole Tension
pounds
5000 0
Replay Scale 1:240

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_002.dta
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700

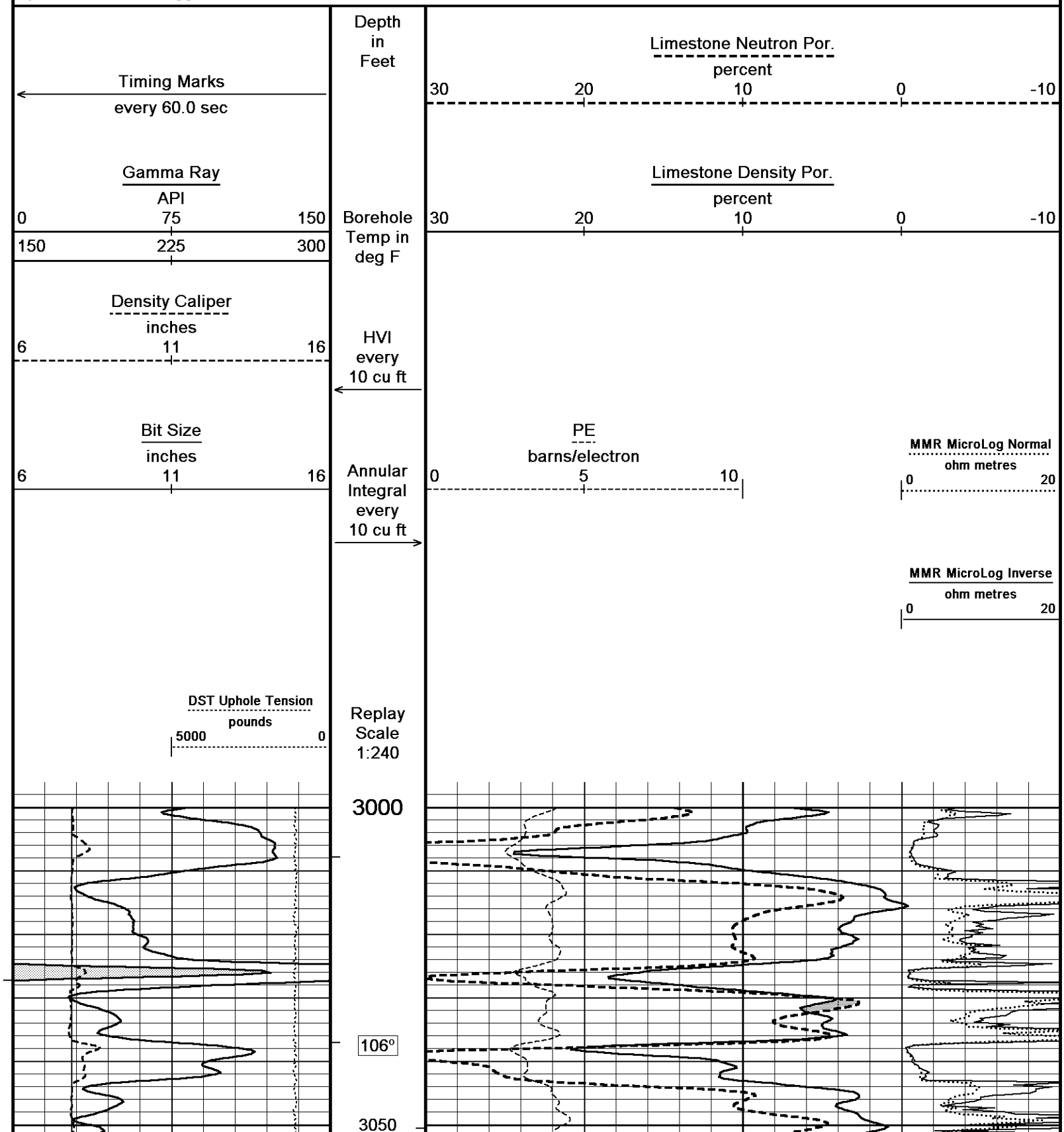
Plotted on 30-OCT-2017 16:27
Recorded on 30-OCT-2017 13:39

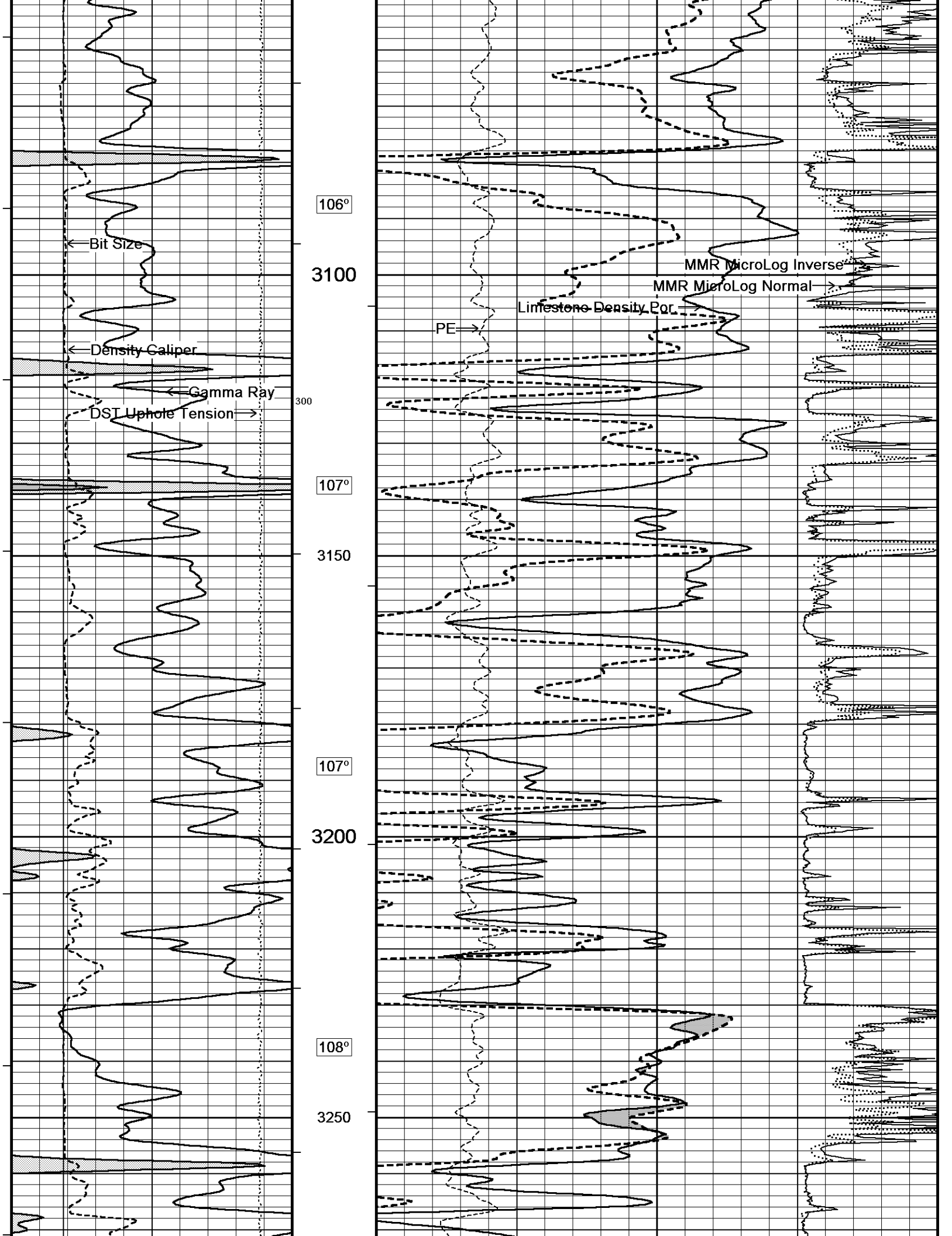
5 INCH MAIN - ANHYDRITE

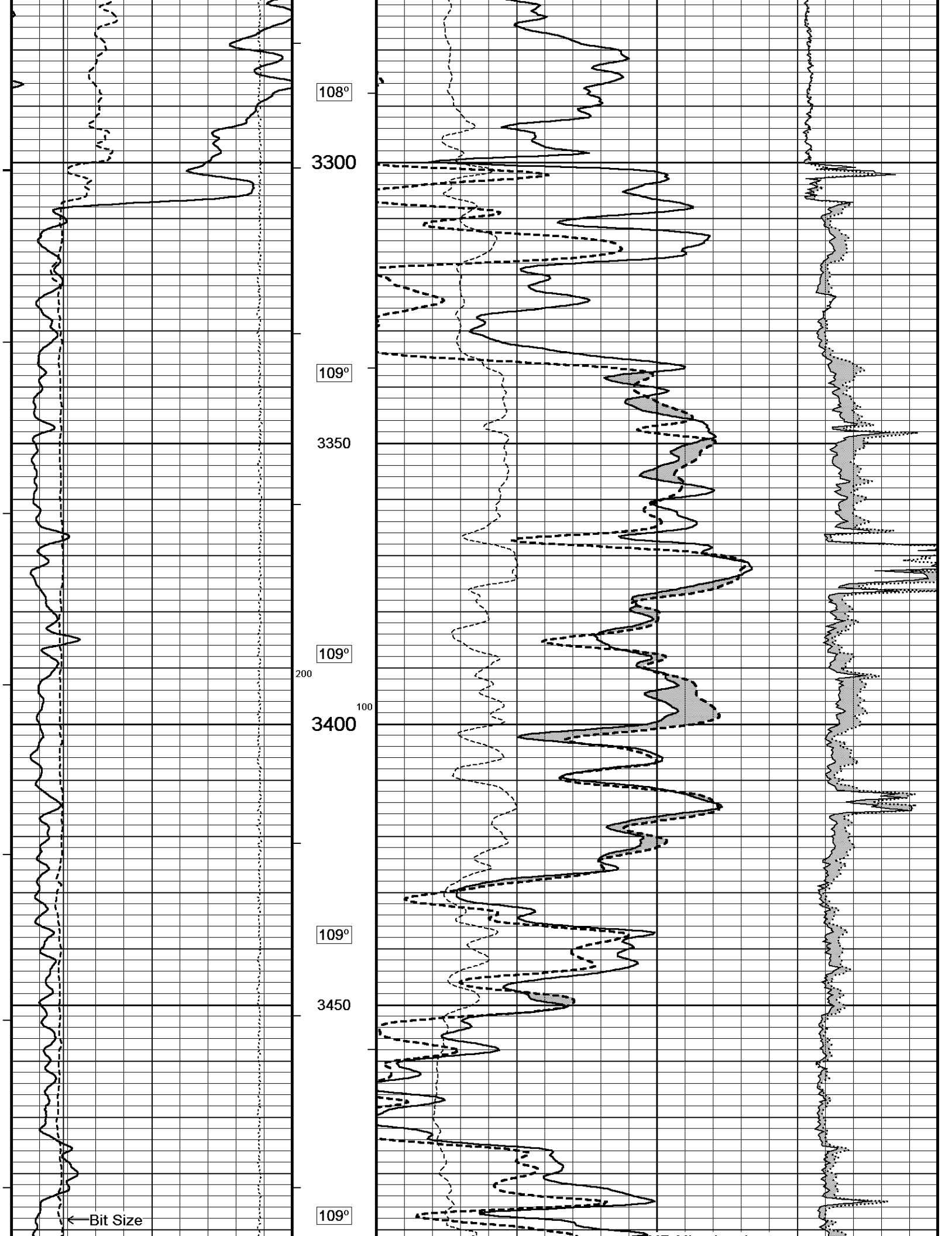
5 INCH LIMESTONE MAIN

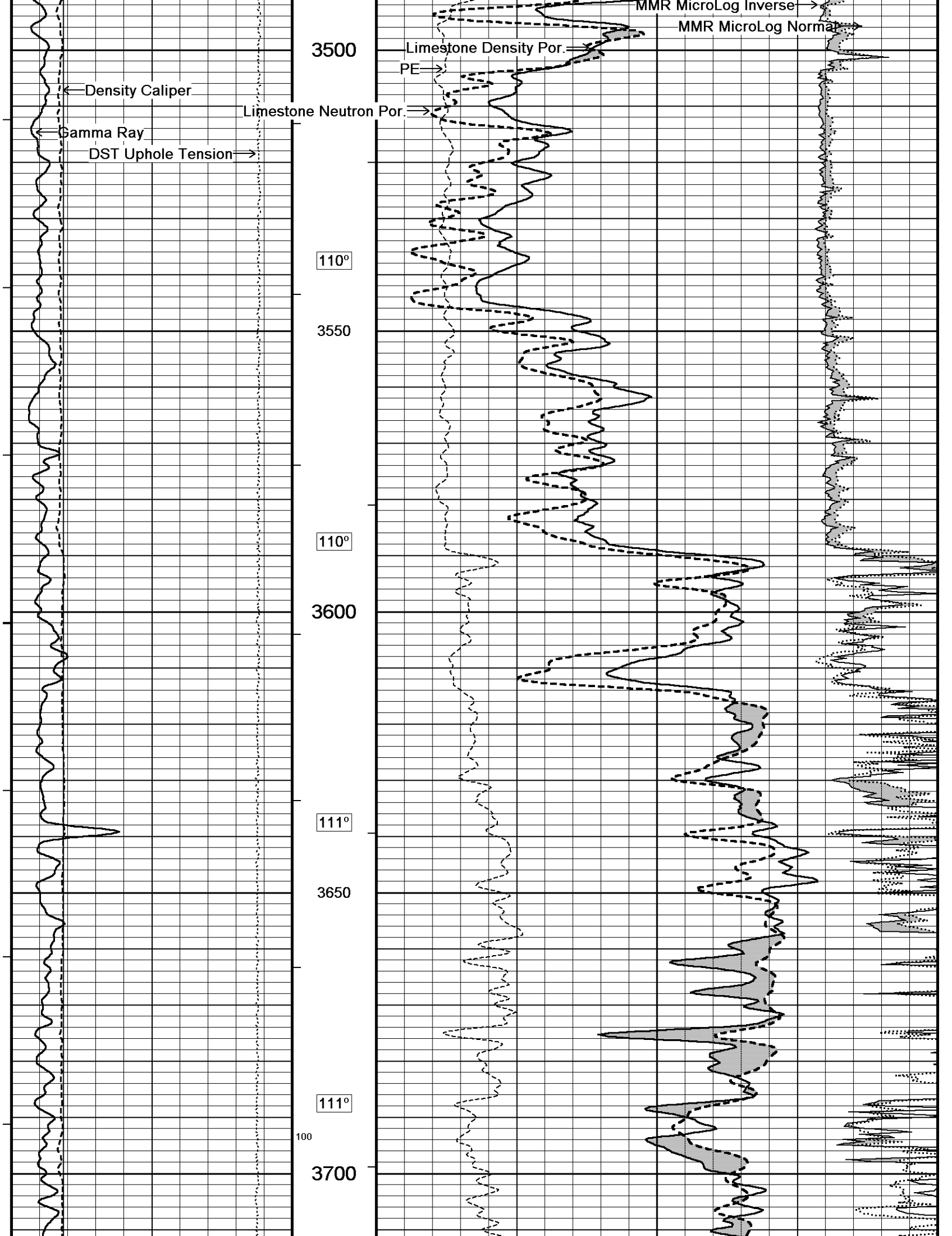
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_002.dta
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700

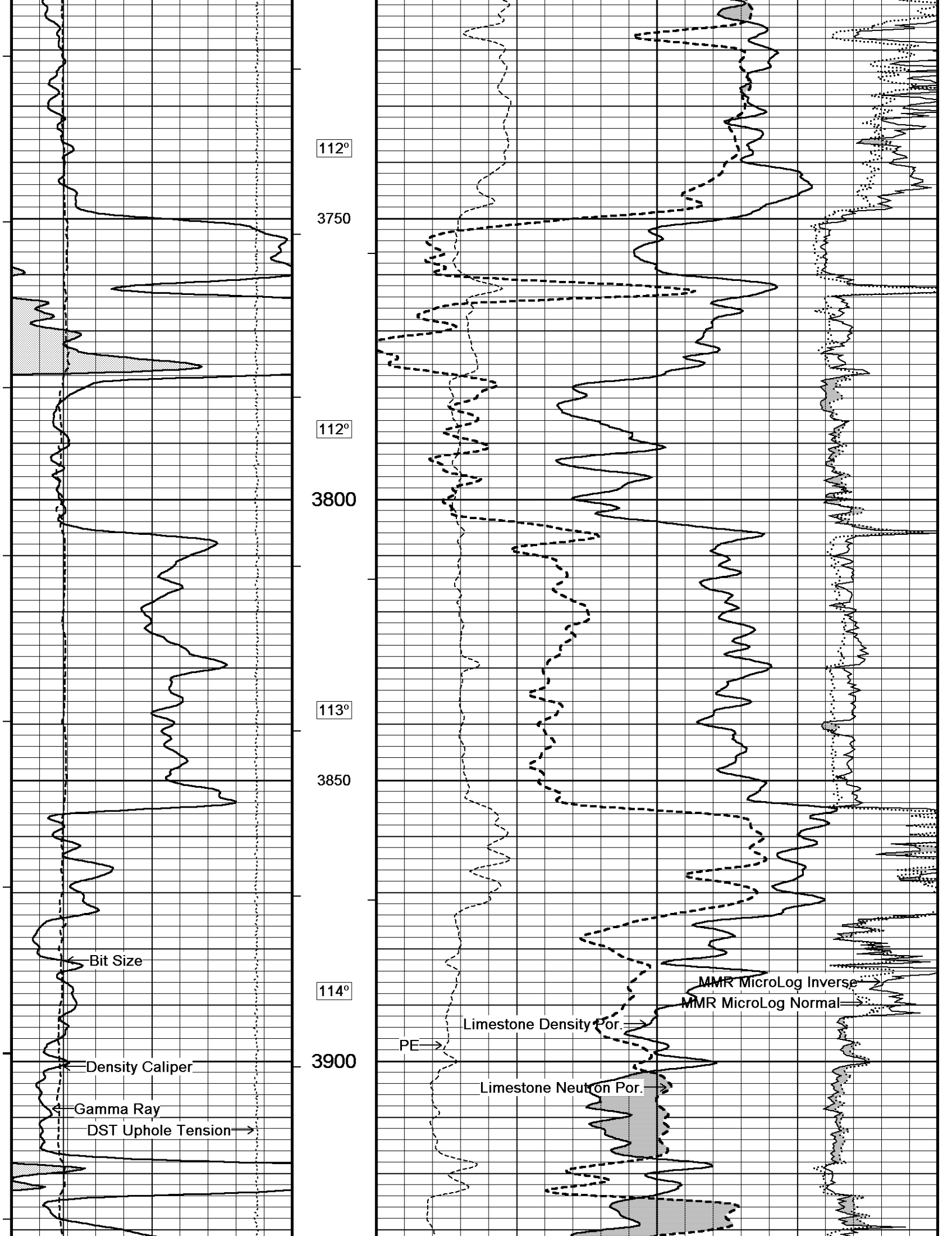
Plotted on 30-OCT-2017 16:27
Recorded on 30-OCT-2017 13:39

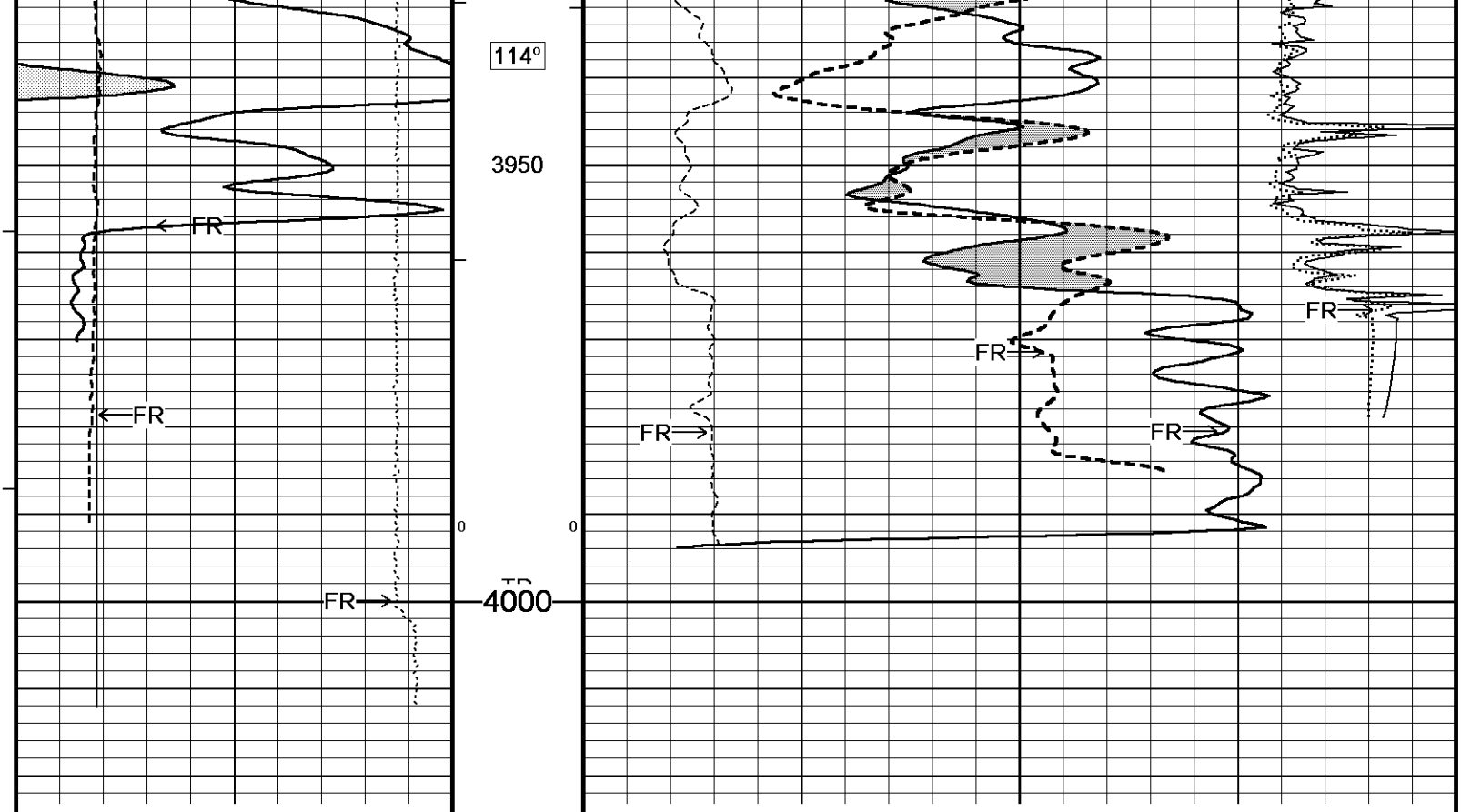



106°
Bit Size
3100
MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por
PE
Density Caliper
Gamma Ray
DSI Uphole Tension
300
107°
3150
107°
3200
108°
3250


108°
3300
109°
3350
109°
200
100
3400
109°
3450
109°
Bit Size


MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por.
PE
Density Caliper
Limestone Neutron Por.
Gamma Ray
DST Uphole Tension
3500
110°
3550
110°
3600
111°
3650
111°
100
3700


112°
3750
112°
3800
113°
3850
114°
3900
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por.
PE
Limestone Neutron Por.



Depth in Feet

Timing Marks
every 60.0 sec

Limestone Neutron Por.
percent
30 20 10 0 -10

Gamma Ray
API
0 75 150
150 225 300

Limestone Density Por.
percent
30 20 10 0 -10

Borehole Temp in deg F

Density Caliper
inches
6 11 16

HVI every 10 cu ft

Bit Size
inches
6 11 16

PE
barns/electron
0 5 10

MMR MicroLog Normal
ohm metres
0 20

Annular Integral every 10 cu ft

MMR MicroLog Inverse
ohm metres
0 20

DST Uphole Tension
pounds
5000 0

Replay Scale 1:240

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 30-OCT-2017 16:27

Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_002.dta

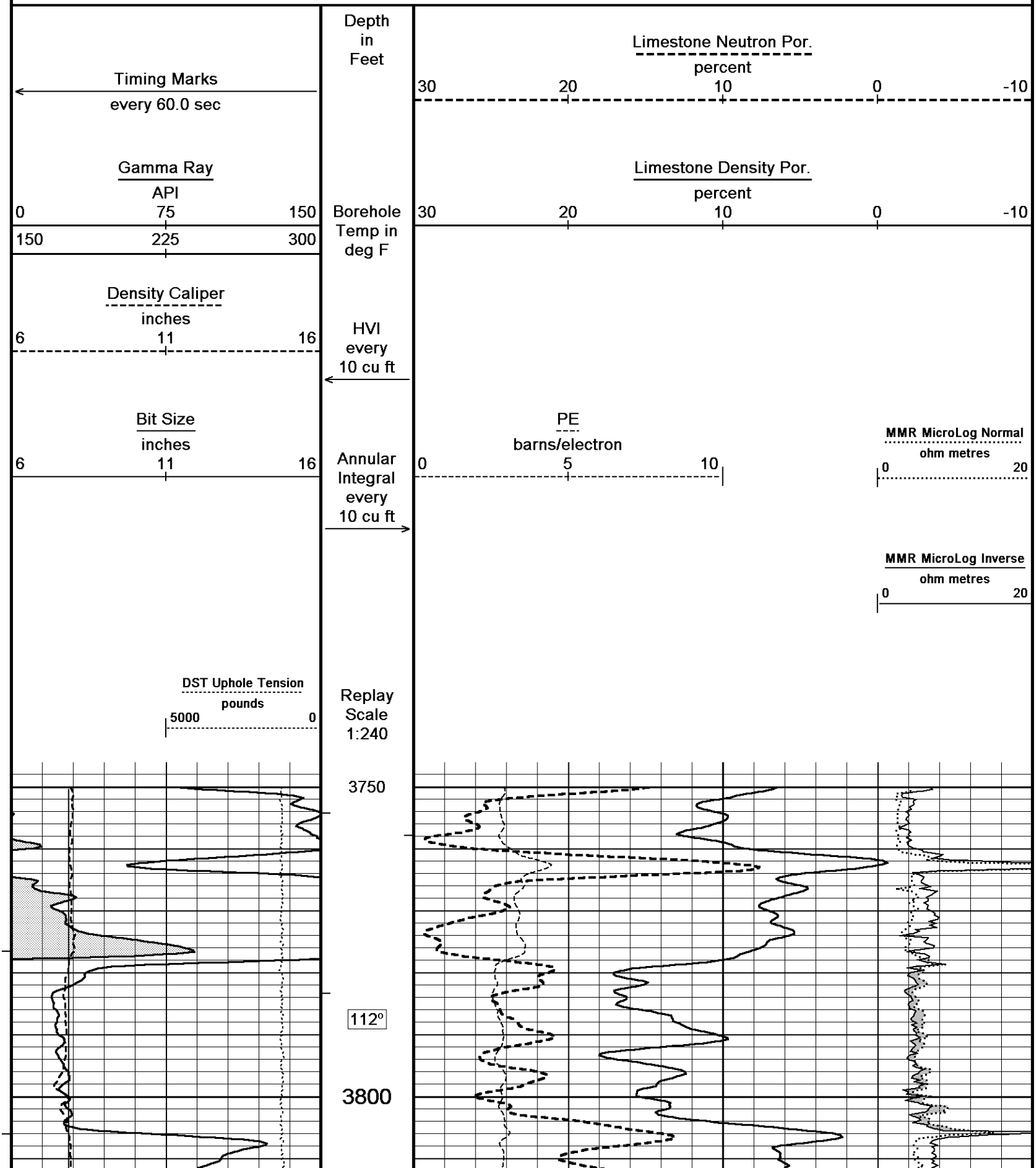
Recorded on 30-OCT-2017 13:39

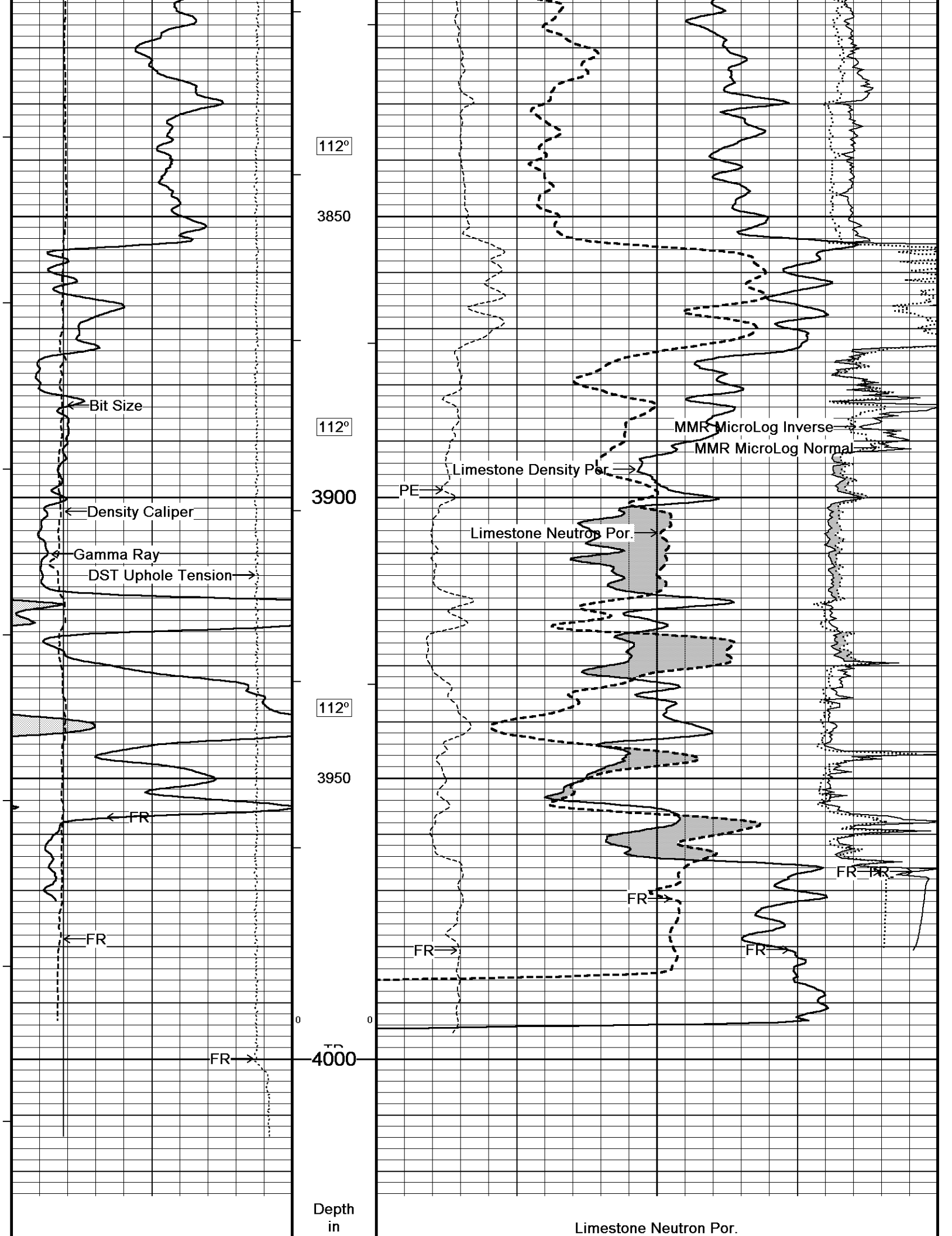
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_002.dta Recorded on 30-OCT-2017 15:39
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700

5 INCH LIMESTONE MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 30-OCT-2017 16:27
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_001.dta Recorded on 30-OCT-2017 13:19
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700




112°
3850
112°
3900
112°
3950
4000
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
FR
FR
FR
FR
MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por.
PE
Limestone Neutron Por.
FR
FR
FR
FR
0
0
Depth
in
Limestone Neutron Por.

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Density 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

percent
30 20 10 0 -10

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10

MMR MicroLog Normal
ohm metres
0 20

MMR MicroLog Inverse
ohm metres
0 20

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_001.dta
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700

Plotted on 30-OCT-2017 16:27
Recorded on 30-OCT-2017 13:19

REPEAT SECTION

5 INCH BULK DENSITY MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_002.dta
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700

Plotted on 30-OCT-2017 16:27
Recorded on 30-OCT-2017 13:39

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Density Caliper
inches
6 11 16

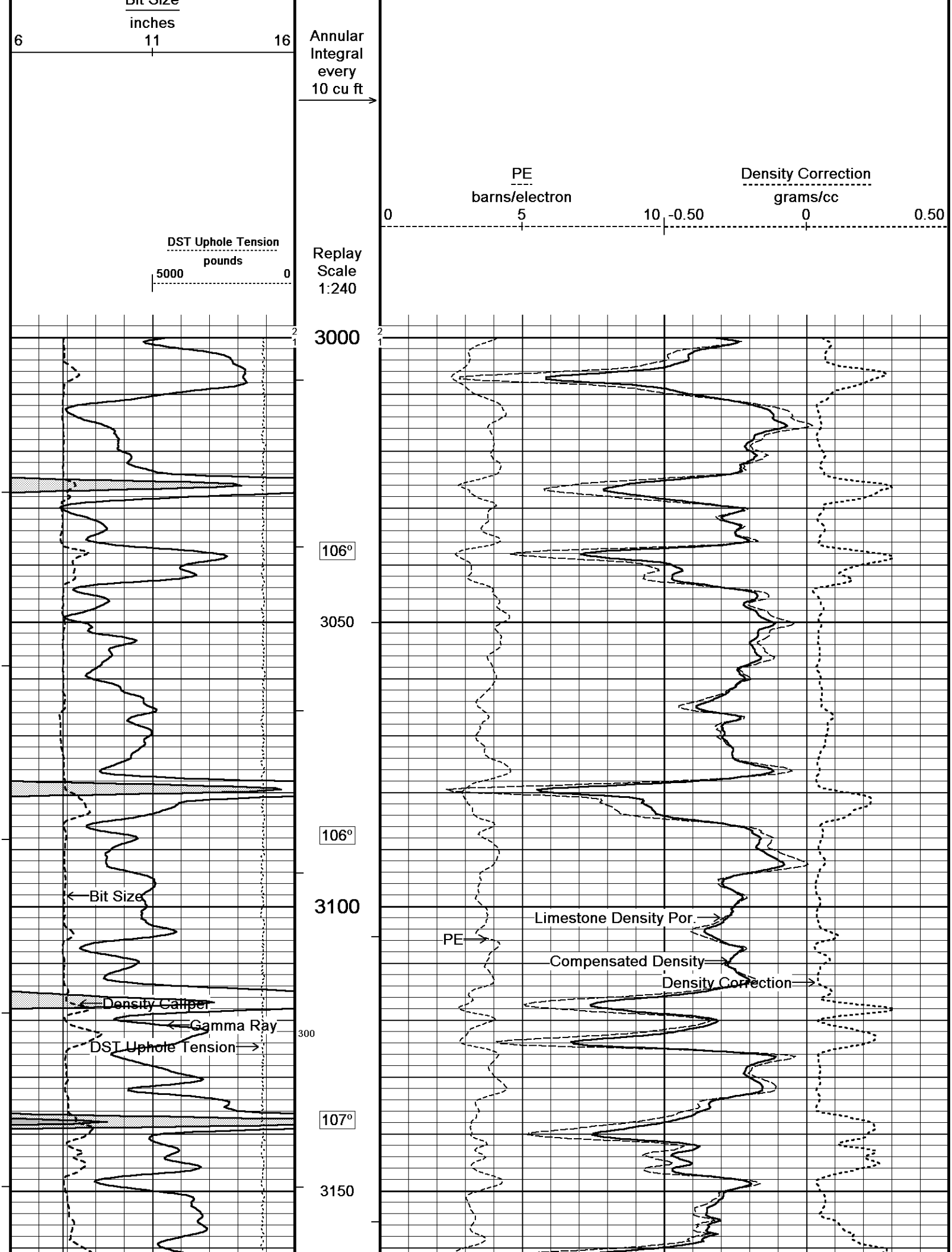
Depth in Feet

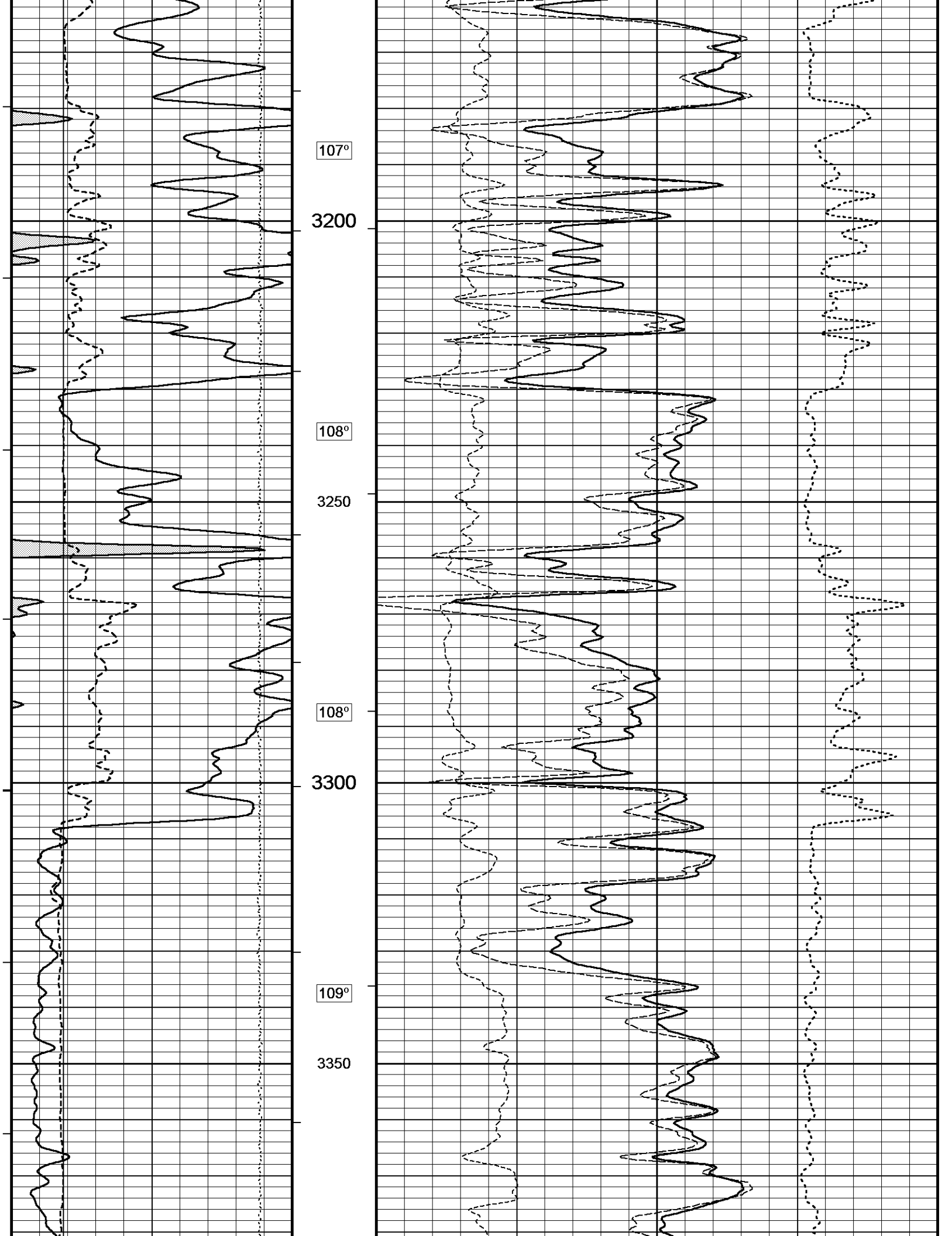
Borehole Temp in deg F

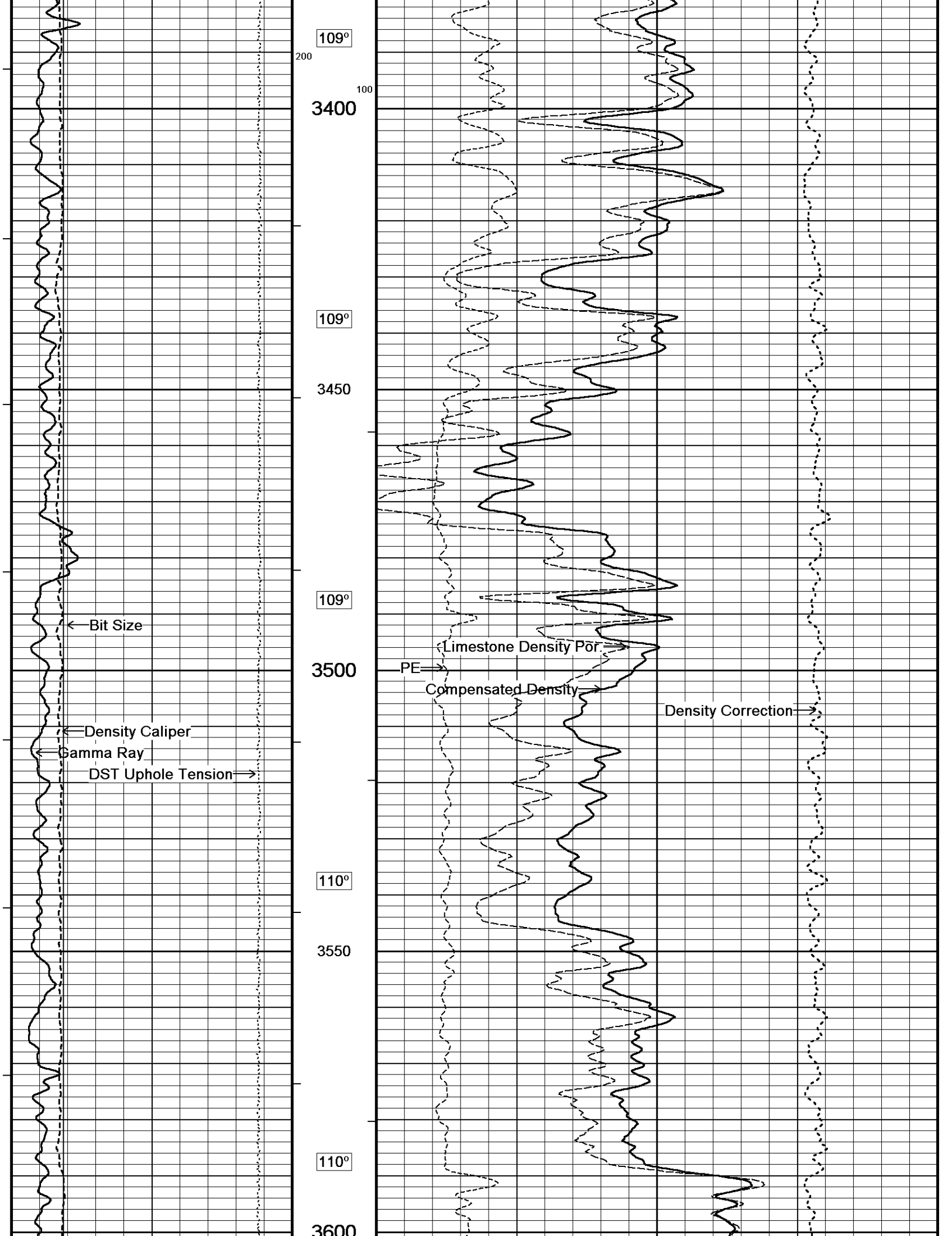
HVI every 10 cu ft

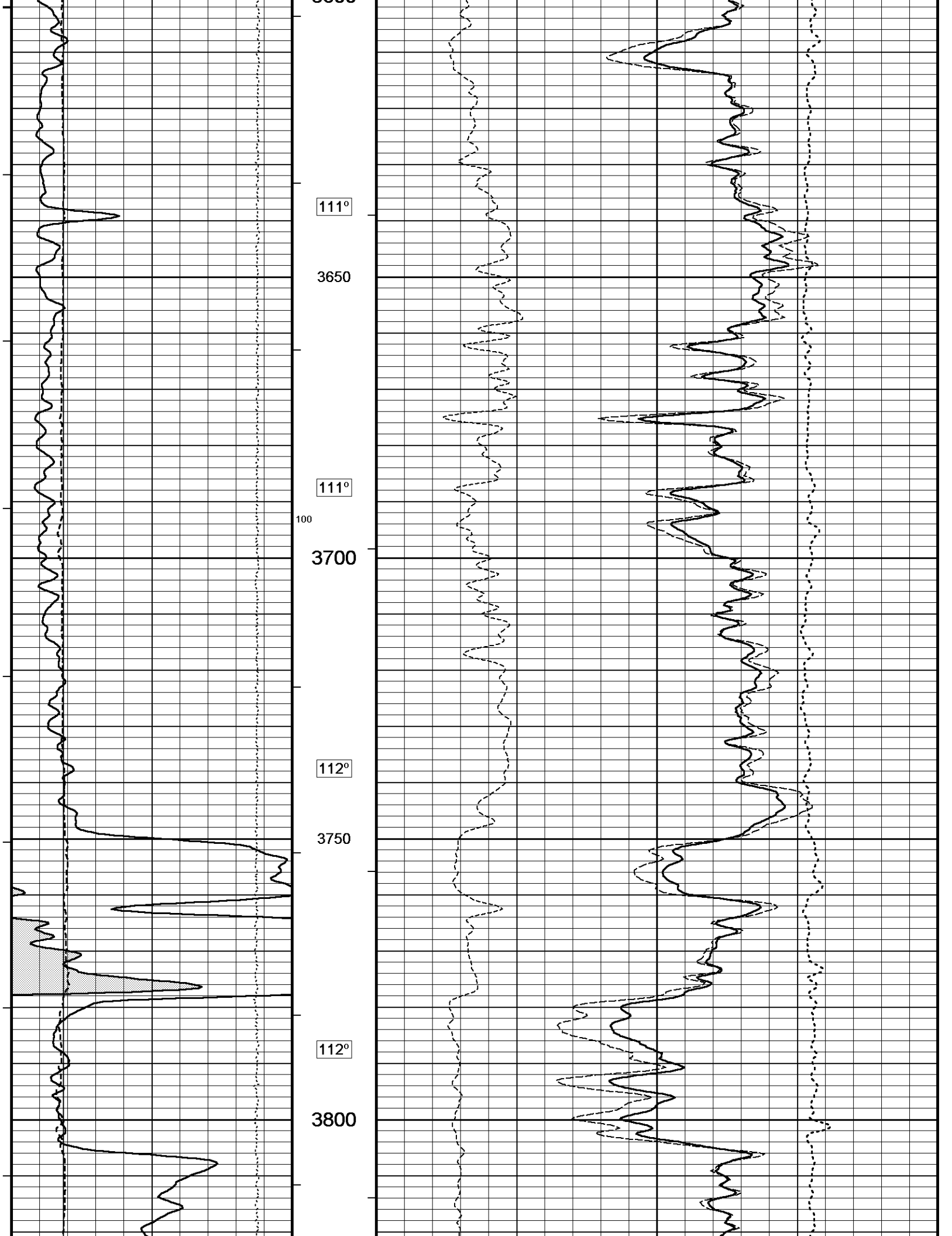
Compensated Density
grams/cc
2 2.25 2.50 2.75 3

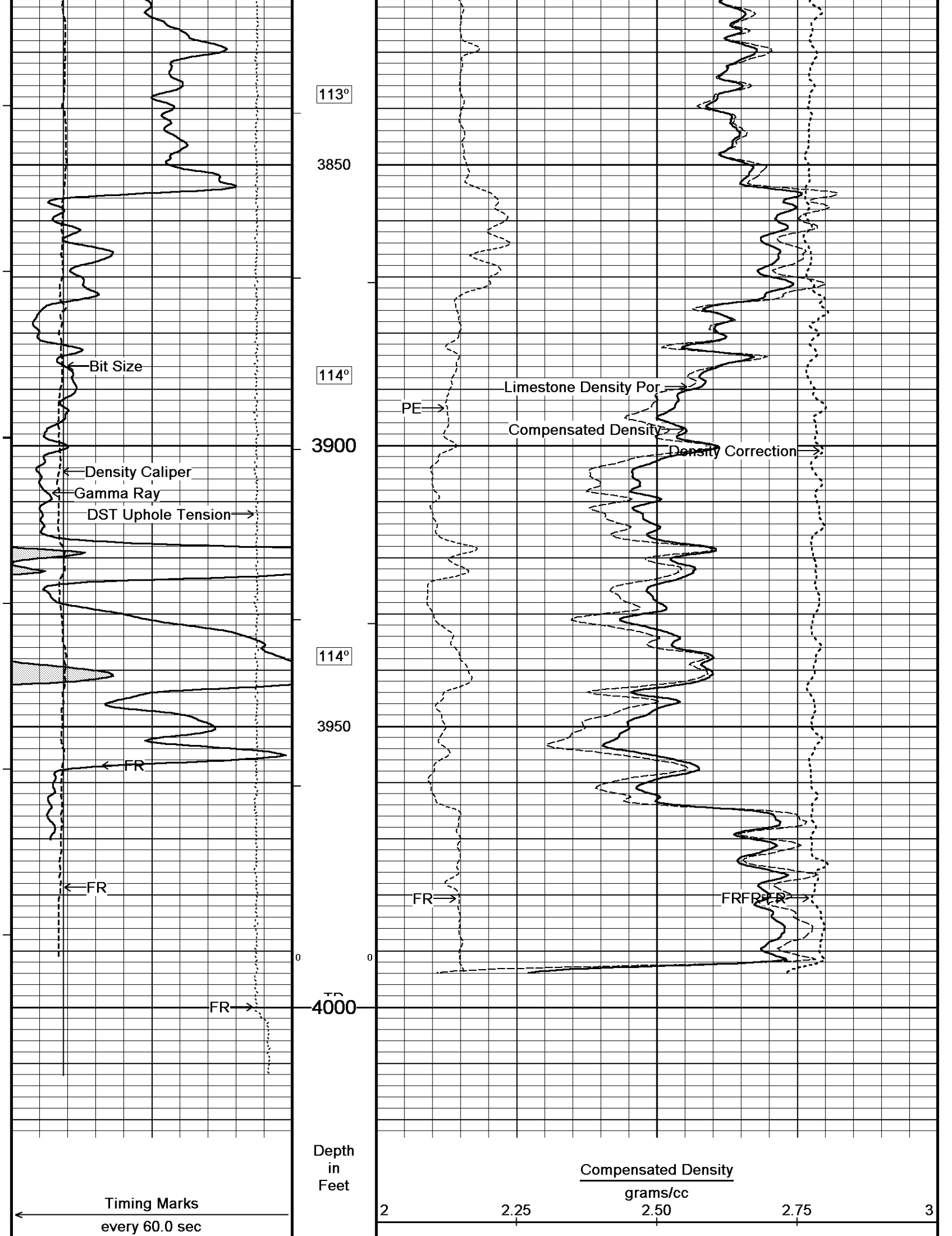
Limestone Density Por.
percent
30 20 10 0 -10

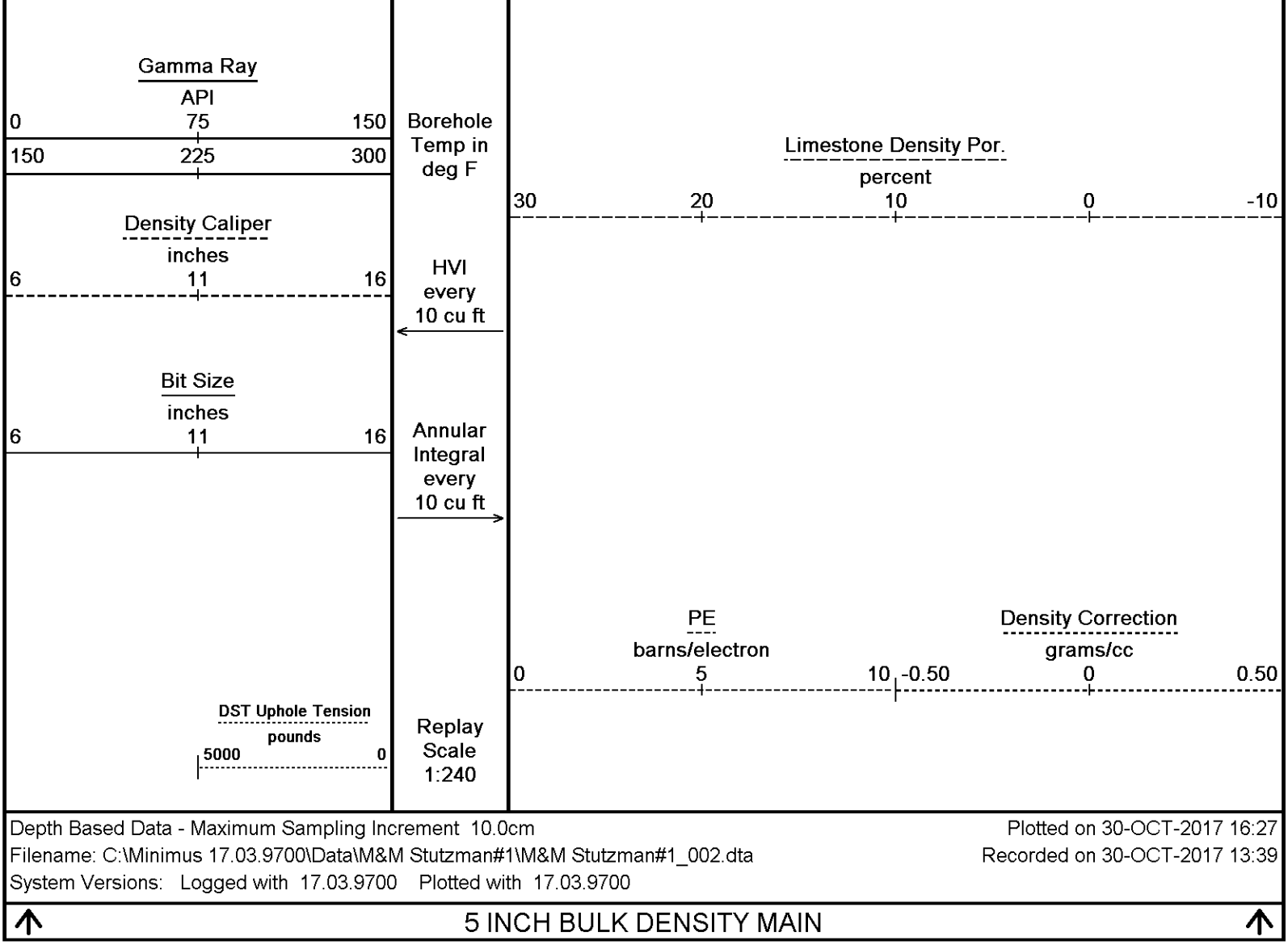

Bit Size
inches
6
11
16
Annular Integral every 10 cu ft
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.50
0
0.50
DST Uphole Tension
pounds
5000
0
Replay Scale 1:240
3000
106°
3050
106°
3100
3150
107°
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Limestone Density Por.
PE
Compensated Density
Density Correction


107°
3200
108°
3250
108°
3300
109°
3350


109°
200
100
3400
109°
3450
109°
Bit Size
Limestone Density Por.
PE
3500
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
110°
3550
110°
3600


111°
3650
111°
100
3700
112°
3750
112°
3800


113°
3850
114°
3900
114°
3950
4000
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
FR
FR
FR
FR
PE
Limestone Density Por
Compensated Density
Density Correction
FR
FRFRFR
0
0
Depth
in
Feet
Timing Marks
every 60.0 sec
Compensated Density
grams/cc
2
2.25
2.50
2.75
3

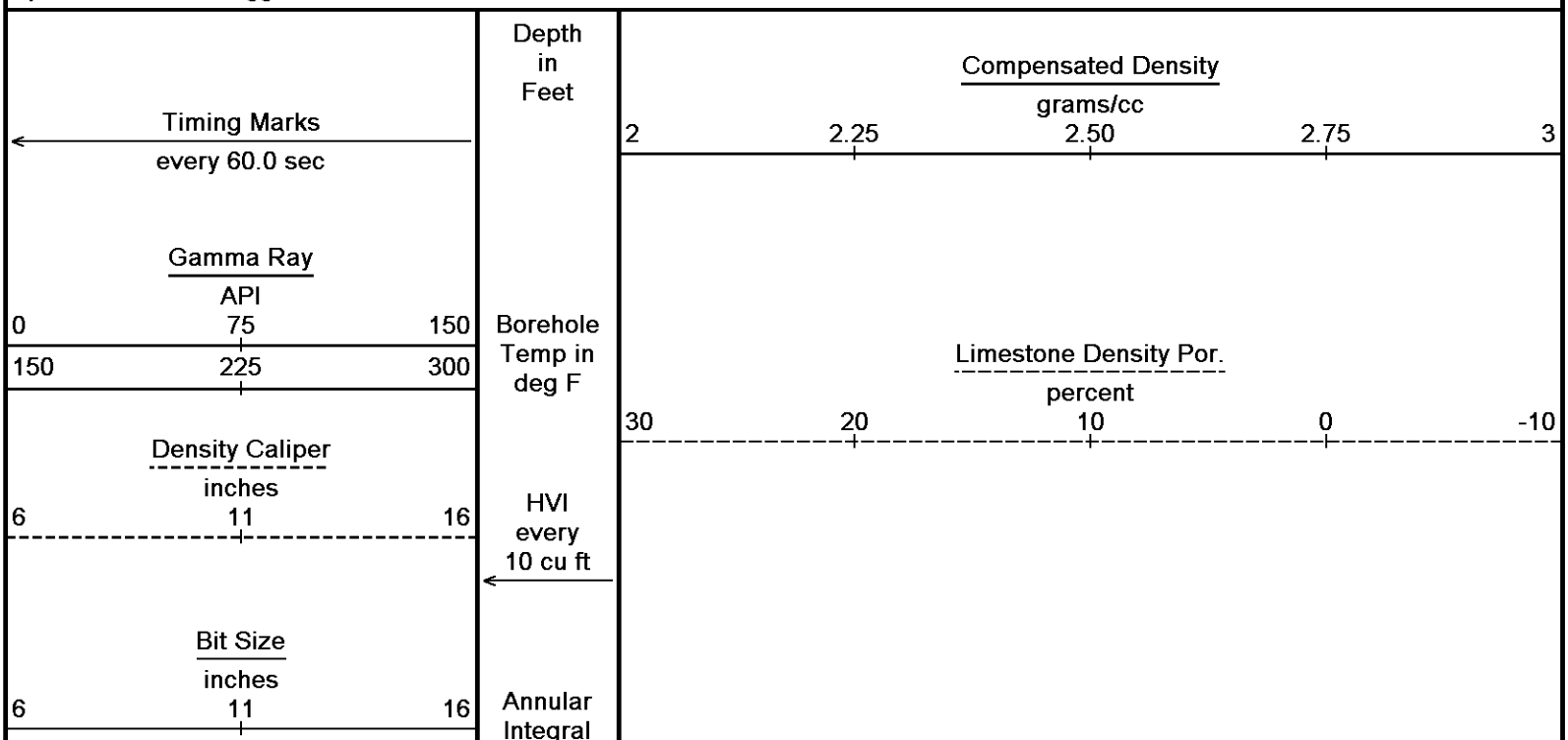


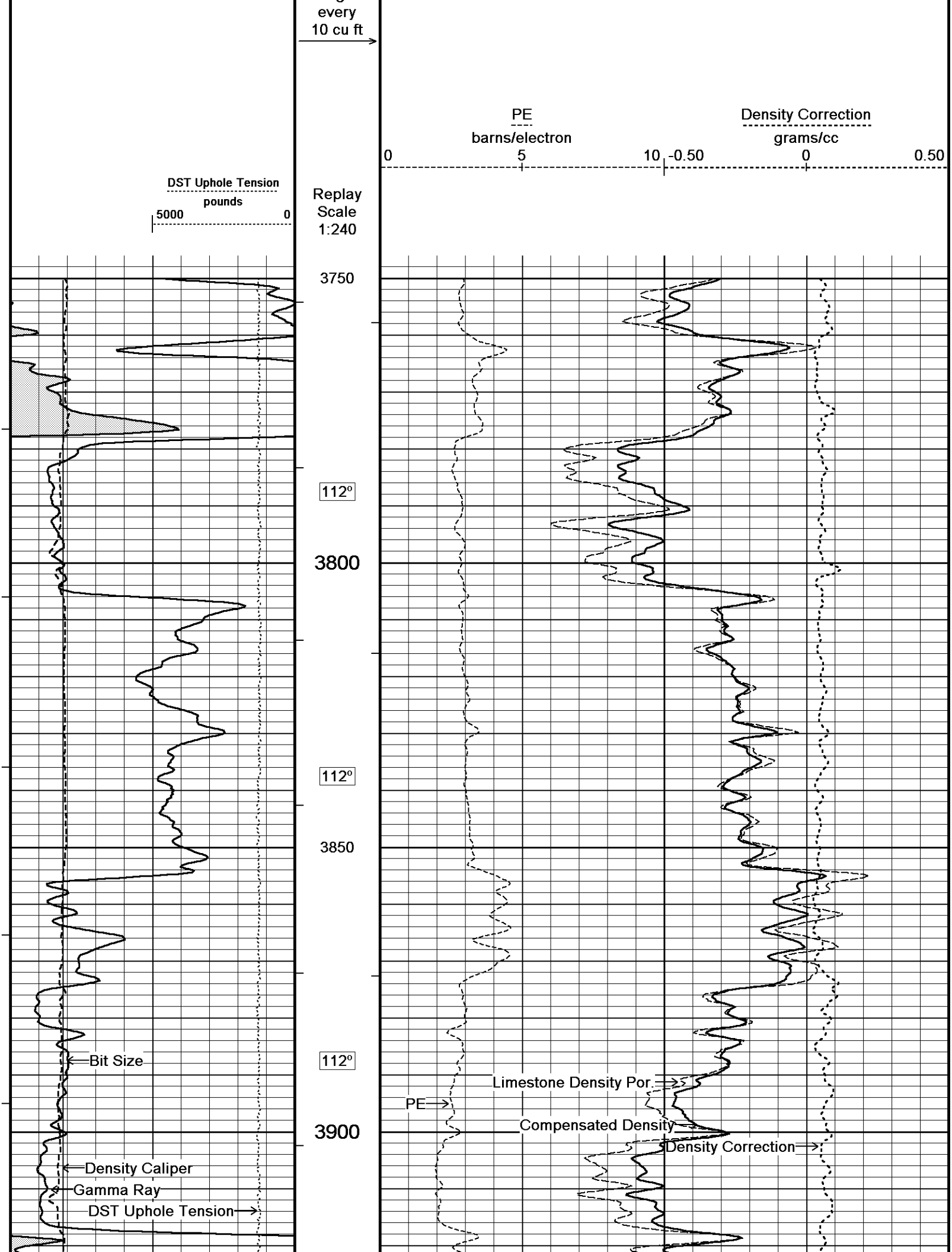
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-OCT-2017 16:27
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_002.dta — Recorded on 30-OCT-2017 13:39
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700

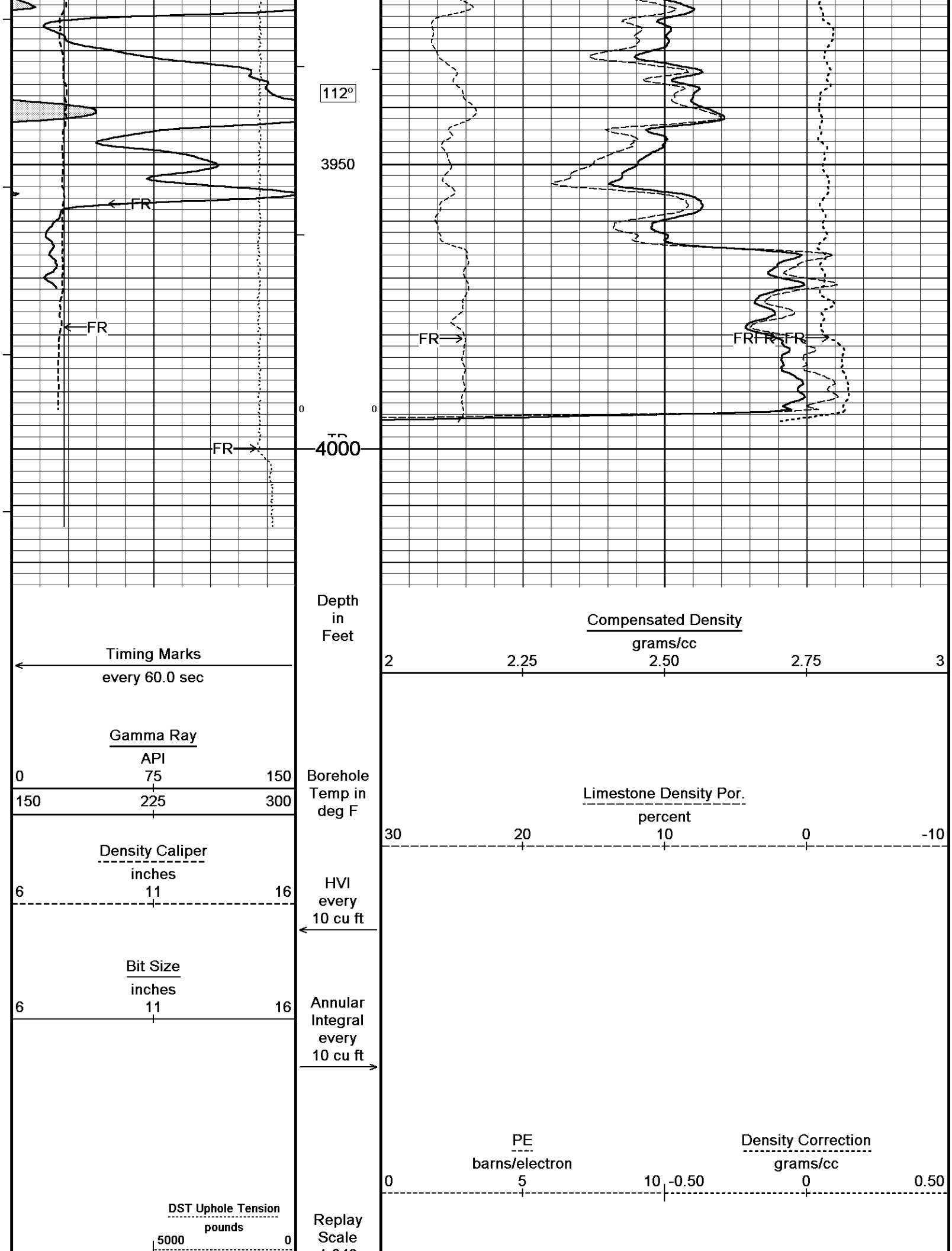
5 INCH BULK DENSITY MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-OCT-2017 16:27
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_001.dta — Recorded on 30-OCT-2017 13:19
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700




every
10 cu ft
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.50
0
0.50
DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
3750
112°
3800
112°
3850
112°
3900
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Limestone Density Por.
PE
Compensated Density
Density Correction


112°
3950
FR
FR
FR
FR
FR FR FR
0
0
4000
Depth in Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Density Caliper
inches
6
11
16
Bit Size
inches
6
11
16
Borehole Temp in deg F
HVI every 10 cu ft
Annular Integral every 10 cu ft
DST Uphole Tension
pounds
5000
0
Replay Scale
Compensated Density
grams/cc
2
2.25
2.50
2.75
3
Limestone Density Por.
percent
30
20
10
0
-10
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.50
0
0.50

1:240

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_001.dta
System Versions: Logged with 17.03.9700 Plotted with 17.03.9700

Plotted on 30-OCT-2017 16:27
Recorded on 30-OCT-2017 13:19

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_001.dta

General Constants All 000

Last Edited on 30-OCT-2017,12:50

General Parameters		
Mud Resistivity	0.890	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	0.620	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

Down-hole Tension Calibration SMS 0

Field Calibration on 08-OCT-2017 14:52

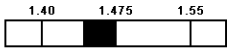
Reading No	Measured	Calibrated (lbs)
1	459.59	0.00
2	-1870.04	220.00

Gamma Calibration MCG-C 84

Field Calibration on 27-OCT-2017 07:35

	Measured	Calibrated (API)
Background	105	73
Calibrator (Gross)	762	529
Calibrator (Net)	657	456

Gamma Calibration Tolerances MCG-C 84

Ratio 1.442 

Counts/API

Gamma Constants MCG-C 84

Last Edited on 30-OCT-2017,11:37

Gamma Calibrator Number	MCGGRCC141	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.09	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

SP Calibration MCG-C 84

Field Calibration on 27-OCT-2017,07:20

	Measured	Calibrated (mV)
Reference 1	104.4	100.1
Reference 2	-95.8	-100.1

High Resolution Temperature Calibration MCG-C 84

Field Calibration on 27-OCT-2017,07:21

	Measured	Calibrated(Deg F)
Lower	50.00	50.00

Upper	212.00	212.00

High Resolution Temperature Constants MCG-C 84

Last Edited on 30-AUG-2017,13:52

Pre-filter Length	11

Micro Normal and Micro Inverse Calibration MML-A 7

Base Calibration on 23-OCT-2017 14:05
Field Check on 30-OCT-2017 12:39

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

Base Calibration

	Measured		Calibrated (ohm-m)	
Micro Normal	10.1	50.4	5.1	25.6
Micro Inverse	10.0	50.1	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	76.7	76.7
Micro Inverse	51.0	51.0

Micro Normal & Micro Inverse Calibration Tolerance MML-A 7

Micro Normal Res. 1 10.1 ohm (-5% 10.0 +5%)
Micro Normal Res. 2 50.4 ohm (-5% 50.0 +5%)
Micro Inverse Res. 1 10.0 ohm (-5% 10.0 +5%)
Micro Inverse Res. 2 50.1 ohm (-5% 50.0 +5%)

Micro Normal Base Check 76.7 ohm-m (-2% 76.57 +2%)
Micro Inverse Base Check 51.0 ohm-m (-2% 50.98 +2%)

Micro Normal Field Check 76.7 ohm-m (-2% 76.7 +2%)
Micro Inverse Field Check 51.0 ohm-m (-2% 51.0 +2%)

Micro Normal and Micro Inverse Constants MML-A 7

Last Edited on 30-OCT-2017,12:39

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 MML-A 7

Base Calibration on 23-OCT-2017 13:59
Field Calibration on 30-OCT-2017 12:38

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14085	5.98
2	17580	7.97
3	20846	9.86
4	24750	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.00	8.10

Caliper Calibration Tolerances MML-A 7

Short Arm Field Cal. 8.00 in (7.90 8.10 8.30)

Neutron Calibration MDN-A.B 114

Base Calibration on 25-OCT-2017 16:20
Field Check on 27-OCT-2017 07:40

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3039	94	3714	110
Ratio	32.458		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	2150	3142
Ratio	0.684	

Field Check

	Calibrated (cps)	
	2143	3109

Ratio	0.689

Neutron Calibration Tolerances MDN-A.B 114

		-5%	33	+5%
Ratio	32.458			

		0.65	0.7	0.75
Base Check	0.684			

		0.664	0.684	0.704
Field Check	0.689			

Neutron Constants MDN-A.B 114

Last Edited on 30-OCT-2017,11:37

Neutron Source Id	P0204NN	
Neutron Jig Number	NJ5736	
Air Hole Processing	Modified Ratio	
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	

FE Calibration MFE-B.J 352

Base Calibration on 23-OCT-2017 13:20
Field Check on 30-OCT-2017 12:25

	Resistor 1 (ohm)	Resistor 2 (ohm)
	0.0	1000.0
Base Calibration		
	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	963.8	126.8
Base Check		281.3
Field Check		281.4

FE Calibration Tolerances MFE-B.J 352

		-3%	980.0	+3%	
Reference 2	963.8				ohm

		-2%	277.0	+2%	
Base Check	281.3				ohm-m

		-2%	281.3	+2%	
Field Check	281.4				ohm-m

FE Constants MFE-B.J 352

Last Edited on 30-OCT-2017,12:24

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Borehole Correction Constants		
Sonde Position	0.5	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	

High Resolution Temperature Calibration MAI-A.A 111

Field Calibration on 01-OCT-2017,14:58

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

High Resolution Temperature Constants MAI-A.A 111

Last Edited on 26-JUN-2014,15:06

Pre-filter Length	11

Induction Calibration MAI-A.A 111

Factory Loop Calibration 25-OCT-2017 15:40
Field Check on 30-OCT-2017 12:35

Factory Loop Calibration

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

	Measured Signal (unitless)		Reference Conductivity (mmho/m)		Calibration	
Array	Low	High	Low	High	Gain	Offset
1 (near)	17.6	473.6	9.3	966.2	0.0	0.0
2	6.4	385.9	7.6	821.4	0.0	0.0
3	3.2	264.0	5.2	566.0	0.0	0.0
4 (far)	2.1	135.5	2.6	279.2	0.0	0.0

Array Temperature	23.0	Deg F

Tool Checks

	Factory Reference (mmho/m)		Before Survey (mmho/m)		
Array	Low	High	Low	High	
1 (near)	11.4	3842.3	13.8	3843.4	
2	29.3	3499.9	31.5	3501.6	
3	28.7	2997.0	30.6	2998.7	
4 (far)	18.9	2041.5	20.1	2043.1	
Array Temperature	90.7		69.6		Deg F

Induction Check Tolerances MAI-A.A 111

Low Array 1	13.8	9.9 / 11.4 / 12.9	mmho/m	High Array 1	3843.4	3840.8 / 3842.3 / 3843.8 mmho/m
Low Array 2	31.5	27.8 / 29.3 / 30.8	mmho/m	High Array 2	3501.6	3498.4 / 3499.9 / 3501.4 mmho/m
Low Array 3	30.6	27.2 / 28.7 / 30.2	mmho/m	High Array 3	2998.7	2995.5 / 2997.0 / 2998.5 mmho/m
Low Array 4	20.1	17.4 / 18.9 / 20.4	mmho/m	High Array 4	2043.1	2040.0 / 2041.5 / 2043.0 mmho/m

Induction Constants MAI-A.A 111

Last Edited on 30-OCT-2017,12:33

Induction Model	RtAP-WBM	
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	

Photo Density Calibration MPD-C.A 216

Base Calibration on 23-OCT-2017 14:37
Field Check on 30-OCT-2017 12:24

Density Calibration

Base Calibration	Measured Near	Measured Far	Calibrated (sdu) Near	Calibrated (sdu) Far
Background	1025	1218		
Reference 1	51146	24580	59556	30836
Reference 2	20383	2310	24941	2541
Field Check at Base	1024.7	1217.9		
Field Check	1024.3	1212.0		

PE Calibration

Base Calibration	Measured WS	Measured WH	Ratio	Calibrated Ratio
Background	187	916		
Reference 1	21227	50978	0.420	0.371
Reference 2	5863	20269	0.293	0.272
Field Check at Base	187.1	916.4		
Field Check	186.0	916.1		

Photo Density Calibration Tolerances MPD-C.A 216

Near Density Ratio	2.59	-5% 2.52 +5%	Far Density Ratio	21.38	-5% 21.00 +5%
PE Calibration	0.118	0.089 0.110 0.131			
Near Den. Field Check	1024.3	-3% 1024.7 +3%	Far Den. Field Check	1212.0	-3% 1217.9 +3%
PE WS Field Check	186.0	-6% 187.1 +6%	PE WH Field Check	916.1	-6% 916.4 +6%

Density Constants MPD-C.A 216

Last Edited on 30-OCT-2017,12:24

Density Source Id	P50557B	
Nylon Calibrator Number	DNCE695	
Aluminium Calibrator Number	DACD698	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.09	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	Not 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	

Caliper Calibration MPD-C.A 216

Base Calibration on 23-OCT-2017 14:16
Field Calibration on 30-OCT-2017 12:36

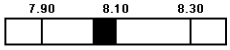
Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16832	3.99
2	27040	5.98
3	37135	7.97
4	46864	9.86
5	58032	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.03	8.10

Caliper Calibration Tolerances MPD-C.A 216

Short Arm Field Cal. 8.03 

in

DOWNHOLE EQUIPMENT

C:\Minimus 17.03.9700\Data\M&M Stutzman#1\M&M Stutzman#1_001.dta

Cablehead, 11 pin
CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma
MCG-C 84 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-log
MML-A 7 LG: 7.97 ft WT: 81.6 lb OD: 2.244 in

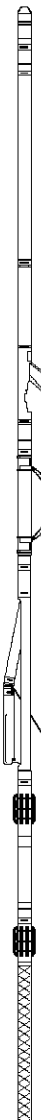
Compact Neutron
MDN-A.B 114 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

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

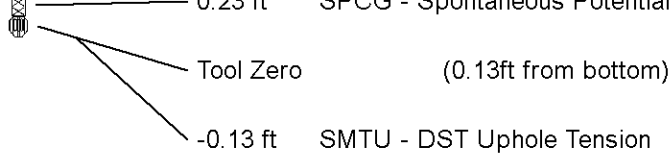
Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

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

Total Length: 50.55 ft Weight: 407.9 lb



42.87 ft	GRGC - MCG Gamma Ray
39.96 ft	CGXT - MCG External Temperature
34.24 ft	MLTC - MML Caliper
33.24 ft	MINV - Micro-inverse
33.24 ft	MNRL - Micro-normal
28.45 ft	NPRL - Limestone Neutron Por.
21.21 ft	AVOL - Annular Volume
21.21 ft	HVOL - Hole Volume
21.21 ft	CLDC - Density Caliper
19.28 ft	DEN - Compensated Density
19.28 ft	DCOR - Density Correction
19.28 ft	DPRL - Limestone Density Por.
19.22 ft	PDPE - PE
13.72 ft	FEFE - Shallow FE
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	SPGC - Spontaneous Potential



All measurements relative to tool zero.

COMPANY	M & M EXPLORATION, INC.
WELL	STUTZMAN #1
FIELD	KISIWA
PROVINCE/COUNTY	HARVEY
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1410	feet	First Reading	3981.00	feet
Elevation Drill Floor	1408	feet	Depth Driller	4000.00	feet
Elevation Ground Level	1402	feet	Depth Logger	4000.00	feet

Weatherford®

COMPENSATED NEUTRON
COMPACT PHOTO DENSITY
MICRORESISTIVITY LOG

JUSTIN D. CARTER
CONSULTING GEOLOGIST

Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name:	**STUTZMAN #1**		
Well Id:			
Location:	**NW, NW, SW, NE Sec. 15 - 24S - 2W Harvey Co., KS**		
License Number:	**15-079-20715-0000**	**Region:**	**Kisiwa**
Spud Date:	**10/23/17**	**Drilling Completed:**	**10/30/17**
Surface Coordinates:	**1381' FNL & 2350' FEL**		
Bottom Hole Coordinates:	**270': 1/4 DEG, 3779': 1 1/4 DEG, 4000': 3/4 DEG**		
Ground Elevation (ft):	**1402'**	**K.B. Elevation (ft):**	**1410'**
Logged Interval (ft):	**2500' To: 4000'**	**Total Depth (ft):**	**4000'**
Formation:	**HUNTON, VIOLA**		
Type of Drilling Fluid:	**Chemical Mud**		

OPERATOR

Company: M & M EXPLORATION, INC.
Address: 4257 Main St., Suite 230
Westminister, CO 80031
Co. Geo.: Mr. Mike Austin

GEOLOGIST

Name: Justin D. Carter
Company: Consulting Geologist
Address: 1640 N. Roosevelt Ave.
Liberal, KS 67901
Phone: 620-655-1187

Comments

Drilling Contractor: Discovery Drilling Rig #2
Tool Pusher: Terry Wickham

8 5/8" surface casing set at 266'

Mud: Turbo Drilling Fluids
Engineer: Dave Leahy

DSTs: Trilobite Testing
Tester: Jimmy Ricketts Jr.

Open-Hole Loggers: Weatherford Wireline

Remarks

After careful review of the sample log, electric logs, and DST reports, the decision was made to P&A the Stutzman #1.

Respectfully submitted,

Justin D. Carter
Consulting Geologist

TRILOBITE TESTING, INC

DRILL STEM TEST REPORT

M&M Exploration

4257 Main st #230
Westminster CO, 80031

ATTN: Mike Austin

15w/24s/2 Harvey KS

Stutzman #1

Job Ticket: 62010 **DST#: 1**

Test Start: 2017.10.28 @ 19:50:00

GENERAL INFORMATION:

Formation: **Hunton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 21:57:20
Time Test Ended: 04:01:50

Test Type: Conventional Bottom Hole (Initial)
Tester: Jason Cash/Jimmy Ric
Unit No: #80

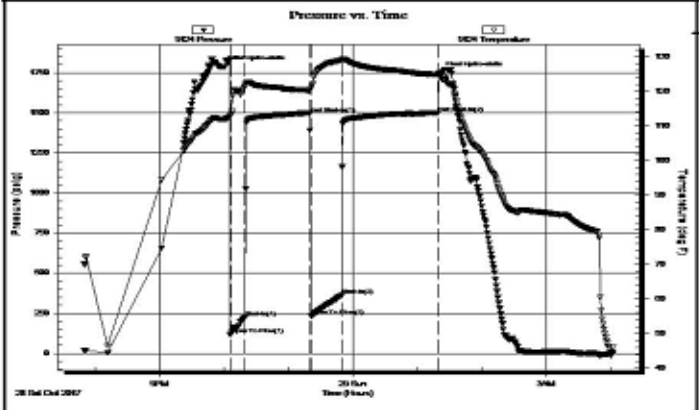
Interval: 3748.00 ft (KB) To 3779.00 ft (KB) (TVD)
Total Depth: 3779.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 1410.00 ft (KB)
1402.00 ft (CF)
KB to GR/CF: 8.00 ft

Serial #: 9124 **Inside**
Press@RunDepth: 361.90 psig @ 3749.00 ft (KB)
Start Date: 2017.10.28 End Date: 2017.10.29
Start Time: 19:50:05 End Time: 04:01:50

Capacity: 8000.00 psig
Last Calib.: 1899.12.30
Time On Btm: 2017.10.28 @ 21:57:20
Time Off Btm: 2017.10.29 @ 01:20:20

TEST COMMENT: IF- Weak Blow Building to strong blow 7 minutes into initial flow period.
FF -Weak Blow Building to strong blow 7 minutes into final flow period.
FS-1 1/2 inch blow back during final shut-in period.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1787.41	111.95	Initial Hydro-static
9	116.86	112.98	Open To Flow (1)
23	223.18	121.56	Shut-In(1)
83	1497.25	120.30	End Shut-In(1)
84	233.41	120.86	Open To Flow (2)
113	361.90	128.92	Shut-In(2)
202	1500.08	124.80	End Shut-In(2)
203	1749.97	124.76	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
325.00	Mud cut w ater 93%W &7%M	2.92
120.00	Heavy mud cut w ater 60%W&40%M	1.68
120.00	Heavy w ater cut mud 30%W&70%M	1.68
90.00	Drilling mud 100%M	1.26

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

TRILOBITE TESTING, INC

M&M Exploration

4257 Main st #230
Westminster CO, 80031

ATTN: Mike Austin

15w/24s/2 Harvey KS

Stutzman #1

Job Ticket: 62011 **DST#: 2**

Test Start: 2017.10.29 @ 15:31:00

GENERAL INFORMATION:

Formation: **Viola**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 17:05:40
Time Test Ended: 21:54:39

Test Type: Conventional Bottom Hole (Initial)
Tester: Jason Cash
Unit No: 80

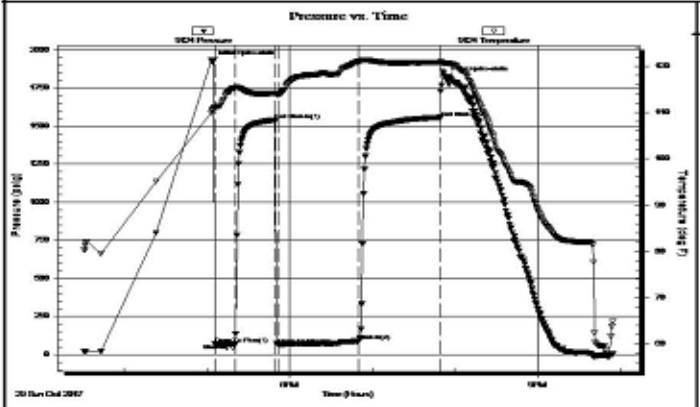
Interval: 3862.00 ft (KB) To 3876.00 ft (KB) (TVD)
Total Depth: 3876.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 1410.00 ft (KB)
1402.00 ft (CF)
KB to GR/CF: 8.00 ft

Serial #: 9124 **Inside**
Press@RunDepth: 89.39 psig @ 3863.00 ft (KB)
Start Date: 2017.10.29 End Date: 2017.10.29
Start Time: 15:31:05 End Time: 21:54:39

Capacity: 8000.00 psig
Last Calib.: 1899.12.30
Time On Btm: 2017.10.29 @ 17:04:00
Time Off Btm: 2017.10.29 @ 19:52:39

TEST COMMENT: IF-Weak blow building to 1 inch during initial flow period.
FF-Weak blow building to 2 inchs druing final flow period.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1921.00	110.45	Initial Hydro-static
2	69.60	110.95	Open To Flow (1)
17	69.53	115.27	Shut-In(1)
46	1541.50	114.20	End Shut-In(1)
48	65.35	113.87	Open To Flow (2)
106	89.39	121.04	Shut-In(2)
166	1556.91	120.83	End Shut-In(2)
169	1818.71	120.66	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
70.00	Heavy water cut mud 29%W &71%M	0.52

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

ROCK TYPES

Anhy
Bent
Brec
Cht
Clyst
Coal
Congl
Dol
Gyp
Igne
Lmst
Meta
Mrlst
Salt
Shale
Shcol
Shgy
Sltst
Ss
Till
Carb sh
Dol
Dtd
Gry sh
Sandylms
Shale
Sltstn
Shlyslts
Sltysh
Lms

ACCESSORIES

FOSSIL
- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite
- Plant
- Strom
- Fuss
- Oomold

MINERAL
- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Brecfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff
- Chlorite
- Dol
- Sand
- Slty

STRINGER
- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg
- Carbsh
- Clystn
- Dol
- Grysh
- Gryslt
- Lms
- Sandylms
- Sh
- Sltstn

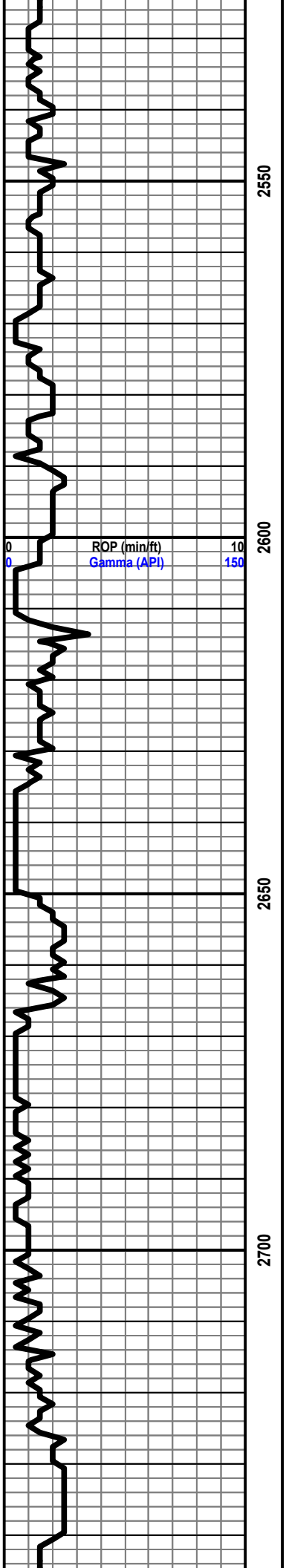
TEXTURE
- BS Boundst
- C Chalky
- CX Cryxln
- E Earthy
- FX Finexln
- GS Grainst
- L Lithogr
- MX Microxln
- MS Mudst
- PS Packst
- WS Wackest

OTHER SYMBOLS

INTERVALS
- Core
- Dst
- Dst

OIL SHOWS
- Even
- Spotted
- Ques
- Dead
- Gas show

Curve Track 1 ROP (min/ft) Gamma (API)	Depth	Lithology	Oil Shows	Geological Descriptions	Remarks
0 ROP (min/ft) 10 0 Gamma (API) 150 BIT #2 BAKER HUGHES 7 7/8" GX20L S/N: 5270290 IN @ 270'	24 2500				CN



GEOLOGIST ON LOCATION 1:15 P.M. 10/26/17

DISPLACE HOLE @ 2662'

CN

CN

CN

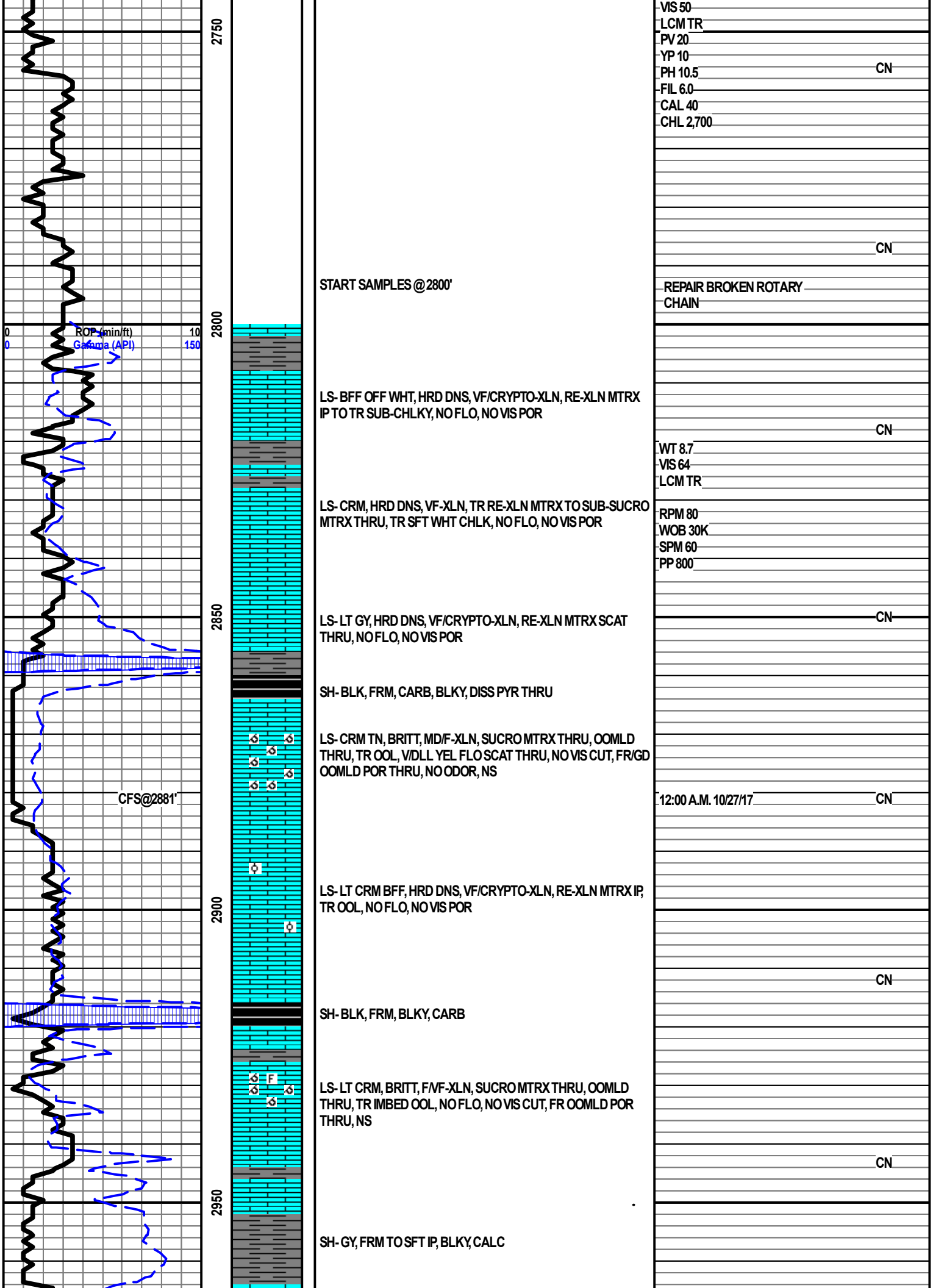
CN

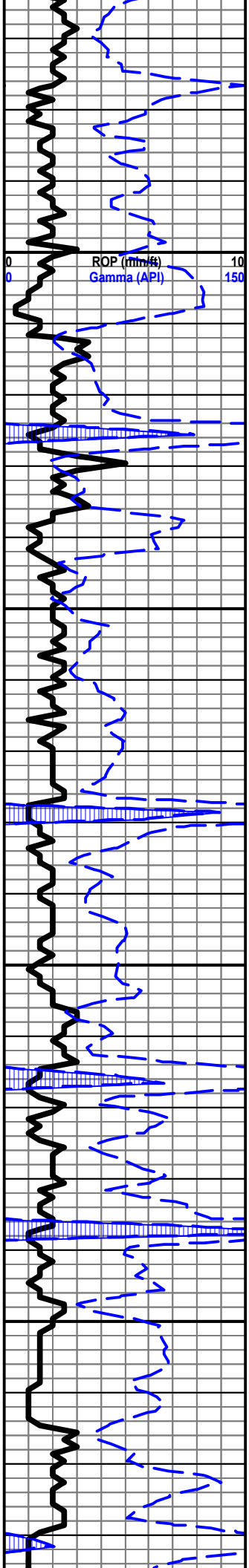
CN

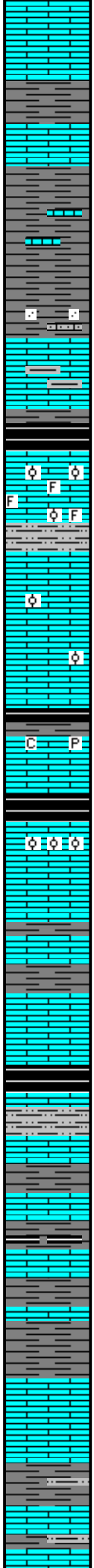
CN

CN

MUD CHECK @ 2740'
WT 8.7


0
ROP (min/ft)
10
0
Gamma (API)
150
2750
2800
2850
2900
2950
CFS@2881'
F
VIS 50
LCM TR
PV 20
YP 10
PH 10.5
CN
FIL 6.0
CAL 40
CHL 2,700
CN
START SAMPLES @ 2800'
REPAIR BROKEN ROTARY CHAIN
LS- BFF OFF WHT, HRD DNS, VF/CRYPTO-XLN, RE-XLN MTRX IP TO TR SUB-CHLKY, NO FLO, NO VIS POR
CN
WT 8.7
VIS 64
LCM TR
LS- CRM, HRD DNS, VF-XLN, TR RE-XLN MTRX TO SUB-SUCRO MTRX THRU, TR SFT WHT CHLK, NO FLO, NO VIS POR
RPM 80
WOB 30K
SPM 60
PP 800
LS- LT GY, HRD DNS, VF/CRYPTO-XLN, RE-XLN MTRX SCAT THRU, NO FLO, NO VIS POR
CN
SH- BLK, FRM, CARB, BLKY, DISS PYR THRU
LS- CRM TN, BRITT, MD/F-XLN, SUCRO MTRX THRU, OOMLD THRU, TR OOL, V/DLL YEL FLO SCAT THRU, NO VIS CUT, FR/GD OOMLD POR THRU, NO ODOR, NS
12:00 A.M. 10/27/17
CN
LS- LT CRM BFF, HRD DNS, VF/CRYPTO-XLN, RE-XLN MTRX IP, TR OOL, NO FLO, NO VIS POR
CN
SH- BLK, FRM, BLKY, CARB
LS- LT CRM, BRITT, F/VF-XLN, SUCRO MTRX THRU, OOMLD THRU, TR IMBED OOL, NO FLO, NO VIS CUT, FR OOMLD POR THRU, NS
CN
SH- GY, FRM TO SFT IP, BLKY, CALC





LS- BRN, HRD DNS, CRYPTO-XLN, TR RE-XLN MTRX, NO FLO, NO VIS POR

CN

LS- V/LT CRM, HRD DNS, CRYPTO-XLN, TR RE-XLN MTRX, IMBED LT GRN SH IP, NO FLO, NO VIS POR

SH- PRPLE LT GRN, FRM TO SFT IP, CALC IP TO SLTY IP, BLKY

CN

LS- LT CRM LT GY, HRD DNS, VF-XLN, RE-XLN MTRX IP, SLI SNDY LS IP, NO FLO, NO VIS POR

KANSAS CITY 3028' (-1618')

LS- CRM, HRD DNS, VF-XLN, RE-XLN MTRX IP, IMBED OOL & OTHER FOSS FRAGS THRU, NO FLO, POSS FRAC POR TO NO VIS POR THRU, NS

CN

LS- BFF, HRD DNS, VF-XLN, RE-XLN MTRX IP TO SUB-SUCRO MTRX IP, TR IMBED OOL, NO FLO, TR FRAC POR TO NO VIS POR THRU, NS

MUD CHECK @3061'
WT 8.8
VIS 57
LCM TR
PV 18
YP 10
PH 10.5
FIL 8.0
CAL 40
CHL 2,000

LS- BFF, HRD DNS, CRYPTO-XLN, RE-XLN MTRX IP, NO FLO, NO VIS POR

CN

LS- CRM TN, HRD, F/VF-XLN, SUCRO TO SUB-SUCRO MTRX THRU TO TR RE-XLN MTRX, IMBED OOL SCAT THRU, TR FINE CALC XLS, NO FLO, TR INTER-OOL POR TO NO VIS POR THRU, NS

CN

LS- TN LT GY CRM, HRD DNS, VF-XLN, RE-XLN MTRX THRU, NO FLO, NO VIS POR

LS- BFF, HRD DNS, VF-XLN, RE-XLN MTRX IP, LT GRN SLTST IP, NO VIS POR

CN

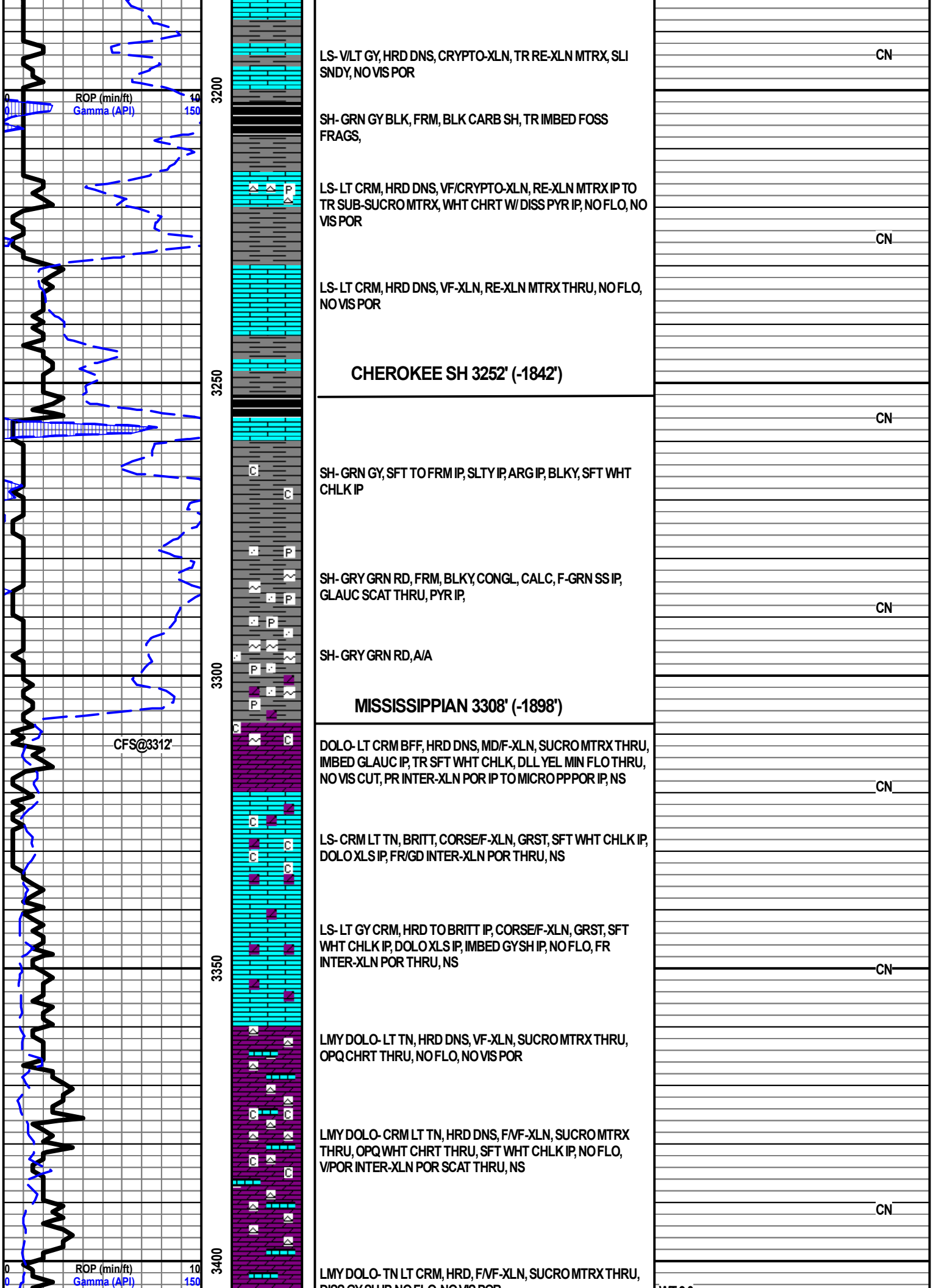
SH- GY GRN BLK, FRM, BLKY, SLTY TO TR CARB SH, TR ARG

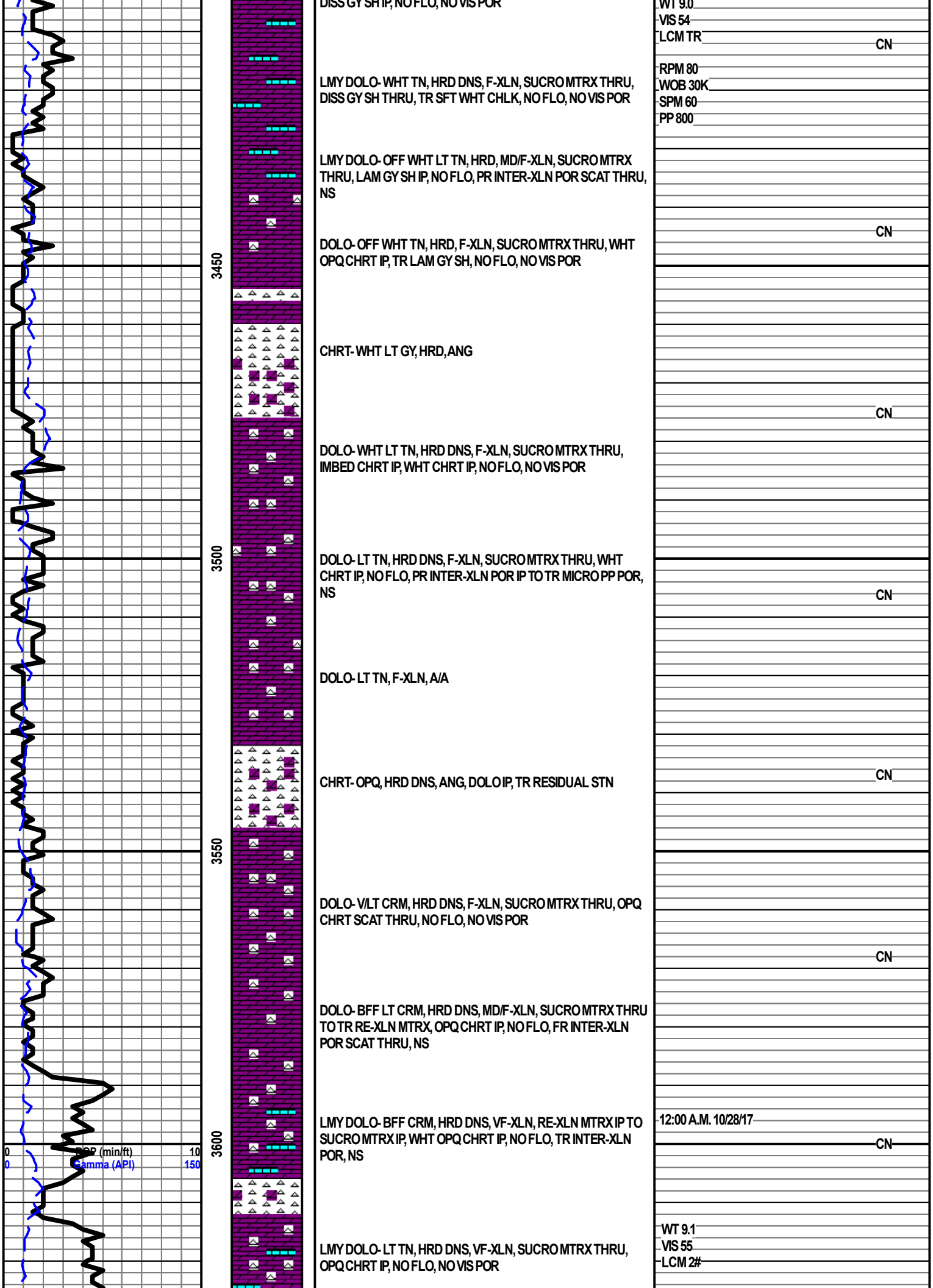
LS- LT TN, HRD DNS, VF-XLN, RE-XLN MTRX THRU, TR SFT WHT CHLK, NO FLO, NO VIS POR

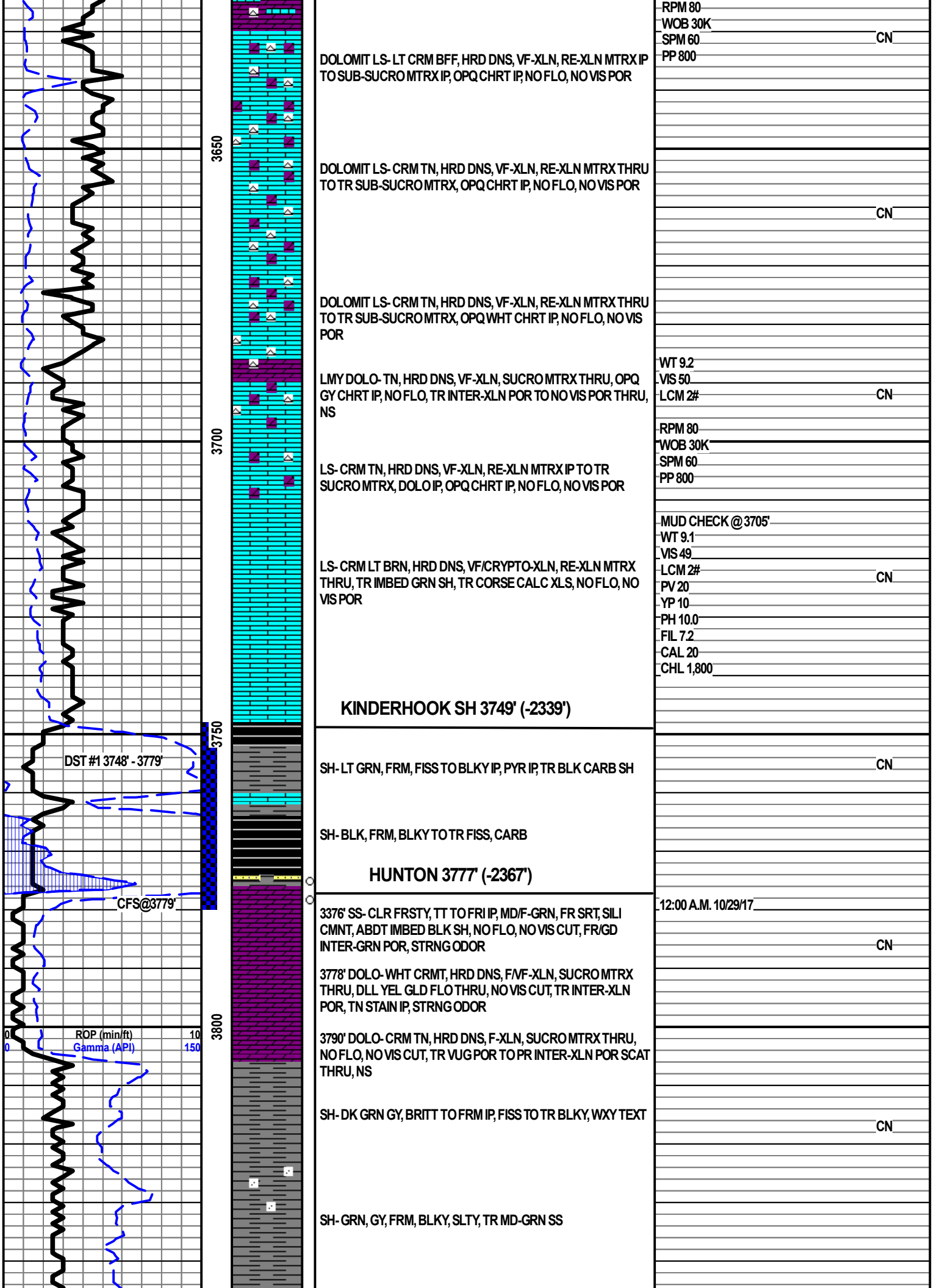
LS- CRM TN, MOTT, MD/VF-XLN, RE-XLN MTRX THRU, FRAC IP, TR IMBED OOL, NO FLO, FRAC POR TO TR INTER-XLN POR, NS

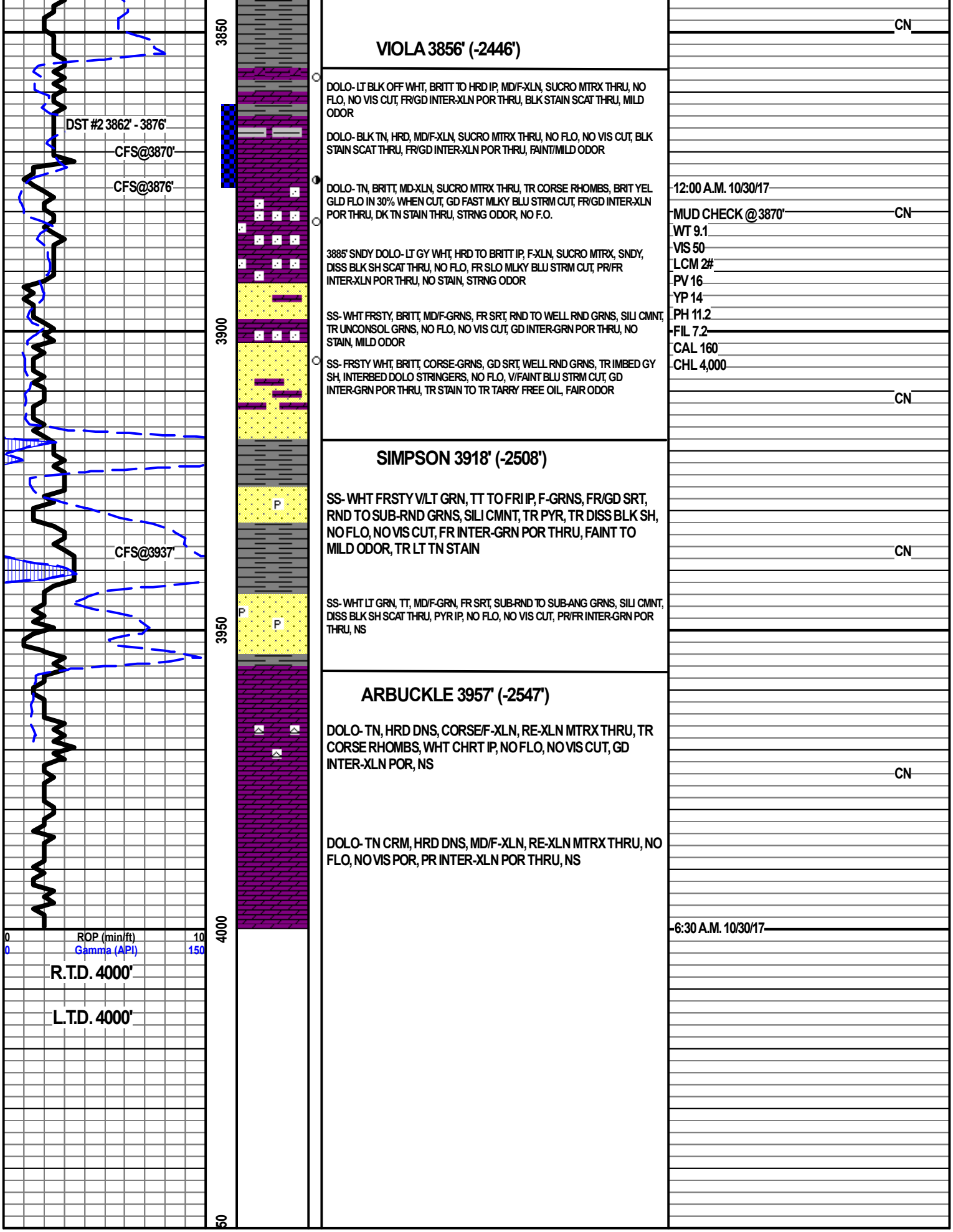
CN

LS- BFF LT CRM, HRD DNS, VF/CRYPTO-XLN, RE-XLN MTRX IP, TR IMBED SH, NO FLO, NO VIS POR


ROP (min/ft)
Gamma (API)
0
10
0
150
3200
3250
3300
3350
3400
CFS@3312'
LS- V/LT GY, HRD DNS, CRYPTO-XLN, TR RE-XLN MTRX, SLI SNDY, NO VIS POR
CN
SH- GRN GY BLK, FRM, BLK CARB SH, TR IMBED FOSS FRAGS,
LS- LT CRM, HRD DNS, VF/CRYPTO-XLN, RE-XLN MTRX IP TO TR SUB-SUCRO MTRX, WHT CHRT W/ DISS PYR IP, NO FLO, NO VIS POR
CN
LS- LT CRM, HRD DNS, VF-XLN, RE-XLN MTRX THRU, NO FLO, NO VIS POR
CHEROKEE SH 3252' (-1842')
CN
SH- GRN GY, SFT TO FRM IP, SLTY IP, ARG IP, BLKY, SFT WHT CHLK IP
SH- GRY GRN RD, FRM, BLKY, CONGL, CALC, F-GRN SS IP, GLAUC SCAT THRU, PYR IP,
CN
SH- GRY GRN RD, A/A
MISSISSIPPIAN 3308' (-1898')
DOLO- LT CRM BFF, HRD DNS, MD/F-XLN, SUCRO MTRX THRU, IMBED GLAUC IP, TR SFT WHT CHLK, DLL YEL MIN FLO THRU, NO VIS CUT, PR INTER-XLN POR IP TO MICRO PPPOR IP, NS
CN
LS- CRM LT TN, BRITT, CORSE/F-XLN, GRST, SFT WHT CHLK IP, DOLO XLS IP, FR/GD INTER-XLN POR THRU, NS
LS- LT GY CRM, HRD TO BRITT IP, CORSE/F-XLN, GRST, SFT WHT CHLK IP, DOLO XLS IP, IMBED GYSH IP, NO FLO, FR INTER-XLN POR THRU, NS
CN
LMY DOLO- LT TN, HRD DNS, VF-XLN, SUCRO MTRX THRU, OPQ CHRT THRU, NO FLO, NO VIS POR
LMY DOLO- CRM LT TN, HRD DNS, F/VF-XLN, SUCRO MTRX THRU, OPQ WHT CHRT THRU, SFT WHT CHLK IP, NO FLO, V/POR INTER-XLN POR SCAT THRU, NS
CN
LMY DOLO- TN LT CRM, HRD, F/VF-XLN, SUCRO MTRX THRU,


DISS GY SH IP, NO FLO, NO VIS POR
WT 9.0
VIS 54
LCM TR
CN
RPM 80
WOB 30K
SPM 60
PP 800
LMY DOLO- WHT TN, HRD DNS, F-XLN, SUCRO MTRX THRU, DISS GY SH THRU, TR SFT WHT CHLK, NO FLO, NO VIS POR
LMY DOLO- OFF WHT LT TN, HRD, MD/F-XLN, SUCRO MTRX THRU, LAM GY SH IP, NO FLO, PR INTER-XLN POR SCAT THRU, NS
CN
DOLO- OFF WHT TN, HRD, F-XLN, SUCRO MTRX THRU, WHT OPQ CHRT IP, TR LAM GY SH, NO FLO, NO VIS POR
3450
CHRT- WHT LT GY, HRD, ANG
CN
DOLO- WHT LT TN, HRD DNS, F-XLN, SUCRO MTRX THRU, IMBED CHRT IP, WHT CHRT IP, NO FLO, NO VIS POR
3500
DOLO- LT TN, HRD DNS, F-XLN, SUCRO MTRX THRU, WHT CHRT IP, NO FLO, PR INTER-XLN POR IP TO TR MICRO PP POR, NS
CN
DOLO- LT TN, F-XLN, A/A
CHRT- OPQ, HRD DNS, ANG, DOLO IP, TR RESIDUAL STN
CN
3550
DOLO- V/LT CRM, HRD DNS, F-XLN, SUCRO MTRX THRU, OPQ CHRT SCAT THRU, NO FLO, NO VIS POR
CN
DOLO- BFF LT CRM, HRD DNS, MD/F-XLN, SUCRO MTRX THRU TO TR RE-XLN MTRX, OPQ CHRT IP, NO FLO, FR INTER-XLN POR SCAT THRU, NS
LMY DOLO- BFF CRM, HRD DNS, VF-XLN, RE-XLN MTRX IP TO SUCRO MTRX IP, WHT OPQ CHRT IP, NO FLO, TR INTER-XLN POR, NS
12:00 A.M. 10/28/17
CN
3600
0
ROP (min/ft)
10
0
Gamma (API)
150
WT 9.1
VIS 55
LCM 2#
LMY DOLO- LT TN, HRD DNS, VF-XLN, SUCRO MTRX THRU, OPQ CHRT IP, NO FLO, NO VIS POR


3650
3700
3750
3800
DST #1 3748' - 3779'
CFS@3779'
ROP (min/ft) 0 10
Gamma (API) 0 150
DOLOMIT LS- LT CRM BFF, HRD DNS, VF-XLN, RE-XLN MTRX IP TO SUB-SUCRO MTRX IP, OPQ CHRT IP, NO FLO, NO VIS POR
DOLOMIT LS- CRM TN, HRD DNS, VF-XLN, RE-XLN MTRX THRU TO TR SUB-SUCRO MTRX, OPQ CHRT IP, NO FLO, NO VIS POR
DOLOMIT LS- CRM TN, HRD DNS, VF-XLN, RE-XLN MTRX THRU TO TR SUB-SUCRO MTRX, OPQ WHT CHRT IP, NO FLO, NO VIS POR
LMY DOLO- TN, HRD DNS, VF-XLN, SUCRO MTRX THRU, OPQ GY CHRT IP, NO FLO, TR INTER-XLN POR TO NO VIS POR THRU, NS
LS- CRM TN, HRD DNS, VF-XLN, RE-XLN MTRX IP TO TR SUCRO MTRX, DOLO IP, OPQ CHRT IP, NO FLO, NO VIS POR
LS- CRM LT BRN, HRD DNS, VF/CRYPTO-XLN, RE-XLN MTRX THRU, TR IMBED GRN SH, TR CORSE CALC XLS, NO FLO, NO VIS POR
KINDERHOOK SH 3749' (-2339')
SH- LT GRN, FRM, FISS TO BLKY IP, PYR IP, TR BLK CARB SH
SH- BLK, FRM, BLKY TO TR FISS, CARB
HUNTON 3777' (-2367')
3376' SS- CLR FRSTY, TT TO FRI IP, MD/F-GRN, FR SRT, SILI CMNT, ABDT IMBED BLK SH, NO FLO, NO VIS CUT, FR/GD INTER-GRN POR, STRNG ODOR
3778' DOLO- WHT CRMT, HRD DNS, F/VF-XLN, SUCRO MTRX THRU, DLL YEL GLD FLO THRU, NO VIS CUT, TR INTER-XLN POR, TN STAIN IP, STRNG ODOR
3790' DOLO- CRM TN, HRD DNS, F-XLN, SUCRO MTRX THRU, NO FLO, NO VIS CUT, TR VUG POR TO PR INTER-XLN POR SCAT THRU, NS
SH- DK GRN GY, BRITT TO FRM IP, FISS TO TR BLKY, WXY TEXT
SH- GRN, GY, FRM, BLKY, SLTY, TR MD-GRN SS
RPM 80
WOB 30K
SPM 60
PP 800
CN
CN
WT 9.2
VIS 50
LCM 2#
CN
RPM 80
WOB 30K
SPM 60
PP 800
MUD CHECK @ 3705'
WT 9.1
VIS 49
LCM 2#
CN
PV 20
YP 10
PH 10.0
FIL 7.2
CAL 20
CHL 1,800
CN
12:00 A.M. 10/29/17
CN
CN



VIOLA 3856' (-2446')

DOLO- LT BLK OFF WHT, BRITT TO HRD IP, MD/F-XLN, SUCRO MTRX THRU, NO FLO, NO VIS CUT, FR/GD INTER-XLN POR THRU, BLK STAIN SCAT THRU, MILD ODOR

DOLO- BLK TN, HRD, MD/F-XLN, SUCRO MTRX THRU, NO FLO, NO VIS CUT, BLK STAIN SCAT THRU, FR/GD INTER-XLN POR THRU, FAINT/MILD ODOR

DOLO- TN, BRITT, MD-XLN, SUCRO MTRX THRU, TR CORSE RHOMBS, BRIT YEL GLD FLO IN 30% WHEN CUT, GD FAST MLKY BLU STRM CUT, FR/GD INTER-XLN POR THRU, DK TN STAIN THRU, STRNG ODOR, NO F.O.

3885' SNDY DOLO- LT GY WHT, HRD TO BRITT IP, F-XLN, SUCRO MTRX, SNDY, DISS BLK SH SCAT THRU, NO FLO, FR SLO MLKY BLU STRM CUT, PR/FR INTER-XLN POR THRU, NO STAIN, STRNG ODOR

SS- WHT FRSTY, BRITT, MD/F-GRNS, FR SRT, RND TO WELL RND GRNS, SILI CMNT, TR UNCONSOL GRNS, NO FLO, NO VIS CUT, GD INTER-GRN POR THRU, NO STAIN, MILD ODOR

SS- FRSTY WHT, BRITT, CORSE-GRNS, GD SRT, WELL RND GRNS, TR IMBED GY SH, INTERBED DOLO STRINGERS, NO FLO, V/FAINT BLU STRM CUT, GD INTER-GRN POR THRU, TR STAIN TO TR TARRY FREE OIL, FAIR ODOR

SIMPSON 3918' (-2508')

SS- WHT FRSTY V/LT GRN, TT TO FRI IP, F-GRNS, FR/GD SRT, RND TO SUB-RND GRNS, SILI CMNT, TR PYR, TR DISS BLK SH, NO FLO, NO VIS CUT, FR INTER-GRN POR THRU, FAINT TO MILD ODOR, TR LT TN STAIN

SS- WHT LT GRN, TT, MD/F-GRN, FR SRT, SUB-RND TO SUB-ANG GRNS, SILI CMNT, DISS BLK SH SCAT THRU, PYR IP, NO FLO, NO VIS CUT, PR/FR INTER-GRN POR THRU, NS

ARBUCKLE 3957' (-2547')

DOLO- TN, HRD DNS, CORSE/F-XLN, RE-XLN MTRX THRU, TR CORSE RHOMBS, WHT CHRT IP, NO FLO, NO VIS CUT, GD INTER-XLN POR, NS

DOLO- TN CRM, HRD DNS, MD/F-XLN, RE-XLN MTRX THRU, NO FLO, NO VIS POR, PR INTER-XLN POR THRU, NS

CN

12:00 A.M. 10/30/17

MUD CHECK @ 3870' CN
WT 9.1
VIS 50
LCM 2#
PV 16
YP 14
PH 11.2
FIL 7.2
CAL 160
CHL 4,000

CN

CN

CN

6:30 A.M. 10/30/17

DRILL STEM TEST REPORT

M&M Exploration

4257 Main st #230
Westminster CO, 80031

ATTN: Mike Austin

15w/24s/2 Harvey KS

Stutzman #1

Job Ticket: 62010 **DST#: 1**

Test Start: 2017.10.28 @ 19:50:00

GENERAL INFORMATION:

Formation: **Hunton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 21:57:20
Time Test Ended: 04:01:50

Test Type: Conventional Bottom Hole (Initial)
Tester: Jason Cash/Jimmy Ric
Unit No: #80

Interval: 3748.00 ft (KB) To 3779.00 ft (KB) (TVD)
Total Depth: 3779.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Poor

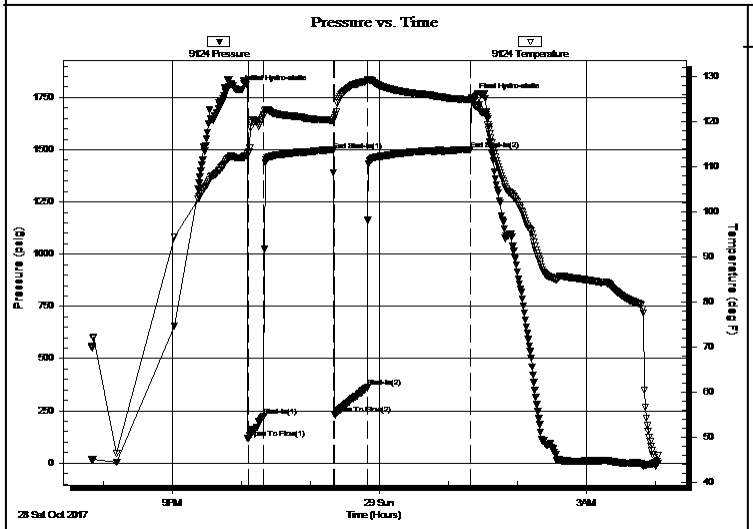
Reference Elevations: 1410.00 ft (KB)
1402.00 ft (CF)
KB to GR/CF: 8.00 ft

Serial #: 9124 **Inside**

Press@RunDepth: 361.90 psig @ 3749.00 ft (KB)
Start Date: 2017.10.28 End Date: 2017.10.29
Start Time: 19:50:05 End Time: 04:01:50

Capacity: 8000.00 psig
Last Calib.: 1899.12.30
Time On Btm: 2017.10.28 @ 21:57:20
Time Off Btm: 2017.10.29 @ 01:20:20

TEST COMMENT: IF- Weak Blow Building to strong blow 7 minutes into initial flow period.
FF -Weak Blow Building to strong blow 7 minutes into final flow period.
FS-1 1/2 inch blow back during final shut-in period.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1787.41	111.95	Initial Hydro-static
9	116.86	112.98	Open To Flow (1)
23	223.18	121.56	Shut-In(1)
83	1497.25	120.30	End Shut-In(1)
84	233.41	120.86	Open To Flow (2)
113	361.90	128.92	Shut-In(2)
202	1500.08	124.80	End Shut-In(2)
203	1749.97	124.76	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
325.00	Mud cut w ater 93%W &7%M	2.92
120.00	Heavy mud cut w ater 60%W&40%M	1.68
120.00	Heavy w ater cut mud 30%W&70%M	1.68
90.00	Drilling mud 100%M	1.26

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

TRILOBITE TESTING, INC.

M&M Exploration

4257 Main st #230
Westminster CO, 80031

ATTN: Mike Austin

15w/24s/2 Harvey KS

Stutzman #1

Job Ticket: 62010 **DST#: 1**

Test Start: 2017.10.28 @ 19:50:00

GENERAL INFORMATION:

Formation: **Hunton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 21:57:20
Time Test Ended: 04:01:50

Test Type: Conventional Bottom Hole (Initial)
Tester: Jason Cash/Jimmy Ric
Unit No: #80

Interval: 3748.00 ft (KB) To 3779.00 ft (KB) (TVD)
Total Depth: 3779.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Poor

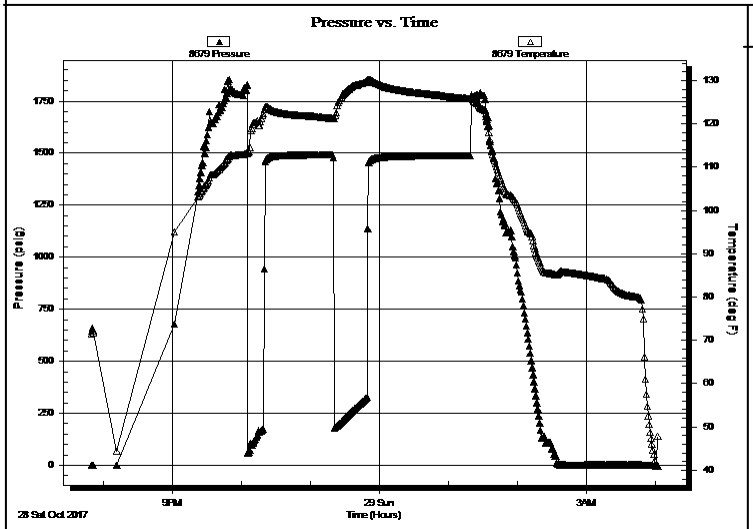
Reference Elevations: 1410.00 ft (KB)
1402.00 ft (CF)
KB to GR/CF: 8.00 ft

Serial #: 8679 **Outside**

Press@RunDepth: psig @ 3749.00 ft (KB)
Start Date: 2017.10.28 End Date: 2017.10.29
Start Time: 19:50:05 End Time: 04:01:50

Capacity: 8000.00 psig
Last Calib.: 1899.12.30
Time On Btm:
Time Off Btm:

TEST COMMENT: IF- Weak Blow Building to strong blow 7 minutes into initial flow period.
FF -Weak Blow Building to strong blow 7 minutes into final flow period.
FS-1 1/2 inch blow back during final shut-in period.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
325.00	Mud cut w ater 93%W &7%M	2.92
120.00	Heavy mud cut w ater 60%W&40%M	1.68
120.00	Heavy w ater cut mud 30%W&70%M	1.68
90.00	Drilling mud 100%M	1.26

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

FLUID SUMMARY

M&M Exploration

4257 Main st #230
Westminster CO, 80031

ATTN: Mike Austin

15w/24s/2 Harvey KS

Stutzman #1

Job Ticket: 62010 **DST#: 1**

Test Start: 2017.10.28 @ 19:50:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	105000 ppm
Viscosity:	50.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	7.00 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	2000.00 ppm				
Filter Cake:	inches				

Recovery Information

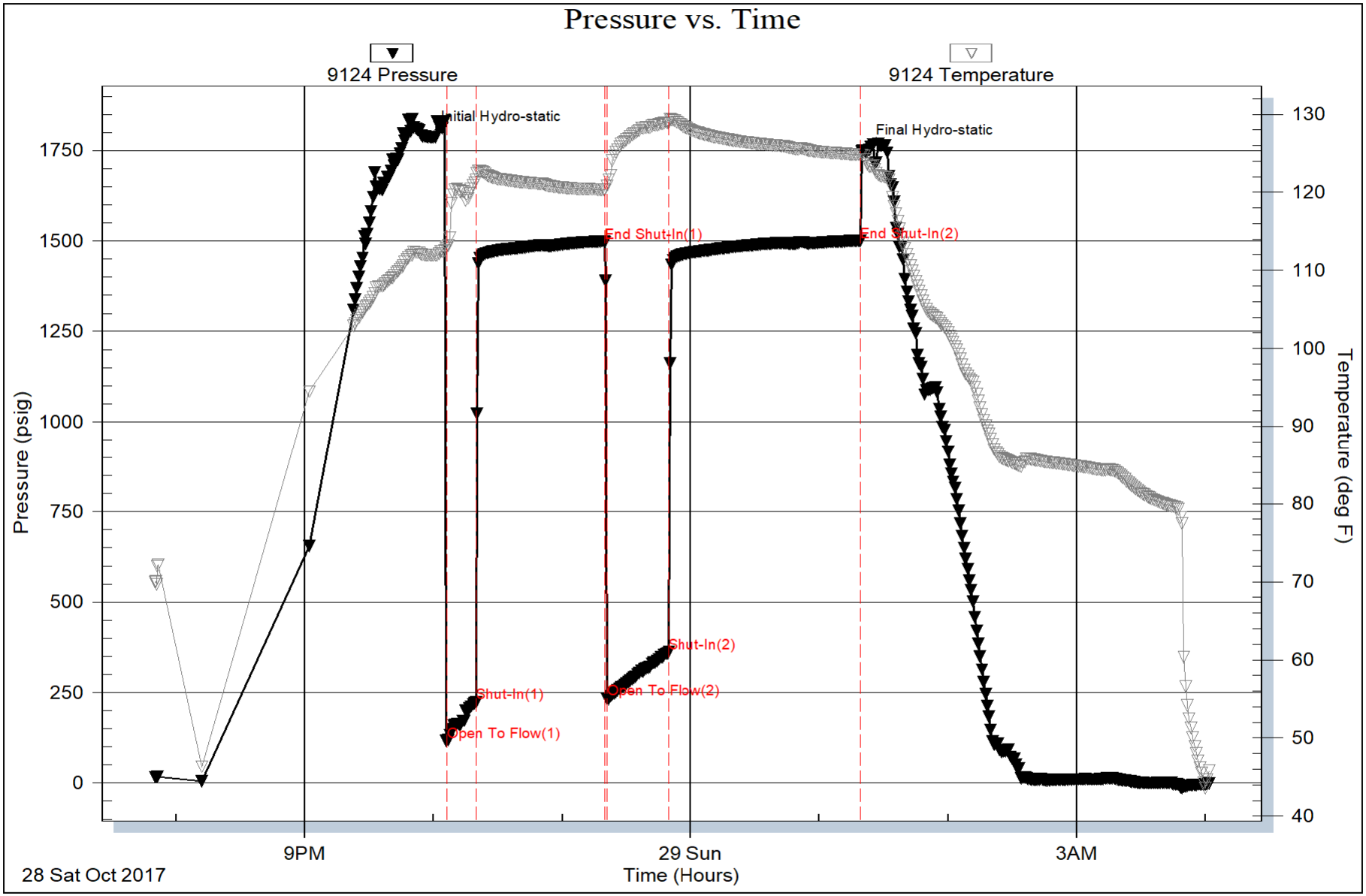
Recovery Table

Length ft	Description	Volume bbl
325.00	Mud cut w ater 93%W &7%M	2.915
120.00	Heavy mud cut w ater 60%W&40%M	1.683
120.00	Heavy w ater cut mud 30%W&70%M	1.683
90.00	Drilling mud 100%M	1.262

Total Length: 655.00 ft Total Volume: 7.543 bbl

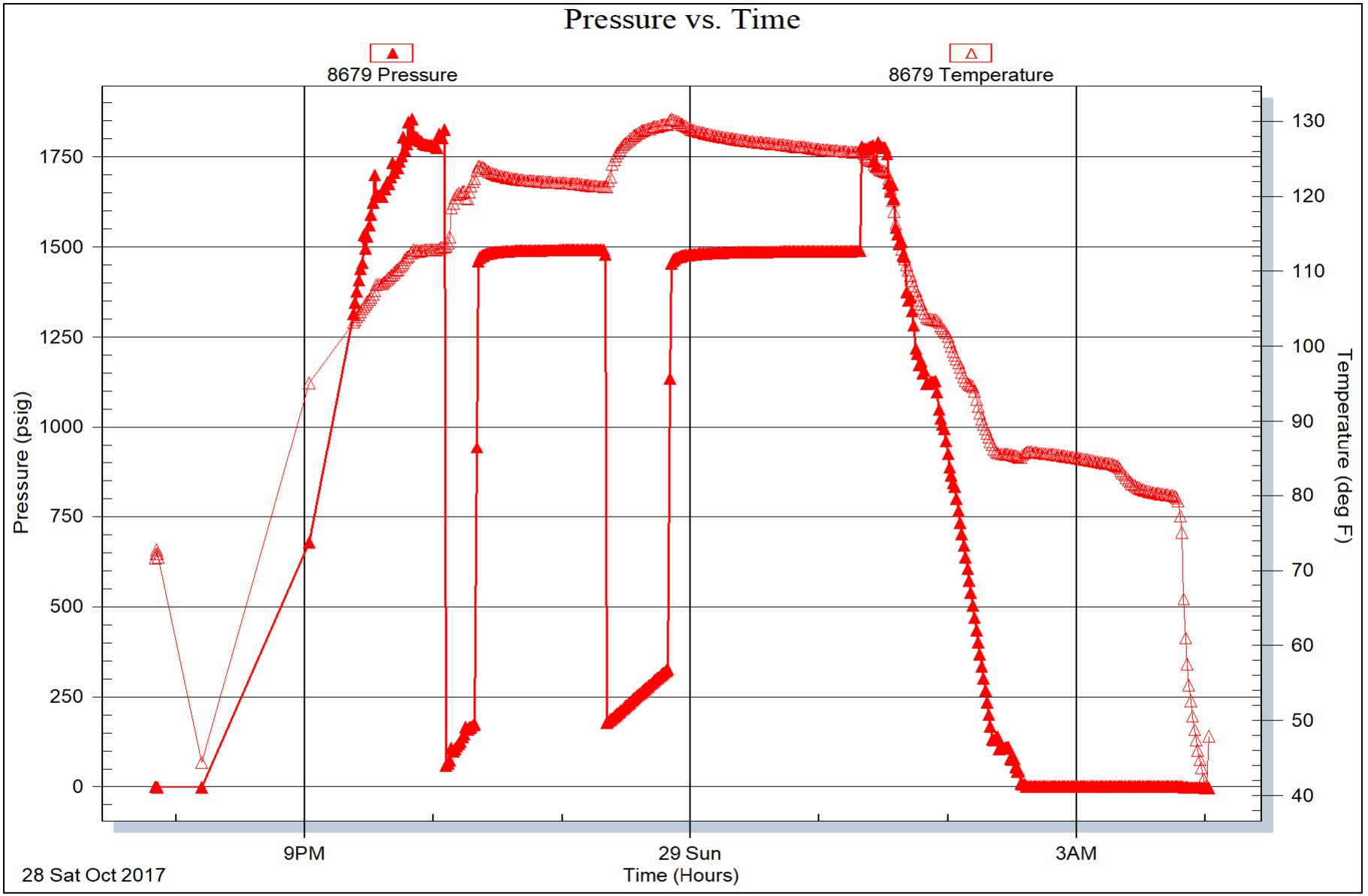
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 9124 **Inside** M&M Exploration Stutzman #1 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 62010 Printed: 2017.10.29 @ 07:56:03

Serial #: 8679 **Outside** M&M Exploration Stutzman #1 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 62010 Printed: 2017.10.29 @ 07:56:04

DRILL STEM TEST REPORT

M&M Exploration

4257 Main st #230
Westminster CO, 80031

ATTN: Mike Austin

15w/24s/2 Harvey KS

Stutzman #1

Job Ticket: 62011 **DST#: 2**

Test Start: 2017.10.29 @ 15:31:00

GENERAL INFORMATION:

Formation: **Viola**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 17:05:40
Time Test Ended: 21:54:39

Test Type: Conventional Bottom Hole (Initial)
Tester: Jason Cash
Unit No: 80

Interval: 3862.00 ft (KB) To 3876.00 ft (KB) (TVD)
Total Depth: 3876.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Poor

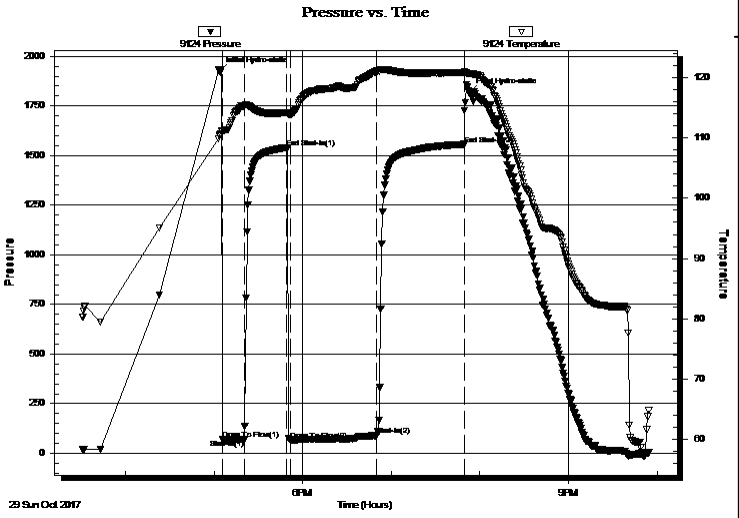
Reference Elevations: 1410.00 ft (KB)
1402.00 ft (CF)
KB to GR/CF: 8.00 ft

Serial #: 9124 **Inside**

Press@RunDepth: 89.39 psig @ 3863.00 ft (KB)
Start Date: 2017.10.29 End Date: 2017.10.29
Start Time: 15:31:05 End Time: 21:54:39

Capacity: 8000.00 psig
Last Calib.: 1899.12.30
Time On Btm: 2017.10.29 @ 17:04:00
Time Off Btm: 2017.10.29 @ 19:52:39

TEST COMMENT: IF-Weak blow building to 1 inch during initial flow period.
FF-Weak blow building to 2 inchs druing final flow period.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1921.00	110.45	Initial Hydro-static
2	69.60	110.95	Open To Flow (1)
17	69.53	115.27	Shut-In(1)
46	1541.50	114.20	End Shut-In(1)
48	65.35	113.87	Open To Flow (2)
106	89.39	121.04	Shut-In(2)
166	1556.91	120.83	End Shut-In(2)
169	1818.71	120.66	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
70.00	Heavy w ater cut mud 29%W &71%M	0.52

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

TRILOBITE TESTING, INC.

M&M Exploration

4257 Main st #230
Westminster CO, 80031

ATTN: Mike Austin

15w/24s/2 Harvey KS

Stutzman #1

Job Ticket: 62011 **DST#: 2**

Test Start: 2017.10.29 @ 15:31:00

GENERAL INFORMATION:

Formation: **Viola**
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Hole Diameter: 7.88 inches Hole Condition: Poor

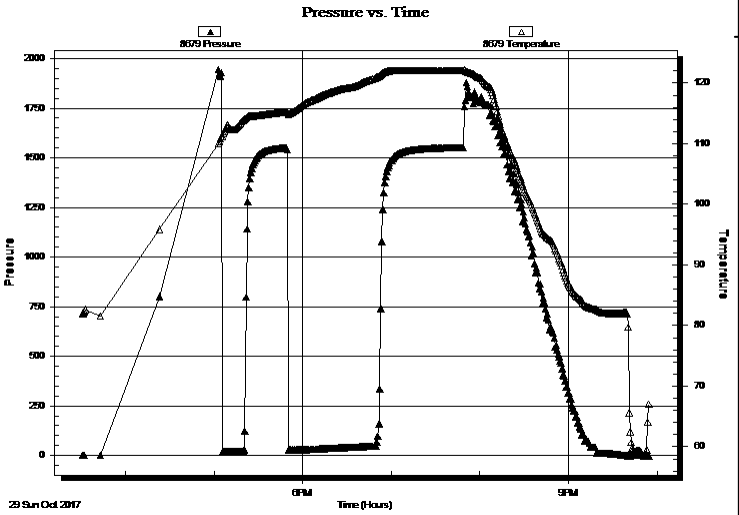
Reference Elevations: 1410.00 ft (KB)
1402.00 ft (CF)
KB to GR/CF: 8.00 ft

Serial #: 8679 **Outside**

Press@RunDepth: psig @ 3863.00 ft (KB)
Start Date: 2017.10.29 End Date: 2017.10.29
Start Time: 15:31:05 End Time: 21:54:39

Capacity: 8000.00 psig
Last Calib.: 1899.12.30
Time On Btm:
Time Off Btm:

TEST COMMENT: IF-Weak blow building to 1 inch during initial flow period.
FF-Weak blow building to 2 inchs druing final flow period.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
70.00	Heavy w ater cut mud 29%W &71%M	0.52

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

FLUID SUMMARY

M&M Exploration

4257 Main st #230
Westminster CO, 80031

ATTN: Mike Austin

15w/24s/2 Harvey KS

Stutzman #1

Job Ticket: 62011 **DST#: 2**

Test Start: 2017.10.29 @ 15:31:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	27000 ppm
Viscosity:	50.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	11.19 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	4000.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
70.00	Heavy water cut mud 29%W &71%M	0.522

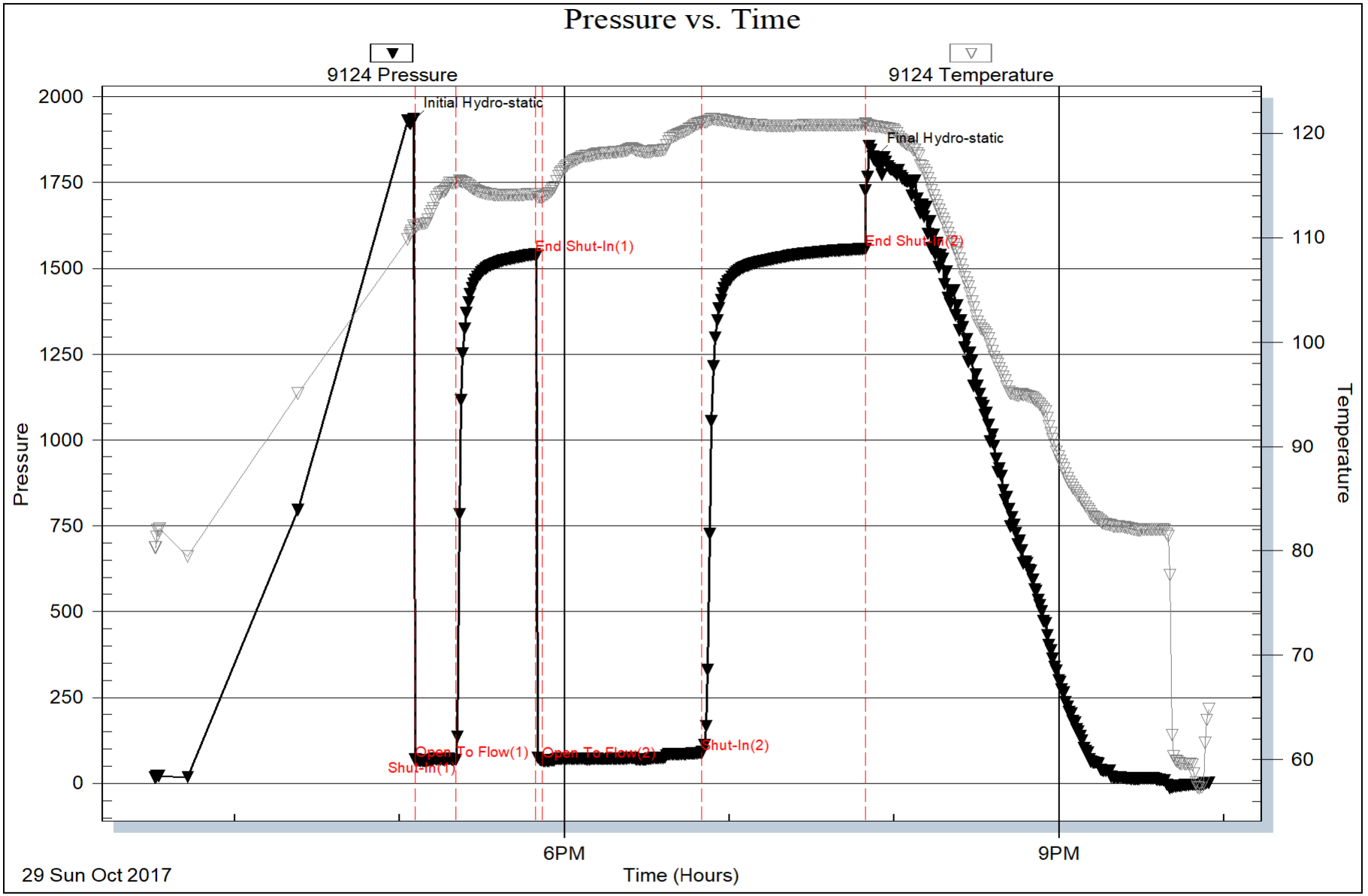
Total Length: 70.00 ft Total Volume: 0.522 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

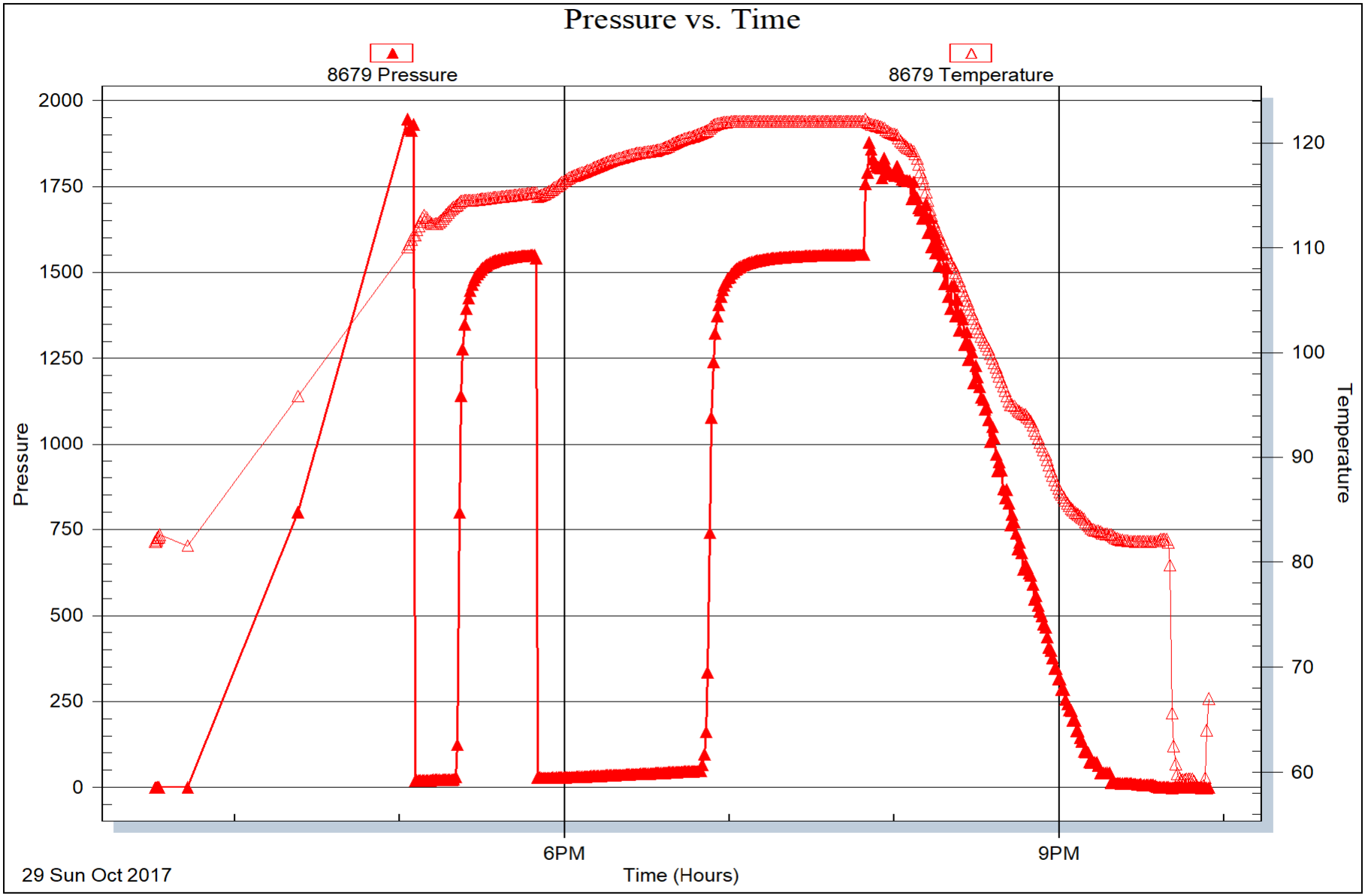
Recovery Comments:

Serial #: 9124 **Inside** M&M Exploration Stutzman #1 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 62011 Printed: 2017.10.30 @ 06:36:09

Serial #: 8679 **Outside** M&M Exploration Stutzman #1 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 62011 Printed: 2017.10.30 @ 06:36:09

BASIC ENERGY SERVICES

PAGE	CUST NO	YARD #	INVOICE DATE
1 of 1	1002800	1718	10/26/2017

INVOICE NUMBER

92553008

Pratt (620) 672-1201

BILL TO
M & M EXPLORATION INC
4257 MAIN STREET SUITE 230
WESTMINSTER
CO US 80031
ATTN: MIKE AUSTIN

JOB SITE
LEASE NAME Stutzman #1
LOCATION
COUNTY Harvey
STATE KS
JOB DESCRIPTION Cement-New Well Casing/Pi
JOB CONTACT

71730

JOB #	EQUIPMENT #	PURCHASE ORDER NO.	TERMS	DUE DATE
41065039	20920		Net - 30 days	11/25/2017

	QTY	U of M	UNIT PRICE	INVOICE AMOUNT
For Service Dates: 10/23/2017 to 10/23/2017				
0041065039				
171816079A Cement-New Well Casing/Pi 10/23/2017				
Cement-8 5/8" S.P.				
60/40 POZ	250.00	EA	6.60	1,650.00 T
Celloflake	63.00	EA	2.03	128.20 T
Calcium Chloride	645.00	EA	0.58	372.49 T
"Unit Mileage Chg (PU, cars one way)"	75.00	MI	2.47	185.62
Heavy Equipment Mileage	150.00	MI	4.13	618.75
806 Prop & Bulk Del Chgs per ton mil	1.00	EA	1,108.60	1,108.60
Depth Charge; 0-500'	1.00	EA	550.00	550.00
Blending & Mixing Service Charge	250.00	BAG	0.77	192.50
"Service Supervisor, first 8 hrs on loc.	1.00	EA	96.25	96.25

PLEASE REMIT TO:
BASIC ENERGY SERVICES,LP
PO BOX 841903
DALLAS,TX 75284-1903

SEND OTHER CORRESPONDENCE TO:
BASIC ENERGY SERVICES,LP
801 CHERRY ST, STE 2100
FORT WORTH, TX 76102

SUB TOTAL	**4,902.41**
TAX	**182.81**
INVOICE TOTAL	**5,085.22**

BASIC ENERGY SERVICES

PAGE	CUST NO	YARD #	INVOICE DATE
1 of 1	1002800	1718	11/02/2017

INVOICE NUMBER

92559740

Pratt (620) 672-1201

BILL TO
M & M EXPLORATION INC
4257 MAIN STREET SUITE 230
WESTMINSTER
CO US 80031
ATTN: MIKE AUSTIN

JOB SITE
LEASE NAME Stutzman #1 71730
LOCATION
COUNTY Harvey
STATE KS
JOB DESCRIPTION Cement-New Well Casing/Pi
JOB CONTACT

JOB #	EQUIPMENT #	PURCHASE ORDER NO.	TERMS	DUE DATE
41066743	86779		Net - 30 days	12/02/2017

	QTY	U of M	UNIT PRICE	INVOICE AMOUNT
For Service Dates: 10/31/2017 to 10/31/2017				
0041066743				
171816126A Cement-New Well Casing/Pi 10/31/2017				
Cement-Plug to Abandon				
60/40 POZ	175.00	EA	6.43	1,125.81 T
Celloflake	44.00	EA	1.98	87.28 T
Cement Gel	303.00	EA	0.13	40.61 T
"Unit Mileage Chg (PU, cars one way)"	75.00	MI	2.41	180.93
Heavy Equipment Mileage	150.00	MI	4.02	603.11
Proppant & Bulk Del. Chgs., per ton mil	615.00	EA	1.34	824.25
Depth Charge; 3001-4000'	1.00	EA	1,157.98	1,157.98
Blending & Mixing Service Charge	175.00	BAG	0.75	131.34
"Service Supervisor, first 8 hrs on loc.	1.00	EA	94.15	94.15

PLEASE REMIT TO:
BASIC ENERGY SERVICES,LP
PO BOX 841903
DALLAS,TX 75284-1903

SEND OTHER CORRESPONDENCE TO:
BASIC ENERGY SERVICES,LP
801 CHERRY ST, STE 2100
FORT WORTH, TX 76102

SUB TOTAL	**4,245.46**
TAX	**106.56**
INVOICE TOTAL	**4,352.02**

BASIC ENERGY SERVICES
PRESSURE PUMPING & WIRELINE

10244 NE Hwy. 61
P.O. Box 8613
Pratt, Kansas 67124
Phone 620-672-1201

FIELD SERVICE TICKET

1718 16126 A

DATE TICKET NO.

DATE OF JOB 10/31/17 DISTRICT	NEW WELL ☐ OLD WELL ☐ PROD ☐ INJ ☐ WDW ☐ CUSTOMER ORDER NO.:
CUSTOMER M.J.M. Corporation, Inc.	LEASE Stutzman WELL NO. 1
ADDRESS	COUNTY Harvey STATE KS
CITY STATE	SERVICE CREW Scott, McCrary, Riley
AUTHORIZED BY Alan Vratil	JOB TYPE: Plug to Abandon 2HB

EQUIPMENT#	HRS	EQUIPMENT#	HRS	EQUIPMENT#	HRS
66776	1.5				
21610	1.75				

	DATE	AM PM	TIME
TRUCK CALLED			
ARRIVED AT JOB	10/31/17	AM PM	7:45
START OPERATION	10/31/17	AM PM	8:45
FINISH OPERATION	10/31/17	AM PM	12:45
RELEASED	10/31/17	AM PM	1:15
MILES FROM STATION TO WELL			

CONTRACT CONDITIONS: (This contract must be signed before the job is commenced or merchandise is delivered).
The undersigned is authorized to execute this contract as an agent of the customer. As such, the undersigned agrees and acknowledges that this contract for services, materials, products, and/or supplies includes all of and only those terms and conditions appearing on the front and back of this document. No additional or substitute terms and/or conditions shall become a part of this contract without the written consent of an officer of Basic Energy Services LP.

SIGNED
(WELL OWNER, OPERATOR, CONTRACTOR OR AGENT)

ITEM/PRICE REF. NO.	MATERIAL, EQUIPMENT AND SERVICES USED	UNIT	QUANTITY	UNIT PRICE	$ AMOUNT
CP103	60/40 Poz	SK	175		
CC102	Calcflake	lb	44		
CC200	Cement Gel	lb	303		
EM10	Unit Mileage Charge Pickup	MI	75		
E101	Heavy Equipment Mileage	MI	150		
E113	Proppant Bulk Delivery	TM	615		
CE204	Depth Charge 3001-4000'	HRS	1		
CE240	Blending & Mixing Service	SK	175		
S003	Service Supervisor 1st Stage	EA	1		

SUB TOTAL	
SERVICE & EQUIPMENT %TAX ON $	
MATERIALS %TAX ON $	
TOTAL	4,245.46

CHEMICAL / ACID DATA:

SERVICE REPRESENTATIVE

THE ABOVE MATERIAL AND SERVICE ORDERED BY CUSTOMER AND RECEIVED BY:
(WELL OWNER OPERATOR CONTRACTOR OR AGENT)

FIELD SERVICE ORDER NO.

CLOUD LITHO - Abilene, TX

BASIC energy services, L.P.

TREATMENT REPORT

Customer	Lease No.	Date
Lease	Well #	

Field Order #	Station	Casing	Depth	County	State
Type Job		Formation		Legal Description	

PIPE DATA		PERFORATING DATA		FLUID USED	TREATMENT RESUME		
Casing Size	Tubing Size	Shots/Ft		Acid	RATE	PRESS	ISIP
Depth	Depth	From	To	Pre Pad	Max		5 Min.
Volume	Volume	From	To	Pad	Min		10 Min.
Max Press	Max Press	From	To	Frac	Avg		15 Min.
Well Connection	Annulus Vol.	From	To		HHP Used		Annulus Pressure
Plug Depth	Packer Depth	From	To	Flush	Gas Volume		Total Load

Customer Representative	Station Manager	Treater

Service Units												
Driver Names												

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
7:45					On location Safety Meeting
8:30					Break Circulation W/ fresh water
8:45	400			5	Pump 100 sacks - 345 sx
8:46	320		15	5	Start Cement 3 sks gel
8:48	100		8.9	5	Start Displacement
900	0		54	0	Shut down
					300'
					Test hole to 1000
11:08	110			4	Pump 100 Sacks
11:11	30		7	4	Start Cement 3 sks gel
11:14	40		8.9	4	Start Displacement
11:15	10		45	0	Shut down
					320'
					Test hole to 1000
11:27	100			4	Pump 100 Sacks
11:28	70		5	4	Start Cement 3 sks gel
11:30	40		35	4	Start Displacement
11:32	0		35	0	Shut down
					60'
11:58	10			3.5	Start Cement 3 sks gel
12:00	10		4.5	3.5	Start Displacement
12:02	0		5	0	Shut down

10244 NE Hiway 61 • P.O. Box 8613 • Pratt, KS 67124-8613 • (620) 672-1201 • Fax (620) 672-5383

Taylor Printing, Inc. 620-672-3656

BASiC energy services, L.P.

TREATMENT REPORT

Customer	Lease No.	Date
M M Exploration		10/31/17
Lease	**Well #**	
[illegible]	1	

Field Order #	Station	Casing	Depth	County	State
161261	Pratt KS	D.P.	3455	[illegible]	KS

Type Job	Formation	Legal Description
Plug to Abandon 242		

PIPE DATA		PERFORATING DATA		FLUID USED	TREATMENT RESUME		
Casing Size [illegible]	Tubing Size	Shots/Ft		Acid	RATE	PRESS	ISIP
Depth 3455	Depth	From	To	Pre Pad	Max		5 Min.
Volume 56	Volume	From	To	Pad	Min		10 Min.
Max Press 1000	Max Press	From	To	Frac	Avg		15 Min.
Well Connection [illegible]	Annulus Vol.	From	To		HHP Used		Annulus Pressure
Plug Depth	Packer Depth	From	To	Flush	Gas Volume		Total Load

Customer Representative	Station Manager	Treater
[illegible]	[illegible]	Scott G.

Service Units											
Driver Names											

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
12:23	0			3	Plug Rat hole 30sks 60/40
12:25	0		7.5	0	Shut down
12:28	0			3	Plug Mouse hole 20sks [illegible]
12:30	0		5.5	0	Shut down
12:32					Wash up Equipment
12:45					Job Complete

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Taylor Printing, Inc. 620-672-3656