KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

1066311

Form ACO-1
June 2009
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: Mike Austin
Phone: (303) 438-1991
CONTRACTOR: License # 33350
Name: Southwind Drilling, Inc.
Wellsite Geologist: Mike Pollok
Purchaser: ONEOK

Designate Type of Completion:

- [x] New Well
- [ ] Re-Entry
- [ ] Workover

- [x] Oil
- [ ] WSW
- [ ] SWD
- [ ] SIOW
- [ ] Gas
- [ ] D&A
- [ ] ENHR
- [ ] SIGW
- [ ] OG
- [ ] GSW
- [ ] Temp. Abd.
- [ ] 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 ENHR
- [ ] Conv. to SWD
- [ ] Conv. to GSW
- [ ] Plug Back: Plug Back Total Depth
- [ ] Commingled Permit #:
- [ ] Dual Completion Permit #:
- [ ] SWD Permit #:
- [ ] ENHR Permit #:
- [ ] GSW Permit #:

7/11/2011	7/21/2011	8/11/2011
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No. 15 - 15-007-23701-00-00
Spot Description:
NW - SE - SW - SW Sec. 19 Twp. 34 S. R. 14 [ ] East [x] West
500 Feet from [ ] North / [x] South Line of Section
950 Feet from [ ] East / [x] West Line of Section
Footages Calculated from Nearest Outside Section Corner:
[ ] NE [ ] NW [ ] SE [x] SW
County: Barber
Lease Name: Z BAR Well #: 19-13
Field Name:
Producing Formation: Mississippian
Elevation: Ground: 1656 Kelly Bushing: 1668
Total Depth: 5100 Plug Back Total Depth: 5060
Amount of Surface Pipe Set and Cemented at: 911 Feet
Multiple Stage Cementing Collar Used? [ ] Yes [x] 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: 0 ppm Fluid volume: 0 bbls
Dewatering method used: Evaporated
Location of fluid disposal if hauled offsite:
Operator Name:
Lease Name: License #:
Quarter Sec. Twp. S. R. [ ] East [ ] West
County: Permit #:

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

- [x] **Letter of Confidentiality Received**
  Date: 10/27/2011
- [x] **Confidential Release Date:** 10/26/2013
- [x] **Wireline Log Received**
- [x] **Geologist Report Received**
- [ ] **UIC Distribution**

ALT [x] **I** [ ] **II** [ ] **III** **Approved by:** NAOMI JAMES **Date:** 11/03/2011

Side Two

1066311

Operator Name: M & M Exploration, Inc. Lease Name: Z BAR Well #: 19-13

Sec. 19 Twp. 34 S. R. 14 ☐ East ☑ West County: Barber

INSTRUCTIONS: Show important tops and base 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. Attach complete copy of all Electric Wire-line Logs surveyed. Attach final geological well site report.

Drill Stem Tests Taken ☐ Yes ☑ No
(Attach Additional Sheets)

Samples Sent to Geological Survey ☐ Yes ☑ No

Cores Taken ☐ Yes ☑ No
Electric Log Run ☑ Yes ☐ No
Electric Log Submitted Electronically ☑ Yes ☐ No
(If no, Submit Copy)

List All E. Logs Run:

Induction
Density-Neutron/Microlog

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

Name	Top	Datum
Penn	3100	-1432
Heebner	4014	-2346
Cherokee	4839	-3171
Mississippian	4874	-3206

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
Conductor	32	20	64	46	65/35	162	6%gel, 3%cc
Surface	12.25	8.625	24	911	65/35 & Class A	400	6%gel, 3%cc
Production	7.880	4.5	11.6	5096	AA-2	245	10% salt,10% calset, .8% FLA-322

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	-			
	-			

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record *(Amount and Kind of Material Used)*	Depth
1	4880-4898, 4907-4914, 4922-4957	2000 gal 15% MCA	
		Frac w 5550 BW + 92,200# sand	

TUBING RECORD: Size:	Set At:	Packer At:	Liner Run:
2 3/8	4880	none	☐ Yes ☑ No

Date of First, Resumed Production, SWD or ENHR.	Producing Method:
9/14/2011	☑ Flowing ☐ Pumping ☐ Gas Lift ☐ Other *(Explain)*

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity
	20	150	90	7500	

DISPOSITION OF GAS:
☐ Vented ☑ Sold ☐ Used on Lease
(If vented, Submit ACO-18.)

METHOD OF COMPLETION:
☐ Open Hole ☑ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)*
☐ Other *(Specify)* _____

PRODUCTION INTERVAL:
4880-4957 OA

Mail to: KCC - Conservation Division, 130 S. Market - Room 2078, Wichita, Kansas 67202

BIG BUCKETS RATHOLE DRILLING
P.O. Box 5252
Enid, Oklahoma 73702
Phone (580) 233-9850
Fax (580) 233-4588

№ 4673

DERED BY Allen Thrower

Date 6/6/11

Bill To M & M Exploration

Lease Z Bar Ranch

Address

Legal 34S-15W

County Barber Ks

Rig Southwind Drlg

DESCRIPTION	AMOUNT
Furnish Men & Equipment To Drill cellar, 45 ft. of 30" hole & remove dirt from loc.	
Materials Furnished 42 ft. of 20" pipe - 4 yds of 8 sk grout 4 of 60" tiffhorn (cellar form)	$5625.00
Operator Dean Whittington Approved By	Total $5625.00

STATE TAX

It's been a pleasure working with you!

Total $5,625.00

ALLIED CEMENTING CO., LLC. 040229

Federal Tax I.D.# 20-5975804

REMIT TO P.O. BOX 31
RUSSELL, KANSAS 67665

SERVICE POINT:
Medicine Lodge, KS
7+2 7-13

DATE	SEC.	TWP.	RANGE	CALLED OUT	ON LOCATION	JOB START	JOB FINISH
7-12-2011	19	34S	14W	1:00 pm	3:30 pm	11:30 pm	12:30 AM
LEASE 2 Bar	WELL # 9-13		LOCATION 2 Bar Entrance, Ess to			COUNTY Barber	STATE KS
OLD OR (NEW) (Circle one)			Telephone pole, S & E into				

CONTRACTOR Southwind
TYPE OF JOB Surface
HOLE SIZE 12 1/4 T.D. 915'
CASING SIZE 8 5/8 DEPTH 911'
TUBING SIZE DEPTH
DRILL PIPE DEPTH
TOOL DEPTH
PRES. MAX MINIMUM
MEAS. LINE SHOE JOINT 41'
CEMENT LEFT IN CSG.
PERFS.
DISPLACEMENT 55 bbls of fresh water

OWNER M & M Exploration

CEMENT

AMOUNT ORDERED 250 sx 65:35:6% Gel 3% CC & 1/4 # Flosel, 150 sx class A 2% Gel + 3% CC

COMMON	150	@ 16.25	2437.50
POZMIX		@	
GEL	3	@ 21.25	63.75
CHLORIDE	14	@ 58.20	814.80
ACW 250 SX		@ 15.00	3750
		@	
Flosal 63		@ 2.70	170.10
		@	
		@	
		@	
		@	
		@	
HANDLING	434	@ 2.25	976.50
MILEAGE	40/434/.11		1909.60
		TOT.	10,122.25

EQUIPMENT

PUMP TRUCK CEMENTER Darin F.
#471-302 HELPER Ron G
BULK TRUCK
#421-252 DRIVER Dustin E.
BULK TRUCK
DRIVER

REMARKS:

Pipe on bottom & break Circulation Pump 3bbls water ahead, mix 250sx of lead cement, mix 150sx of tail cement, Shut down, Release plug, Start displacement, Slow rate to 3bpm at 45 bbls, bump plug at 55 bbls 500-1000 PSI, Float did hold, Cement did Circulate

SERVICE

DEPTH OF JOB 911'
PUMP TRUCK CHARGE 1125.00
EXTRA FOOTAGE @
MILEAGE 80 @ 7.00 560.00
MANIFOLD @
Head rental @ 200.00 200.00
Light vehicle 80 @ 4.00 320.00
TOTAL 2205.00

CHARGE TO: M & M Exploration
STREET
CITY STATE ZIP

PLUG & FLOAT EQUIPMENT

8 5/8

1-Rubber plug	@ 112.00	112.00
1-AFU Insert	@ 382.00	382.00
~~Basket~~	@	
	@	
	@	
TOTAL		494.00

To Allied Cementing Co., LLC.
You are hereby requested to rent cementing equipment and furnish cementer and helper(s) to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read and understand the "GENERAL TERMS AND CONDITIONS" listed on the reverse side.

SALES TAX (If Any)
TOTAL CHARGES 12,821.25
DISCOUNT 20% IF PAID IN 30 DAYS
Net 10,257.00

PRINTED NAME x Alan Vratil

SIGNATURE x

Thank you!!!

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 03445 A

DATE TICKET NO.

DATE OF JOB 7-22-11	DISTRICT PRATT KAN	NEW WELL ☑ OLD WELL ☐ PROD ☐ INJ ☐ WDW ☐	CUSTOMER ORDER NO.:
CUSTOMER Main Exploration		LEASE Z-BAR	19-13 WELL NO.
ADDRESS		COUNTY BARBER	STATE KS
CITY	STATE	SERVICE CREW Sullivan, Melson, McCarley	
AUTHORIZED BY		JOB TYPE: PNW 4½ Longstring	

EQUIPMENT#	HRS	EQUIPMENT#	HRS	EQUIPMENT#	HRS
33209-20926	40 mw				
19831-19862	40 w				
37900					

	DATE	AM/PM	TIME
TRUCK CALLED	7-22-11	AM	11:00
ARRIVED AT JOB		AM	2:00
START OPERATION		AM	7:00
FINISH OPERATION		AM	7:40
RELEASED		AM	8:15
MILES FROM STATION TO WELL			65

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
CP 105	AA2 cmt	SK	275		4,675 00
CC 102	cellflake	lb	69		255 30
CC 111	Salt	lb	1498		749 60
CC 113	gypsum	lb	1295		971 25
CC 129	FLA-322	lb	209		1,560 00
CC 201	gilsonite	lb	1650		1,105 50
CF 606	Latch down plug - Baffle 4½	EA	1		370 00
CF 1250	Auto fill Float shoe	EA	1		330 00
CF 1650	Turbolizer	EA	8		680 00
CF 1900	Basket	EA	1		270 00
C 704	Clay max	gal	4		140 00
E 100	Pickup mileage	mi	65		276 25
E 101	Heavy Eqt mileage	mi	130		910 00
E 113	Bulk Delivery	TM	842		1,346 80
CE 205	Depth charge 4001-5000	EA	1		2,520 00
CE 240	Blending - mixing	SK	275		385 00
CE 504	Plug Container Charge	EA	1		250 00
S 003	Service Supervisor	EA	1		175 00
CE 503	4½ HEAD charge	EA	1		300 00
				SUB TOTAL	

CHEMICAL / ACID DATA:			

SERVICE & EQUIPMENT	%TAX ON $	
MATERIALS	%TAX ON $	
	TOTAL	

Thank you
KG 13,642.59

SERVICE REPRESENTATIVE Robert Sullivan

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
M & M Exploration		7-22-11
Lease: Z-BAR	Well #: 19-13	

Field Order #	Station	Casing	Depth	County	State
34745	PRATT KS	4 1/2	5048	BARBER	KS

Type Job	Formation	Legal Description
CNW 4½ Long String		19-34-14

PIPE DATA		PERFORATING DATA		FLUID USED	TREATMENT RESUME		
Casing Size 4½	Tubing Size	Shots/Ft		Acid	RATE	PRESS	ISIP
Depth 5069	Depth	From	To	Pre Pad	Max		5 Min.
Volume 78	Volume	From	To	Pad	Min		10 Min.
Max Press 2,000	Max Press	From	To	Frac	Avg		15 Min.
Well Connection F.C.	Annulus Vol.	From	To		HHP Used		Annulus Pressure
Plug Depth 5042	Packer Depth	From	To	Flush	Gas Volume		Total Load

Customer Representative	Station Manager	Treater
	DAVE Scott	Robert [illegible]

Service Units	37900	33708	20920	19831	19862					
Driver Names	Sullivan		melton		McPeaky					

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
					ON loc Safety Mtg
					Run 124 Jts 4½ 11.6
					Cent 1,3,5,7,11,14,17,20 Basket 9
0530					Csg. on Bottom
0545					Hook up To circ.
0700	300		3	3	St Spacer
			5	4	mix 25 sk Scavenger cmt 13.6
			67	5	mix 200 sk AA-2 cmt
					cmt mixed shut down wash pump line
					Release Plug
				6	St Disp
	300		37		Lift PS 13.6
	600		70	4.5	Slow Rate
07:40	2,000		78	4	Plug down 13.6
			6		plug RH
			4		plug MH
					JOB Complete
					Thank you

GeoDynamic
Well Logging, Inc.

Rt. #1, Box 185
May, Ok. 73851

(580) 689-2272
(580) 921-5258

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

Well Name:	M &M Exploration, Inc.	Z-Bar 19-13	
Location:	Sec.19-T34S-R14W	Barber County, KS	
License Number:	15-007-23701	Region:	Aetna
Spud Date:	7/12/11	Drilling Completed:	7/21/11
Surface Coordinates:	500'FSL & 950'FWL, SW/4		
Bottom Hole Coordinates:	As Above		
Ground Elevation (ft):	1,656'	K.B. Elevation (ft):	1,668'
Logged Interval (ft):	3,900' To: 5,100'	Total Depth (ft):	5,100'
Formation:	Pennsylvanian & Mississippian		
Type of Drilling Fluid:	Chemical Mud		

OPERATOR

Company: M & M Exploration, Inc.
Address: Attn: Mike Austin
4257 Main Street, Suite 230
Westminster, Colorado 80031

GEOLOGIST

Name: Mike Pollok
Company: MAP Exploration, Inc.
Address: P.O. Box 106
Purcell, Ok 73080

Comments

Southwind Drilling Rig #70 Samples
Mudlogging Unit #5
Mudlogger: Beth Brock

ROCK TYPES

Anhy	Congl	Mrlst	Ss
Bent	Dol	Salt	Till
Brec	Gyp	Shale	sdy sh
Cht	Igne	Shcol	calc sh
Clyst	Lmst	Shgy	shale
Coal	Meta	Sltst	carb sh

ACCESSORIES

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

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

STRINGER
- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg

TEXTURE
- Boundst
- Chalky
- Cryxln
- Earthy
- Finexln
- Grainst
- Lithogr
- Microxln
- Mudst
- Packst
- Wackest

OTHER SYMBOLS

POROSITY TYPE
- Earthy
- Fenest
- Fracture
- Inter
- Moldic
- Organic
- Pinpoint
- Vuggy

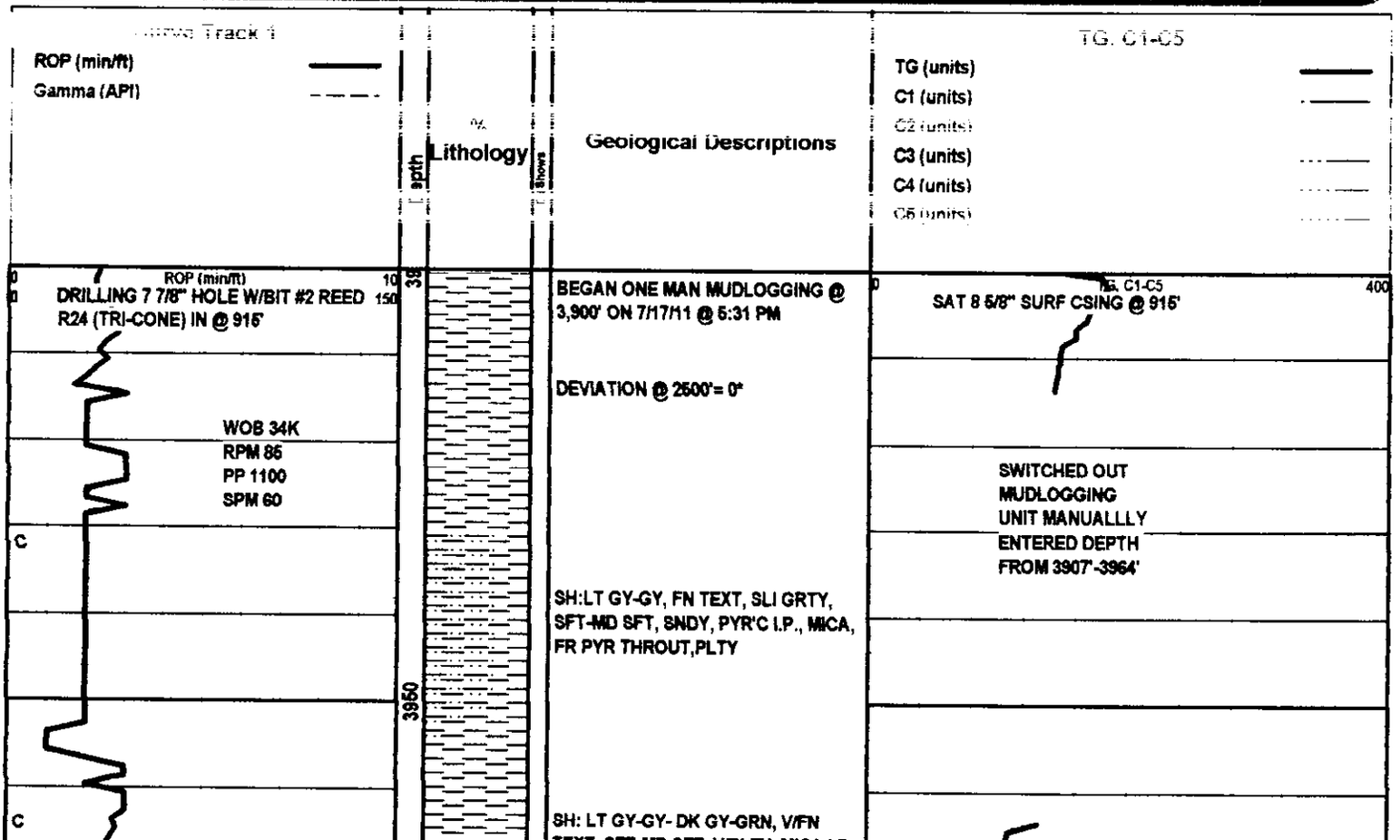
SORTING
- Well
- Moderate
- Poor

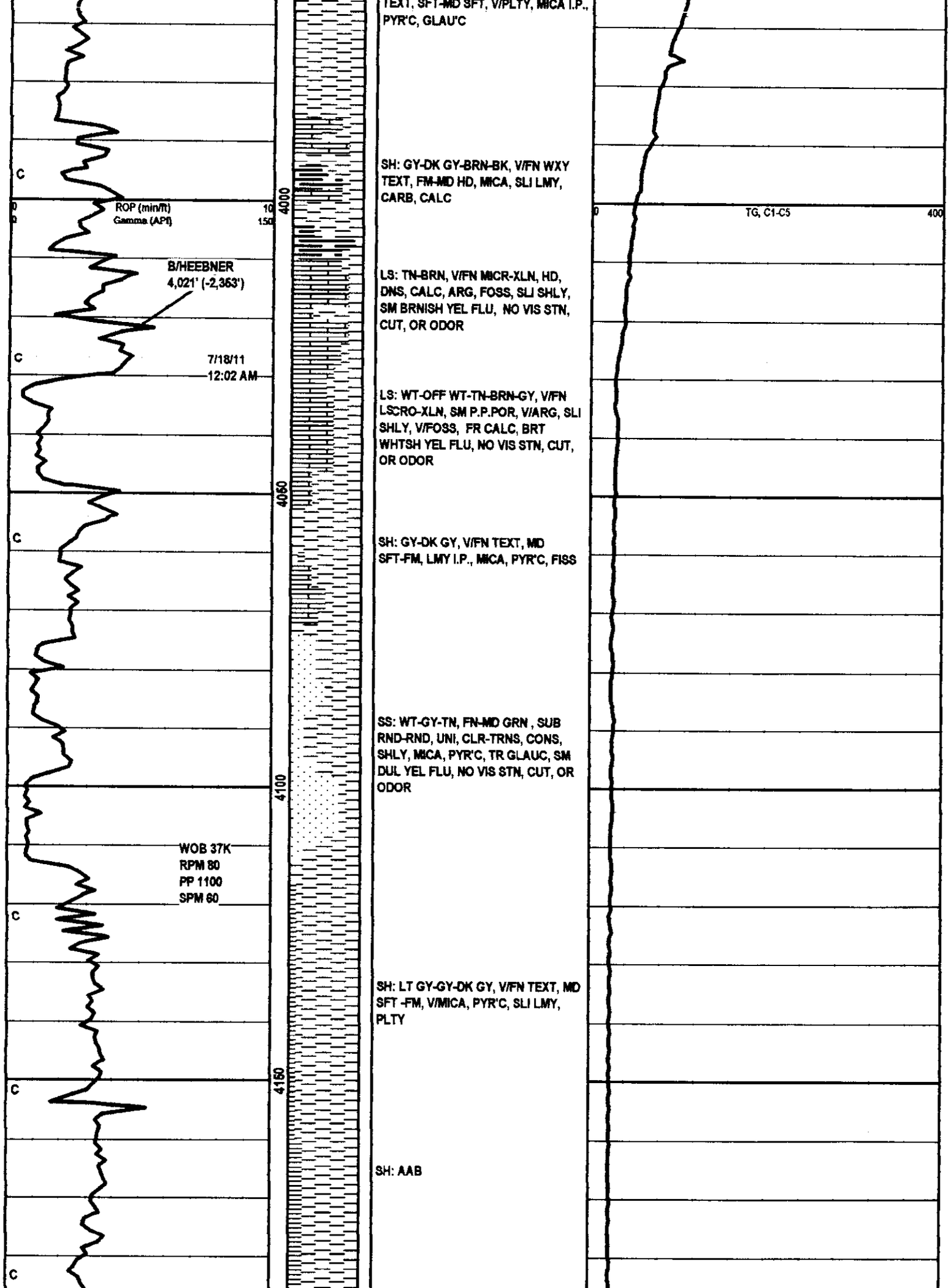
ROUNDING
- Rounded
- Subrnd
- Subang
- Angular

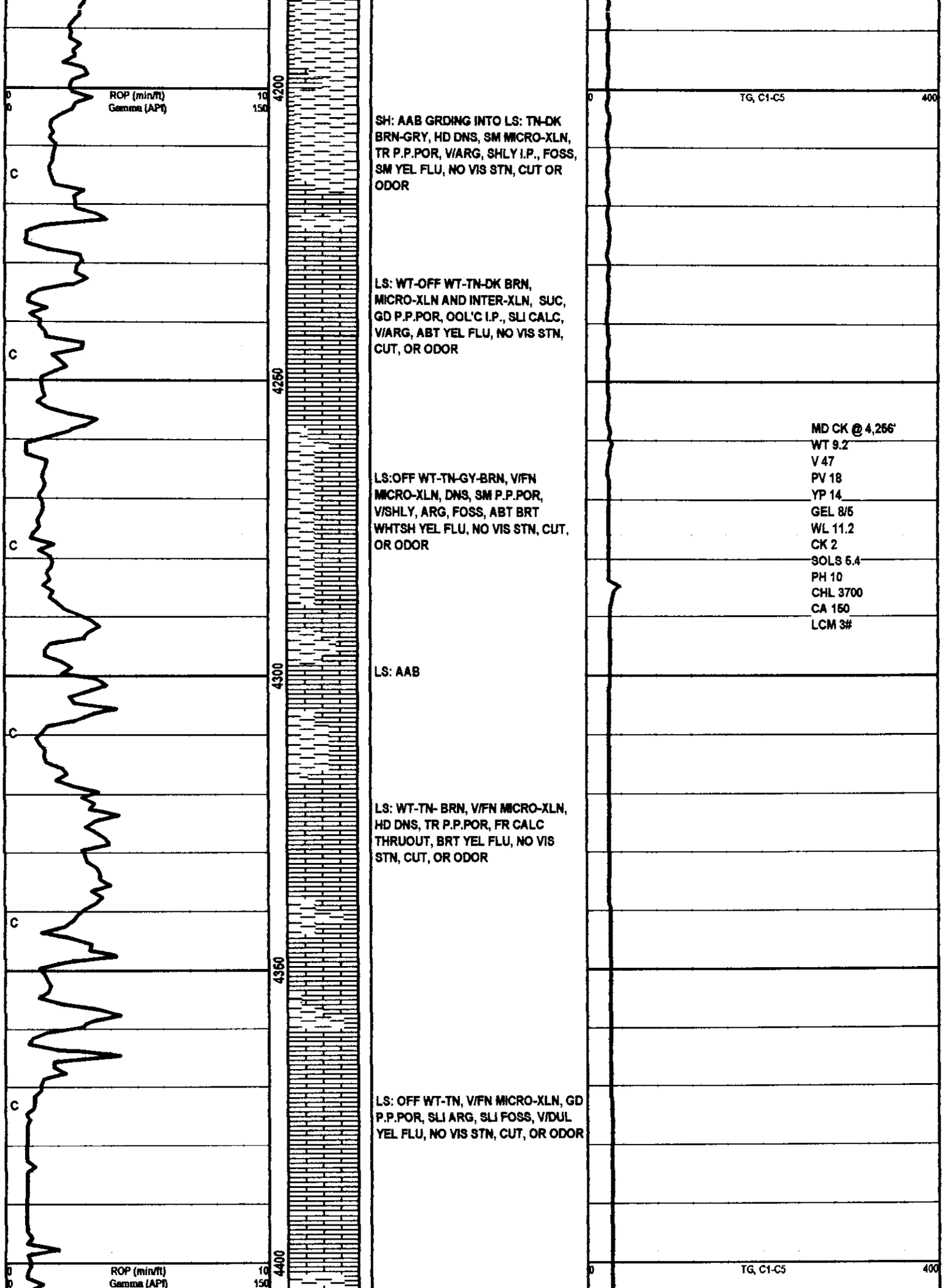
OIL SHOWS
- Even
- Spotted
- Ques
- Dead

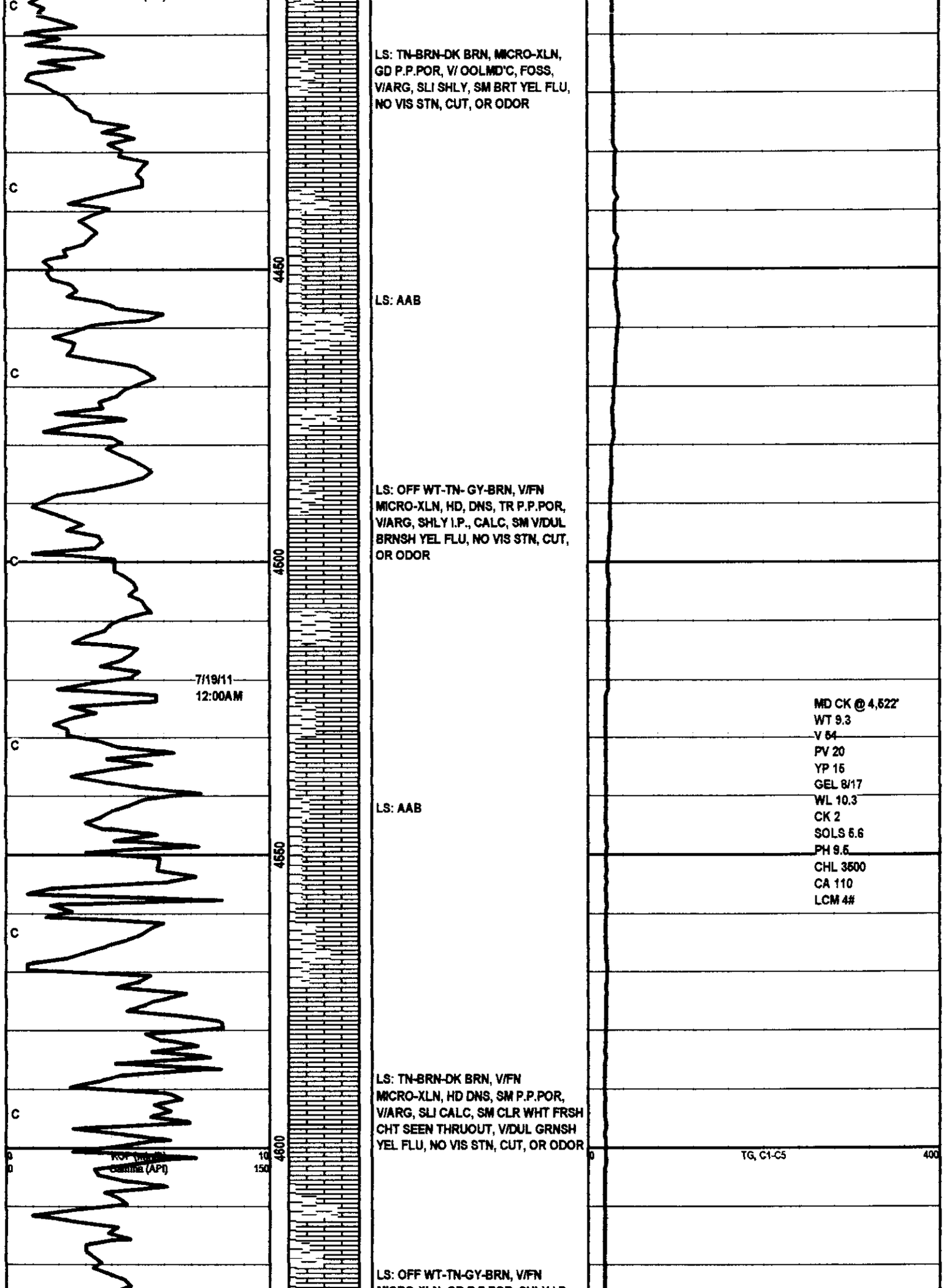
INTERVALS
- Core
- Dst

EVENTS
- Rft
- Sidewall




TEXT, SFT-MD SFT, V/PLTY, MICA I.P., PYR'C, GLAU'C
SH: GY-DK GY-BRN-BK, V/FN WXY TEXT, FM-MD HD, MICA, SLI LMY, CARB, CALC
LS: TN-BRN, V/FN MICR-XLN, HD, DNS, CALC, ARG, FOSS, SLI SHLY, SM BRNISH YEL FLU, NO VIS STN, CUT, OR ODOR
LS: WT-OFF WT-TN-BRN-GY, V/FN LSCRO-XLN, SM P.P.POR, V/ARG, SLI SHLY, V/FOSS, FR CALC, BRT WHTSH YEL FLU, NO VIS STN, CUT, OR ODOR
SH: GY-DK GY, V/FN TEXT, MD SFT-FM, LMY I.P., MICA, PYR'C, FISS
SS: WT-GY-TN, FN-MD GRN , SUB RND-RND, UNI, CLR-TRNS, CONS, SHLY, MICA, PYR'C, TR GLAUC, SM DUL YEL FLU, NO VIS STN, CUT, OR ODOR
SH: LT GY-GY-DK GY, V/FN TEXT, MD SFT -FM, V/MICA, PYR'C, SLI LMY, PLTY
SH: AAB
ROP (min/ft)
Gamma (API)
10
150
TG, C1-C5
0
400
4000
4060
4100
4160
B/HEEBNER
4,021' (-2,363')
7/18/11
12:02 AM
WOB 37K
RPM 80
PP 1100
SPM 60
C


ROP (min/ft)
Gamma (API)
TG, C1-C5
4200
4250
4300
4350
4400
C
SH: AAB GRDING INTO LS: TN-DK BRN-GRY, HD DNS, SM MICRO-XLN, TR P.P.POR, V/ARG, SHLY I.P., FOSS, SM YEL FLU, NO VIS STN, CUT OR ODOR
LS: WT-OFF WT-TN-DK BRN, MICRO-XLN AND INTER-XLN, SUC, GD P.P.POR, OOL'C I.P., SLI CALC, V/ARG, ABT YEL FLU, NO VIS STN, CUT, OR ODOR
LS:OFF WT-TN-GY-BRN, V/FN MICRO-XLN, DNS, SM P.P.POR, V/SHLY, ARG, FOSS, ABT BRT WHTSH YEL FLU, NO VIS STN, CUT, OR ODOR
MD CK @ 4,256'
WT 9.2
V 47
PV 18
YP 14
GEL 8/5
WL 11.2
CK 2
SOLS 5.4
PH 10
CHL 3700
CA 150
LCM 3#
LS: AAB
LS: WT-TN- BRN, V/FN MICRO-XLN, HD DNS, TR P.P.POR, FR CALC THRUOUT, BRT YEL FLU, NO VIS STN, CUT, OR ODOR
LS: OFF WT-TN, V/FN MICRO-XLN, GD P.P.POR, SLI ARG, SLI FOSS, V/DUL YEL FLU, NO VIS STN, CUT, OR ODOR


C
C
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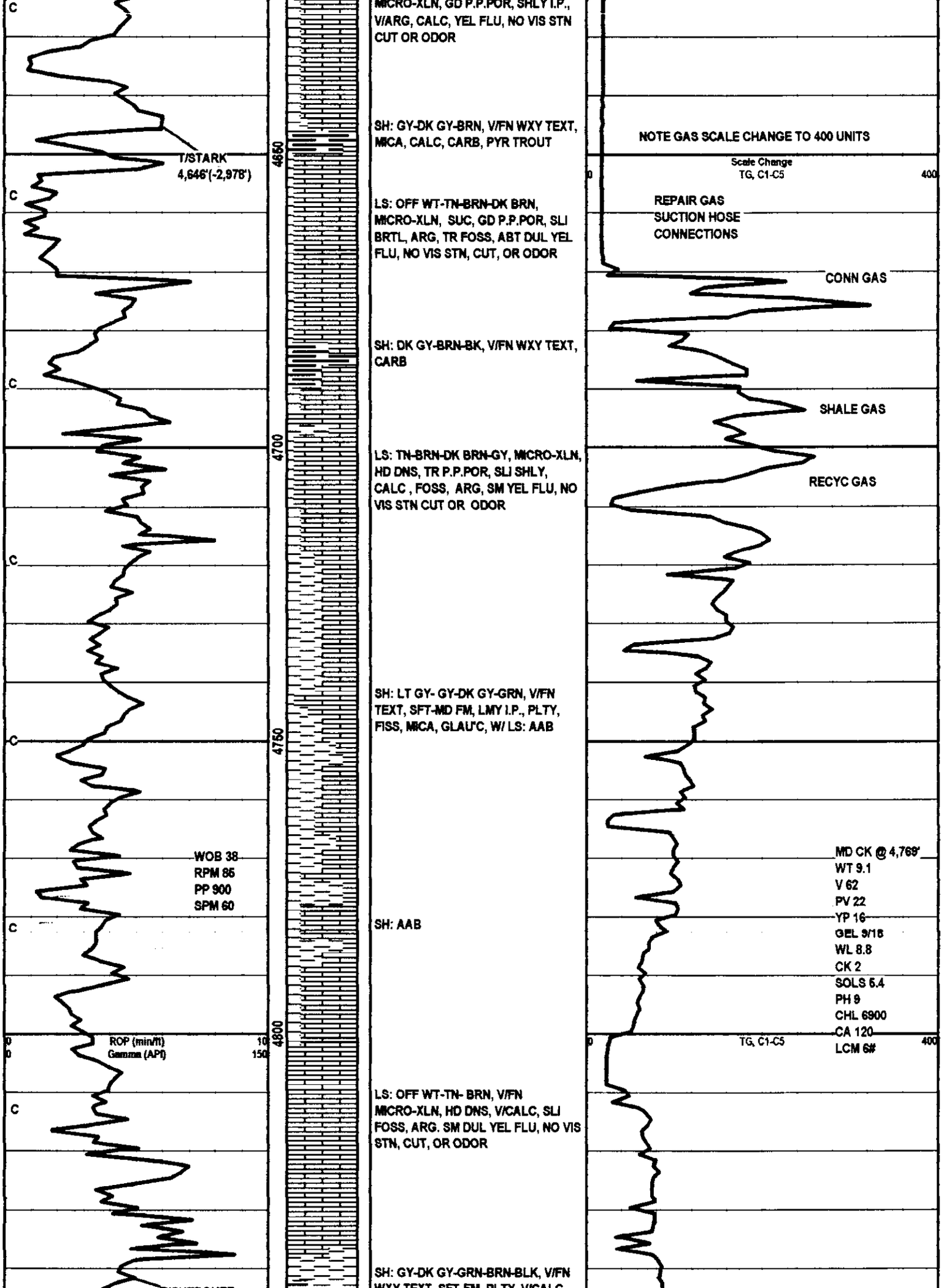
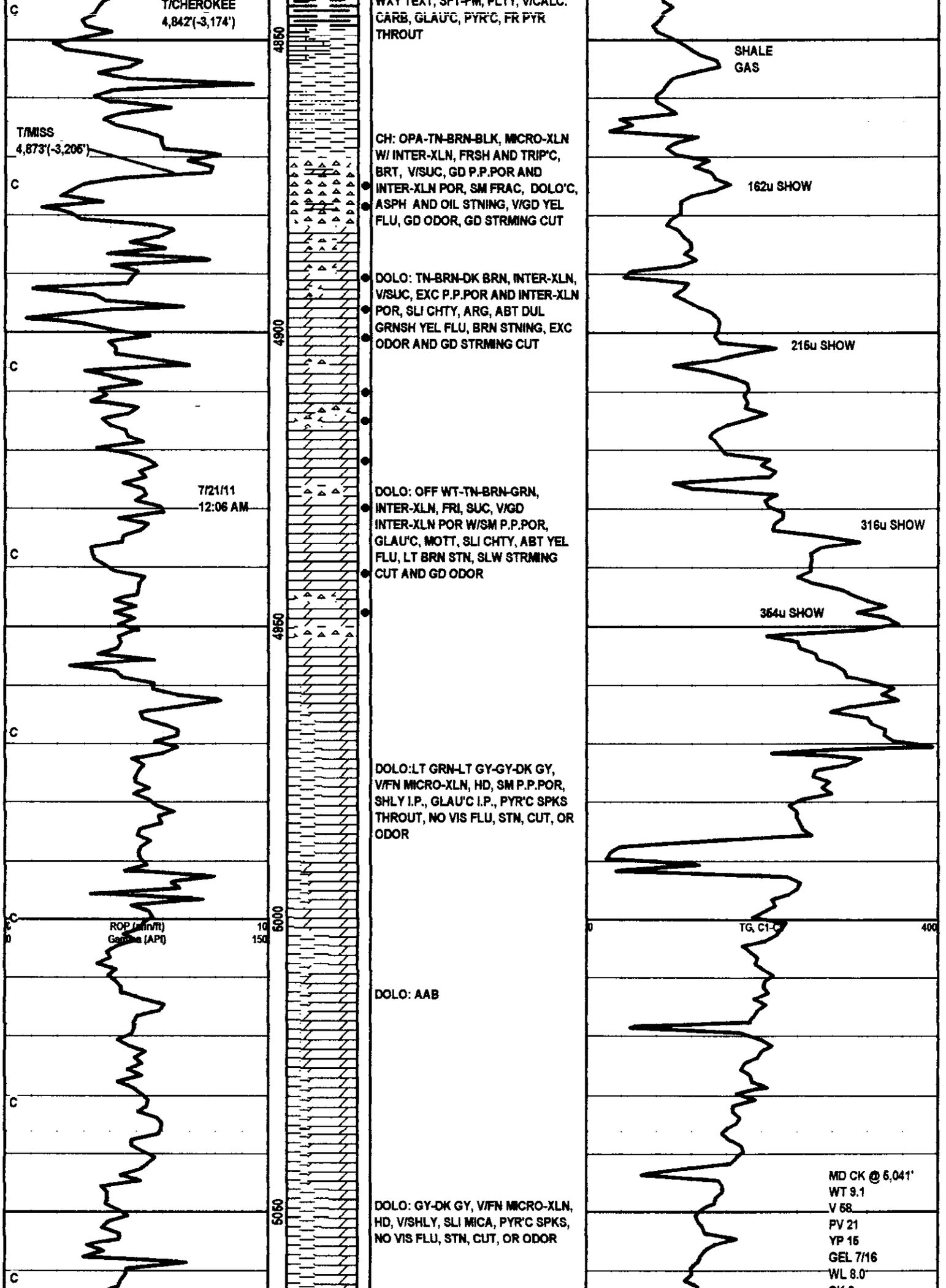
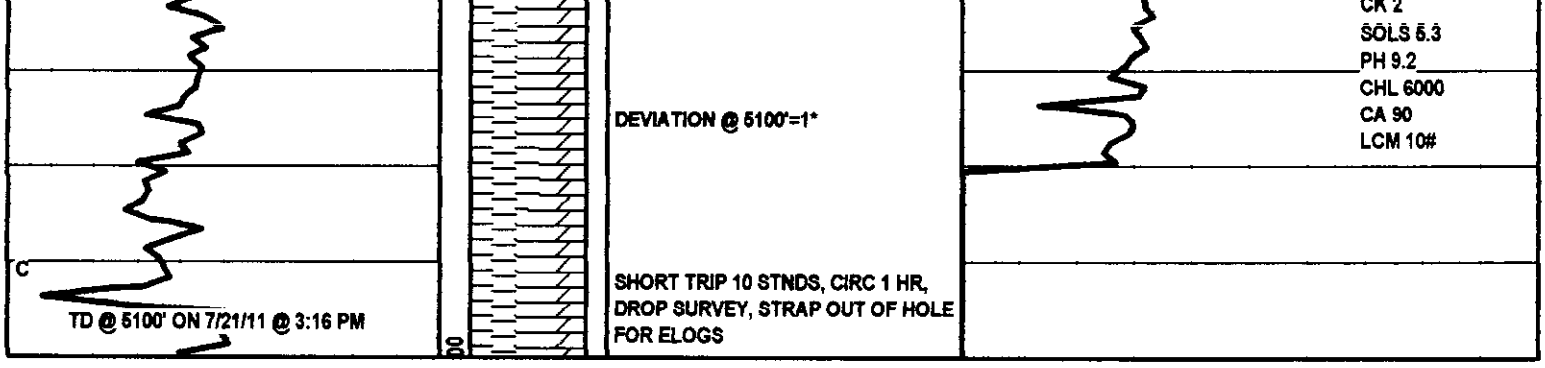
C
C
4450
4500
4550
4600
7/19/11
12:00AM
LS: TN-BRN-DK BRN, MICRO-XLN, GD P.P.POR, V/ OOLMD'C, FOSS, V/ARG, SLI SHLY, SM BRT YEL FLU, NO VIS STN, CUT, OR ODOR
LS: AAB
LS: OFF WT-TN- GY-BRN, V/FN MICRO-XLN, HD, DNS, TR P.P.POR, V/ARG, SHLY I.P., CALC, SM V/DUL BRNSH YEL FLU, NO VIS STN, CUT, OR ODOR
LS: AAB
LS: TN-BRN-DK BRN, V/FN MICRO-XLN, HD DNS, SM P.P.POR, V/ARG, SLI CALC, SM CLR WHT FRSH CHT SEEN THRUOUT, V/DUL GRNSH YEL FLU, NO VIS STN, CUT, OR ODOR
LS: OFF WT-TN-GY-BRN, V/FN
MD CK @ 4,522'
WT 9.3
V 54
PV 20
YP 15
GEL 6/17
WL 10.3
CK 2
SOLS 5.6
PH 9.5
CHL 3500
CA 110
LCM 4#
0
Gamma (API)
150
TG, C1-C5
400


MICRO-XLN, GD P.P.POR, SHLY I.P., V/ARG, CALC, YEL FLU, NO VIS STN CUT OR ODOR
SH: GY-DK GY-BRN, V/FN WXY TEXT, MICA, CALC, CARB, PYR TROUT
NOTE GAS SCALE CHANGE TO 400 UNITS
Scale Change
TG, C1-C5
0
400
T/STARK
4,646'(-2,978')
LS: OFF WT-TN-BRN-DK BRN, MICRO-XLN, SUC, GD P.P.POR, SLI BRTL, ARG, TR FOSS, ABT DUL YEL FLU, NO VIS STN, CUT, OR ODOR
REPAIR GAS
SUCTION HOSE
CONNECTIONS
CONN GAS
SH: DK GY-BRN-BK, V/FN WXY TEXT, CARB
SHALE GAS
LS: TN-BRN-DK BRN-GY, MICRO-XLN, HD DNS, TR P.P.POR, SLI SHLY, CALC , FOSS, ARG, SM YEL FLU, NO VIS STN CUT OR ODOR
RECYC GAS
SH: LT GY- GY-DK GY-GRN, V/FN TEXT, SFT-MD FM, LMY I.P., PLTY, FISS, MICA, GLAU'C, W/ LS: AAB
WOB 38
RPM 85
PP 900
SPM 60
MD CK @ 4,769'
WT 9.1
V 62
PV 22
YP 16
GEL 9/16
WL 8.8
CK 2
SOLS 6.4
PH 9
CHL 6900
CA 120
LCM 6#
SH: AAB
ROP (min/ft)
Gamma (API)
0
0
10
150
TG, C1-C5
0
400
LS: OFF WT-TN- BRN, V/FN MICRO-XLN, HD DNS, V/CALC, SLI FOSS, ARG. SM DUL YEL FLU, NO VIS STN, CUT, OR ODOR
SH: GY-DK GY-GRN-BRN-BLK, V/FN
4650
4700
4750
4800


T/CHEROKEE
4,842'(-3,174')
T/MISS
4,873'(-3,205')
7/21/11
12:06 AM
4850
4900
4950
5000
5050
ROP (min/ft)
Gamma (API)
0
150
TG, C1-C5
400
WAY TEXT, SPT-FM, PLTY, V/CALC.
CARB, GLAU'C, PYR'C, FR PYR
THROUT
SHALE
GAS
CH: OPA-TN-BRN-BLK, MICRO-XLN
W/ INTER-XLN, FRSH AND TRIP'C,
BRT, V/SUC, GD P.P.POR AND
INTER-XLN POR, SM FRAC, DOLO'C,
ASPH AND OIL STNING, V/GD YEL
FLU, GD ODOR, GD STRMING CUT
162u SHOW
DOLO: TN-BRN-DK BRN, INTER-XLN,
V/SUC, EXC P.P.POR AND INTER-XLN
POR, SLI CHTY, ARG, ABT DUL
GRNSH YEL FLU, BRN STNING, EXC
ODOR AND GD STRMING CUT
216u SHOW
DOLO: OFF WT-TN-BRN-GRN,
INTER-XLN, FRI, SUC, V/GD
INTER-XLN POR W/SM P.P.POR,
GLAU'C, MOTT, SLI CHTY, ABT YEL
FLU, LT BRN STN, SLW STRMING
CUT AND GD ODOR
316u SHOW
354u SHOW
DOLO:LT GRN-LT GY-GY-DK GY,
V/FN MICRO-XLN, HD, SM P.P.POR,
SHLY I.P., GLAU'C I.P., PYR'C SPKS
THROUT, NO VIS FLU, STN, CUT, OR
ODOR
DOLO: AAB
DOLO: GY-DK GY, V/FN MICRO-XLN,
HD, V/SHLY, SLI MICA, PYR'C SPKS,
NO VIS FLU, STN, CUT, OR ODOR
MD CK @ 5,041'
WT 9.1
V 58
PV 21
YP 15
GEL 7/16
WL 8.0


C
TD @ 5100' ON 7/21/11 @ 3:16 PM
DEVIATION @ 5100'=1°
SHORT TRIP 10 STNDS, CIRC 1 HR,
DROP SURVEY, STRAP OUT OF HOLE
FOR ELOGS
CK 2
SOLS 5.3
PH 9.2
CHL 6000
CA 90
LCM 10#

Weatherford®

COMPACT PHOTO DENSITY COMPENSATED NEUTRON MICRORESISTIVITY LOG

COMPANY	M&M EXPLORATION
WELL	Z-BAR #19-13
FIELD	AETNA GAS AREA
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	500' FSL 950' FWL, SW/4 NW SE SW SW

40 Years of Wireline 1970 2010

SEC	TWP	RGE
19	34S	14W

API Number 15-071-23701
Permit Number

Other Services
MAI/MFE
MML
MSS

Permanent Datum GL, Elevation 1656 feet
Log Measured From K.B. @ 12 FEET above Permanent Datum
Drilling Measured From K.B.

Elevations:	feet
KB	1668.00
DF	1667.00
GL	1656.00

Date	21-JUL-2011			
Run Number	ONE			
Depth Driller	5100.00	feet		
Depth Logger	5096.00	feet		
First Reading	5048.00	feet		
Last Reading	3900.00	feet		
Casing Driller	914.00	feet		
Casing Logger	912.50	feet		
Bit Size	7.880	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.10 g/c3	58.00 CP		
PH / Fluid Loss	9.20	58.00 ml/30Min		
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.84 @ 88.0	ohm-m		
Rmf @ Measured Temp	0.67 @ 88.0	ohm-m		
Rmc @ Measured Temp	1.01 @ 88.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.58 @128.0	ohm-m		
Time Since Circulation	5 HOURS			
Max Recorded Temp	128.00	deg F		
Equipment Name	COMPACT			
Equipment / Base	13025	LIB		
Recorded By	W. STAMBAUGH			
Witnessed By	B. BROCK			

BOREHOLE RECORD

Last Edited: 22-JUL-2011 02:02

Bit Size inches	Depth From feet	Depth To feet
7.880	912.50	5096.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	912.50	24.00

REMARKS

Tools Run: MAI, MPD, MCG, MDN, MFE, MML, MSS in tool string but not presented on final presentation.
Hardware: MPD: 8 inch profile plate used. MAI and MFE: 0.5 inch standoffs used. MDN: Dual Eccentralizer used.
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.
Annular volume with 4.5 inch production casing 270 Cubic Feet
Total hole volume to top of detail section 405 Cubic feet
Service order #3531139
Rig: Southland Drilling #70
Engineer: William Stambaugh
Operator(s): Billy Reeves, Nick Adame

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_002.dta
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

Plotted on 22-JUL-2011 02:37
Recorded on 21-JUL-2011 23:23

Timing Marks
every 60.0 sec

Depth
In
Feet

Limestone Neutron Por.
percent
30 20 10 0 -10

Gamma Ray
API
0 75 150

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

PE
barns/electron
0 5 10

Density Correction
grams/cc
-0.25 0 0.25

Bit Size
inches
6 11 16

Annular
Integral
every
10 cu ft

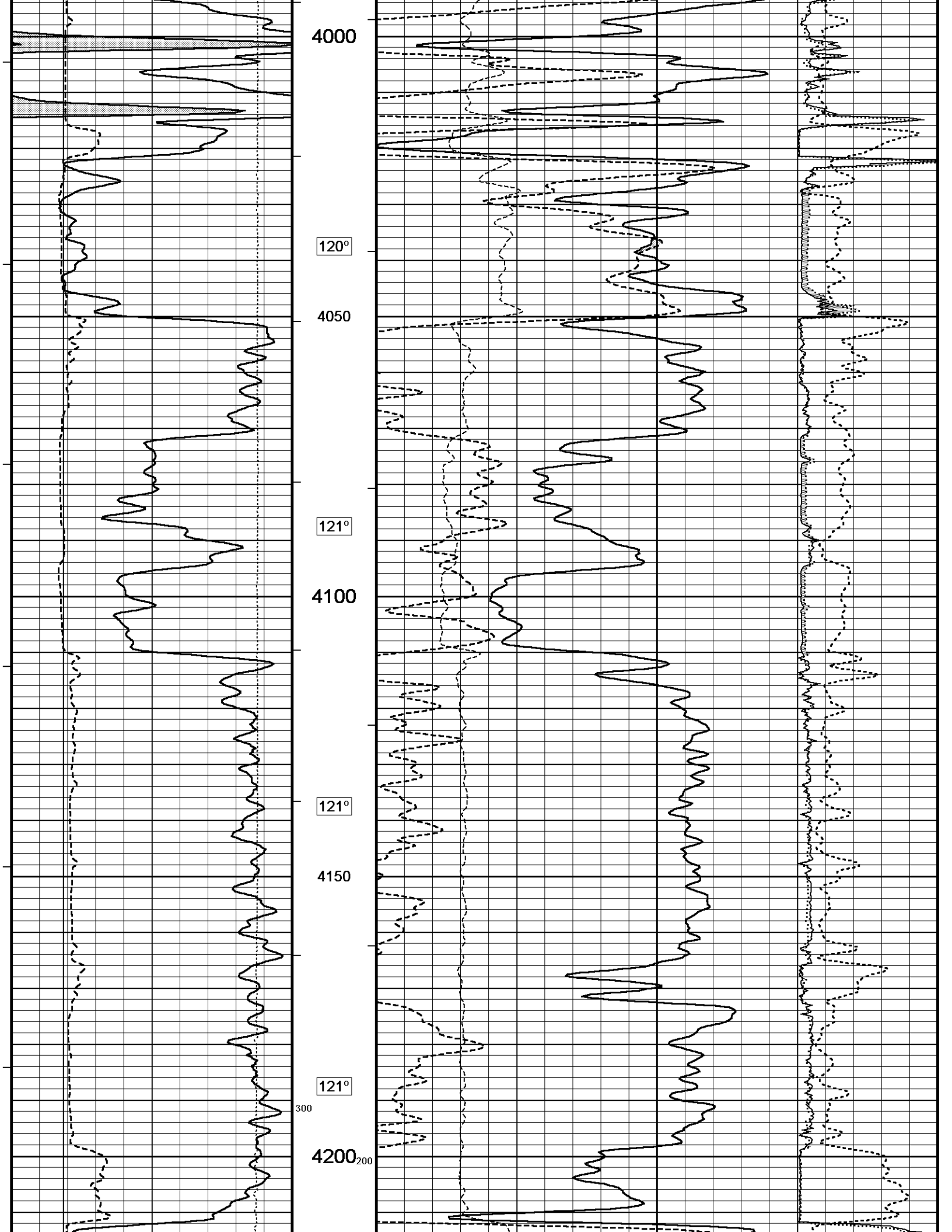
Micro-normal
ohm metres
0 20

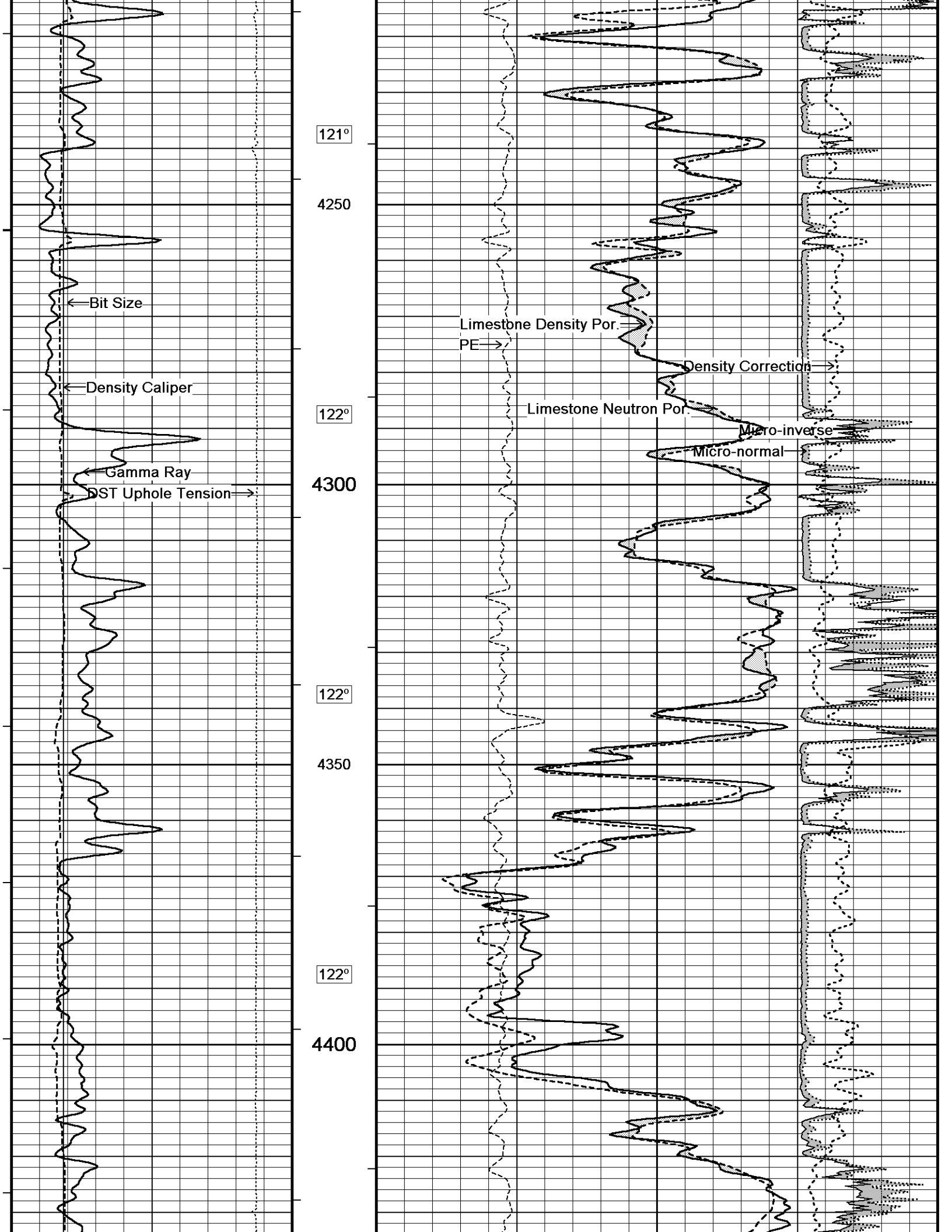
DST Uphole Tension
pounds
5000 0

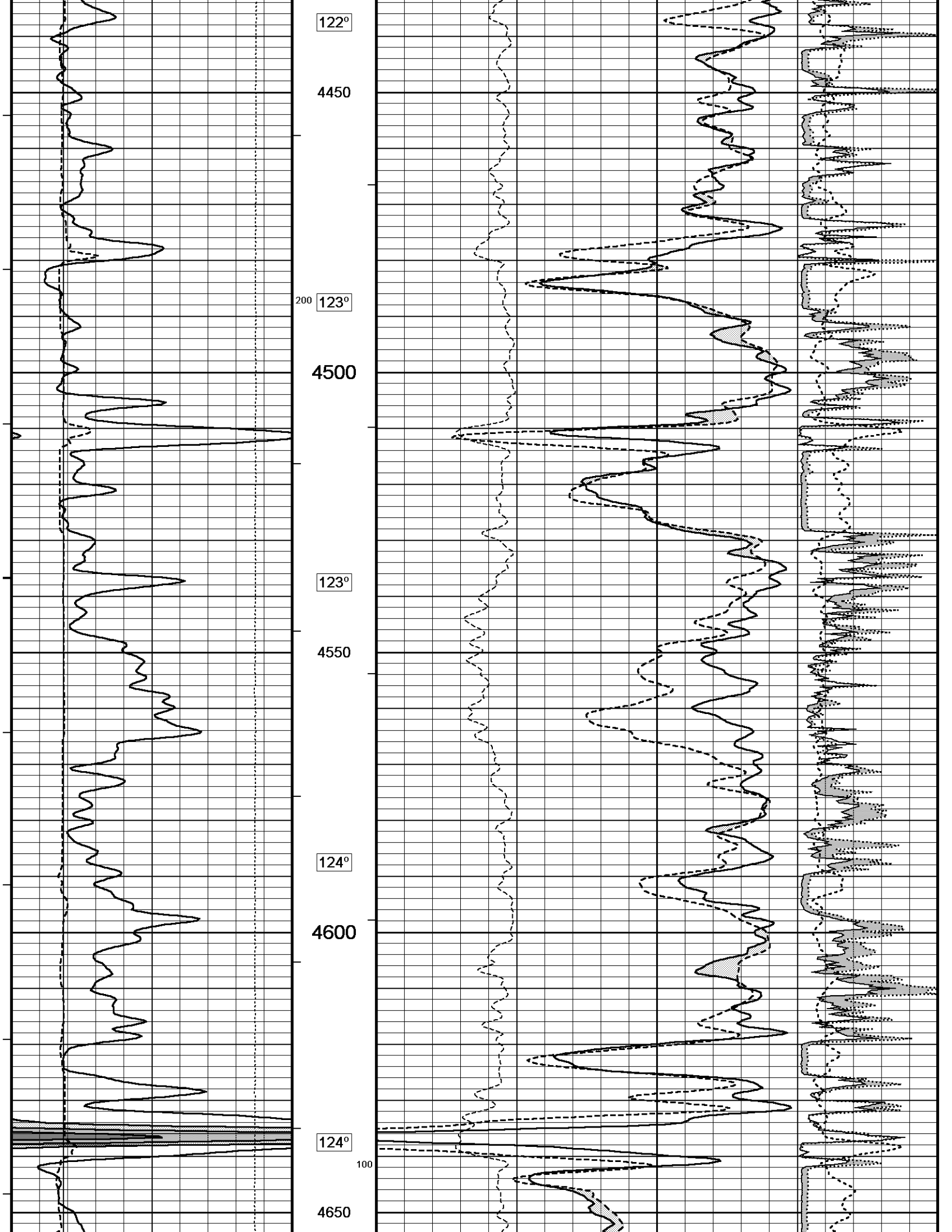
Replay
Scale
1:240

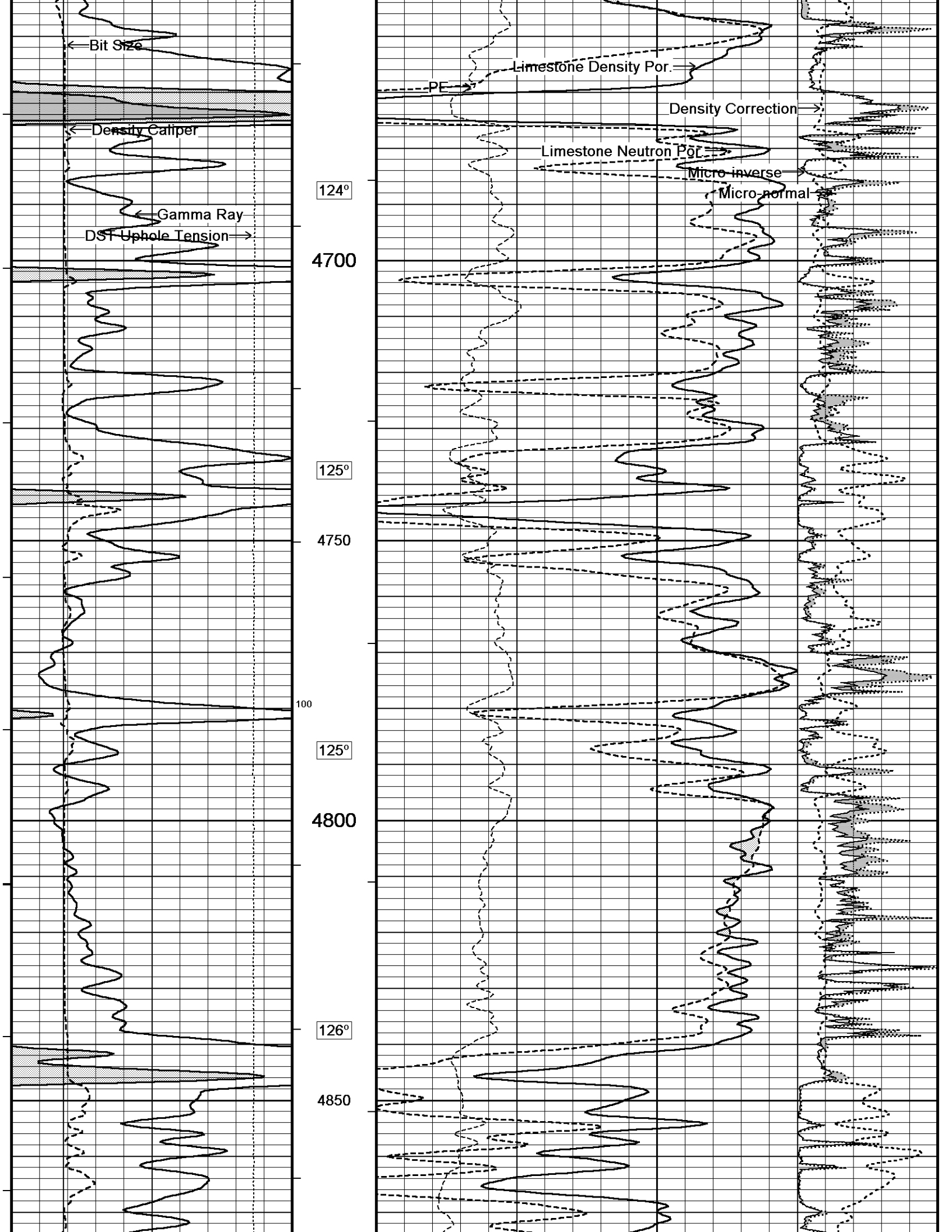
Micro-inverse
ohm metres
0 20

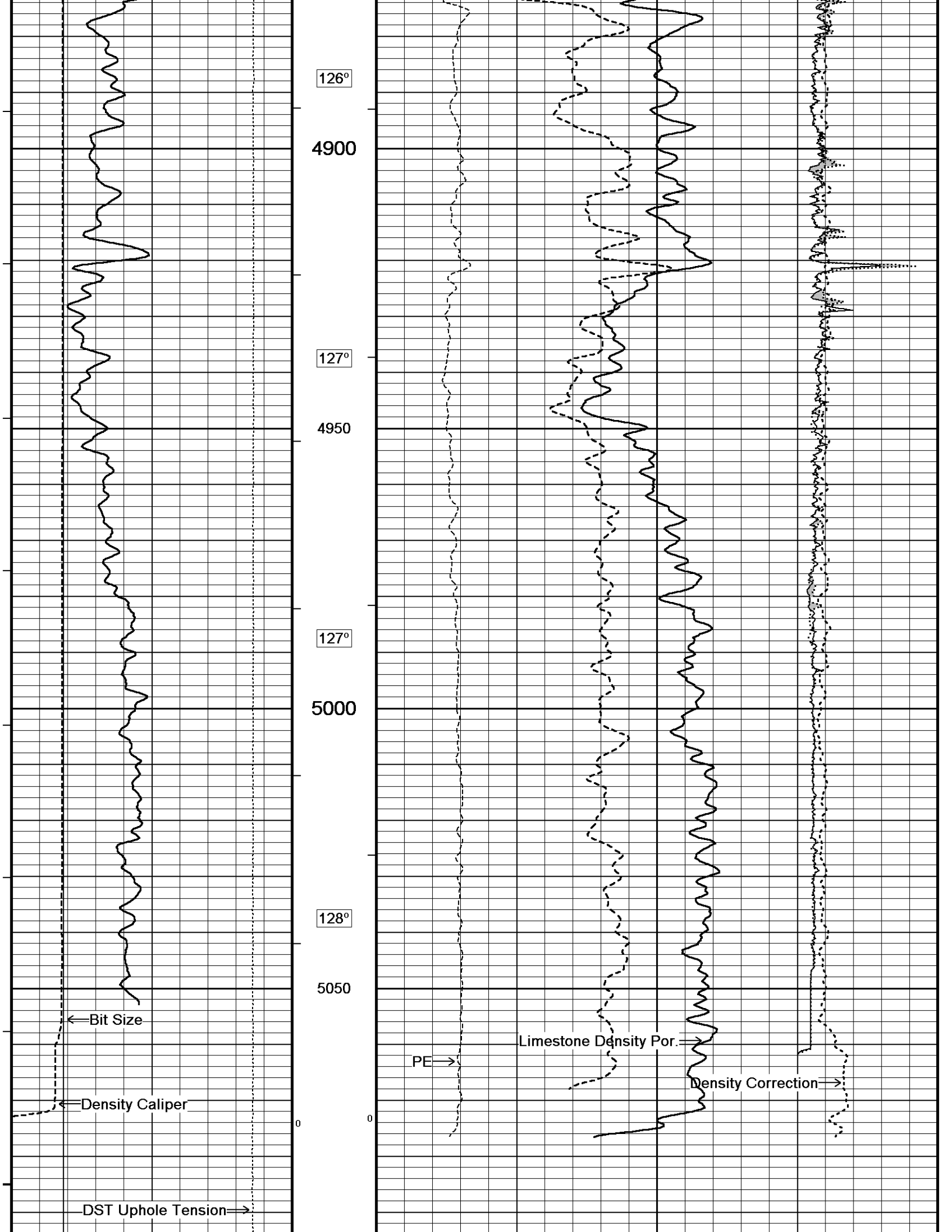
3900
Gamma Ray
DST Uphole Tension
400
Micro-normal
119°
3950
120°

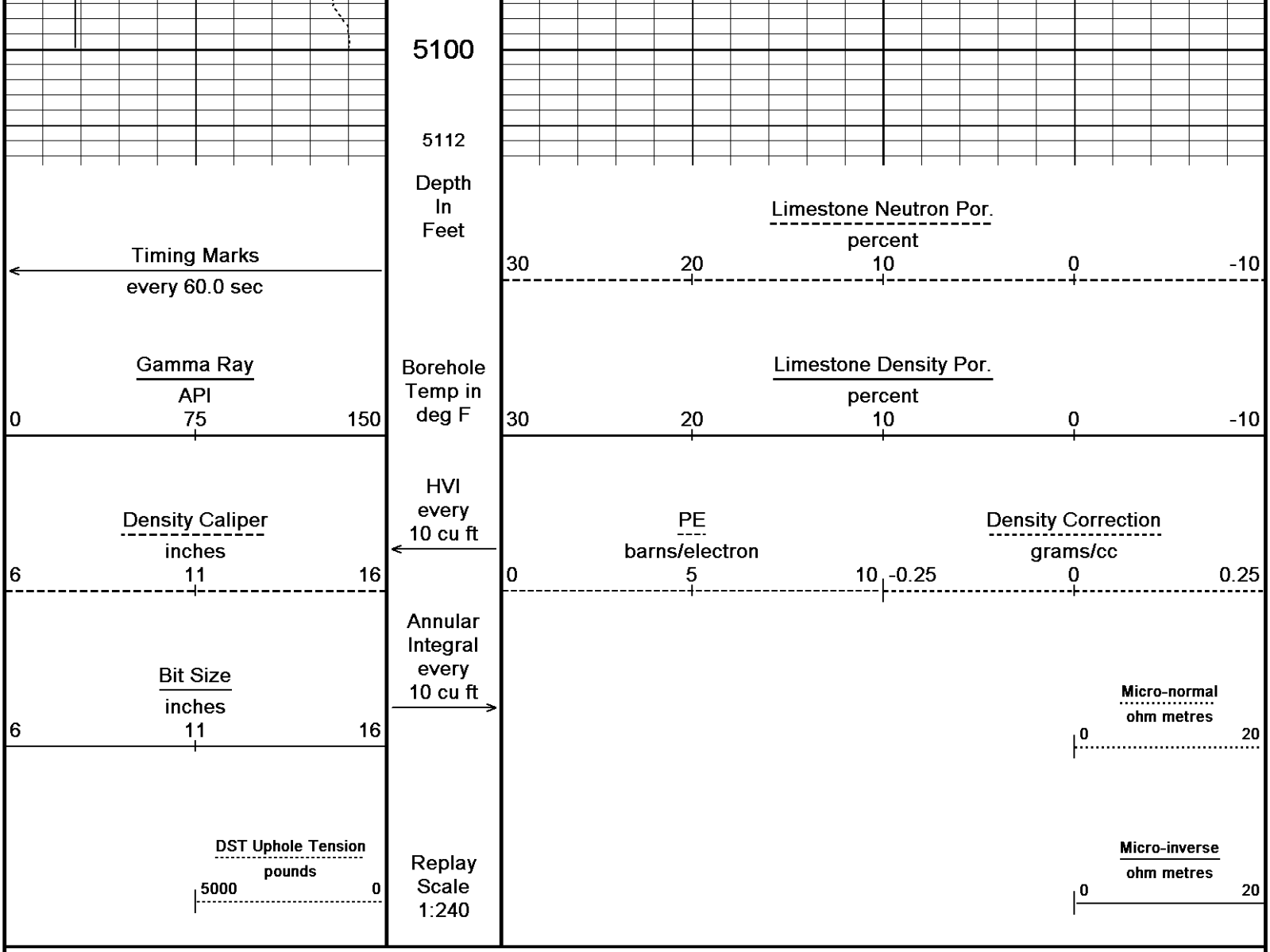

4000
120°
4050
121°
4100
121°
4150
121°
300
4200
200


121°
4250
Bit Size
Limestone Density Por.
PE
Density Correction
Density Caliper
122°
Limestone Neutron Por.
Micro-inverse
Micro-normal
Gamma Ray
4300
DST Uphole Tension
122°
4350
122°
4400


122°
4450
200
123°
4500
123°
4550
124°
4600
124°
100
4650


Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.
Micro-inverse
Micro-normal
124°
4700
125°
4750
100
125°
4800
126°
4850


126°
4900
127°
4950
127°
5000
128°
5050
Bit Size
Density Caliper
DST Uphole Tension
PE
Limestone Density Por.
Density Correction
0
0

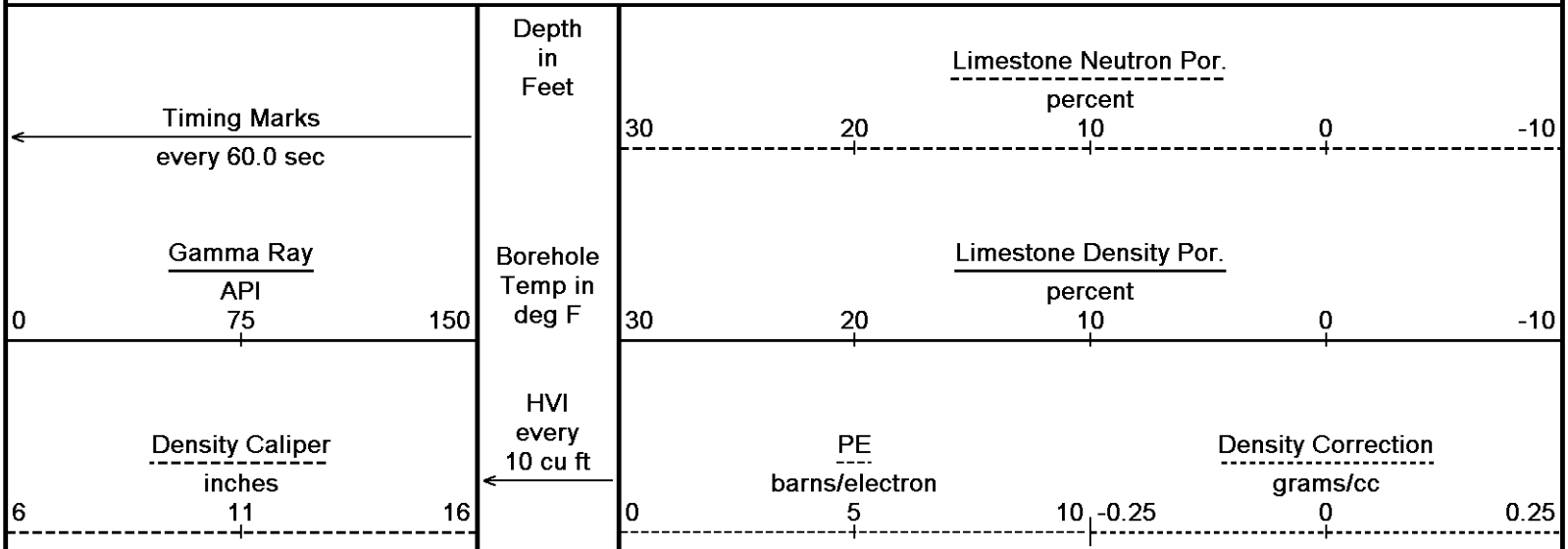


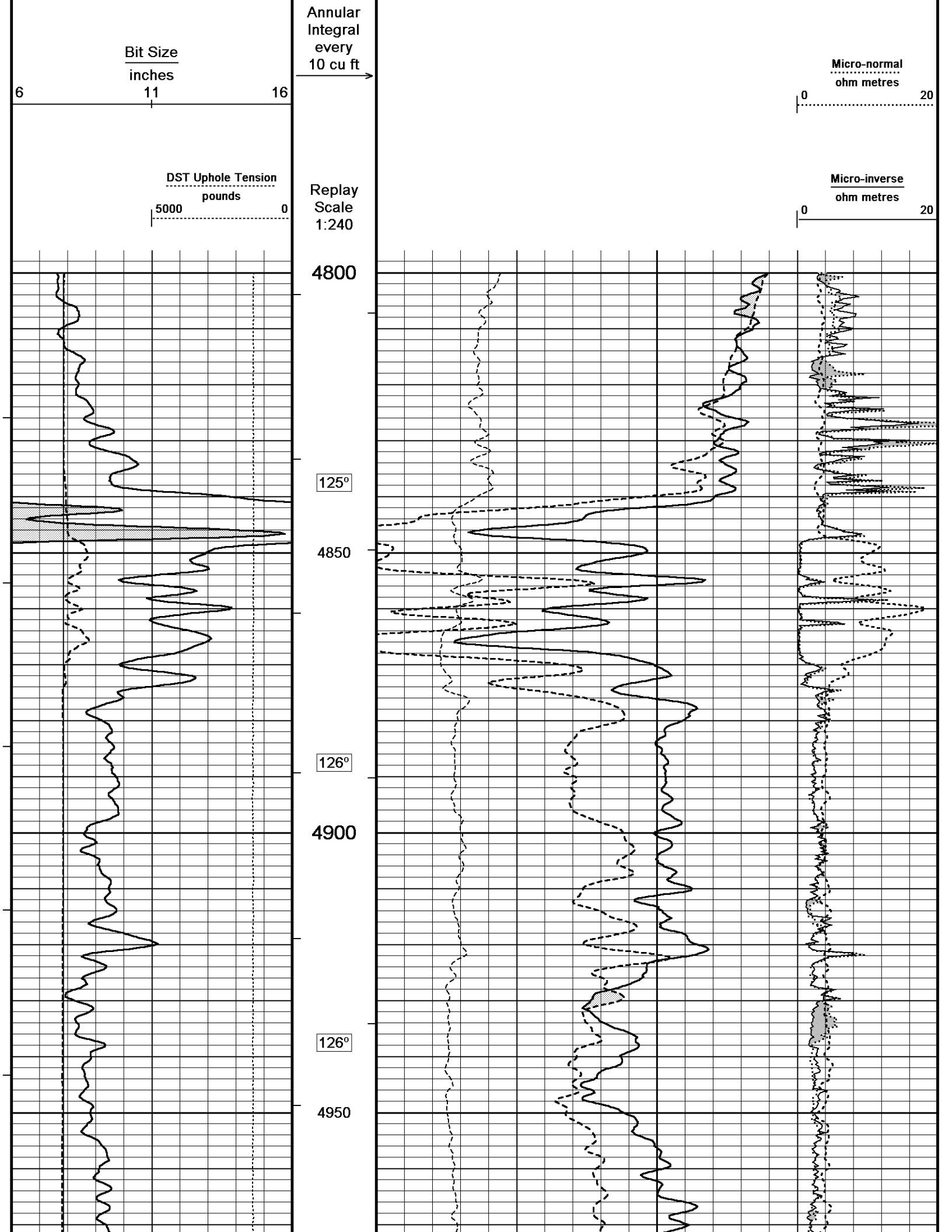
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-JUL-2011 02:37
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_002.dta
Recorded on 21-JUL-2011 23:23
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

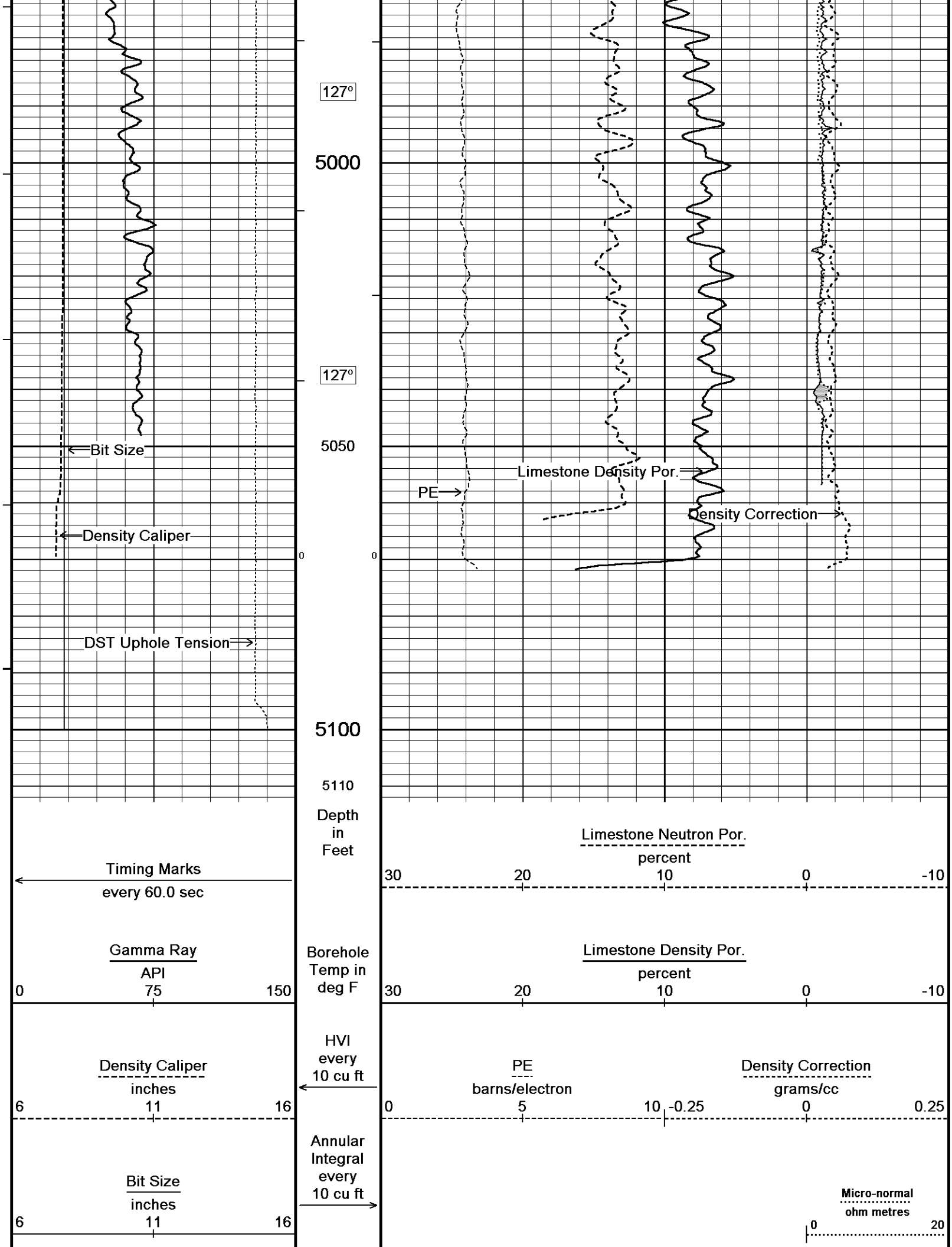
5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-JUL-2011 02:37
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_001.dta
Recorded on 21-JUL-2011 22:53
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789




Bit Size
inches
6
11
16
Annular Integral every 10 cu ft
Micro-normal
ohm metres
0
20
DST Uphole Tension
pounds
5000
0
Micro-inverse
ohm metres
0
20
Replay Scale 1:240
4800
125°
4850
126°
4900
126°
4950


127°
5000
127°
5050
Bit Size
Density Caliper
DST Uphole Tension
PE
Limestone Density Por.
Density Correction
0
0
5100
5110
Depth
in
Feet
Timing Marks
every 60.0 sec
Limestone Neutron Por.
percent
30 20 10 0 -10
Gamma Ray
API
0 75 150
Borehole
Temp in
deg F
Limestone Density Por.
percent
30 20 10 0 -10
HVI
every
10 cu ft
Density Caliper
inches
6 11 16
PE
barns/electron
0 5 10
Density Correction
grams/cc
-0.25 0 0.25
Annular
Integral
every
10 cu ft
Bit Size
inches
6 11 16
Micro-normal
ohm metres
0 20

DST Uphole Tension
pounds
5000 0

Replay Scale 1:240

Micro-inverse
ohm metres
0 20

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-JUL-2011 02:37
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_001.dta
Recorded on 21-JUL-2011 22:53
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

REPEAT SECTION

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-JUL-2011 02:37
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_002.dta
Recorded on 21-JUL-2011 23:23
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

Timing Marks
every 60.0 sec

Depth In Feet

Compensated Density
grams/cc
2 2.25 2.50 2.75 3

Gamma Ray
API
0 75 150

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

Annular Integral every 10 cu ft

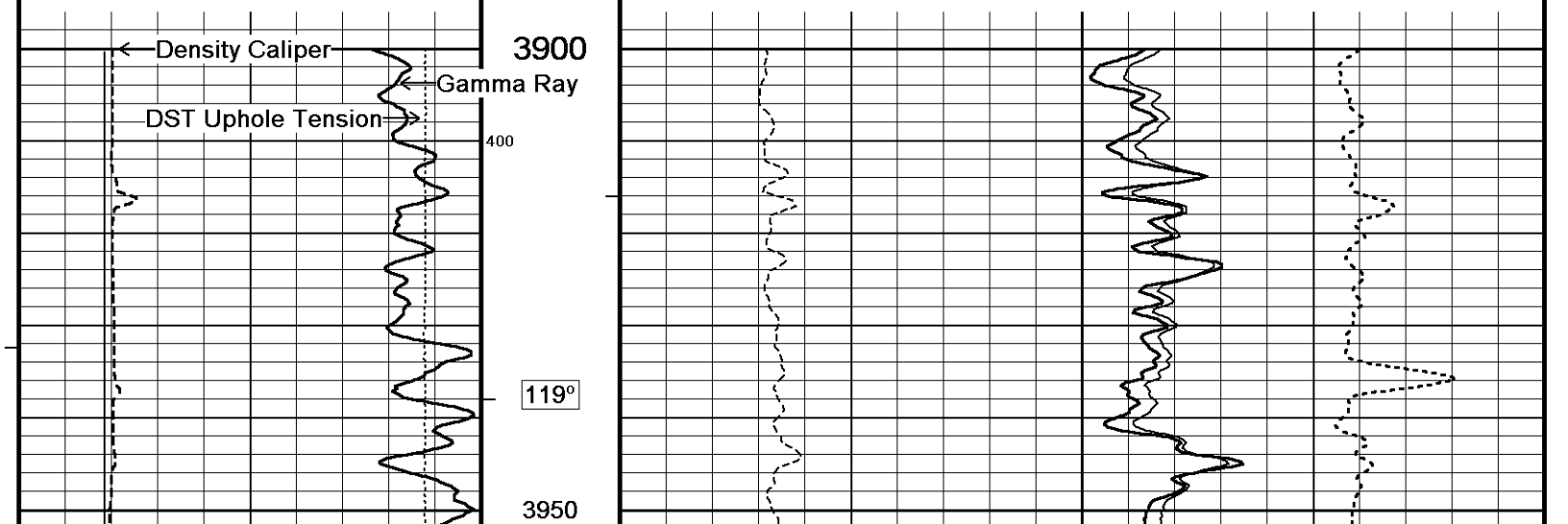
Bit Size
inches
6 11 16

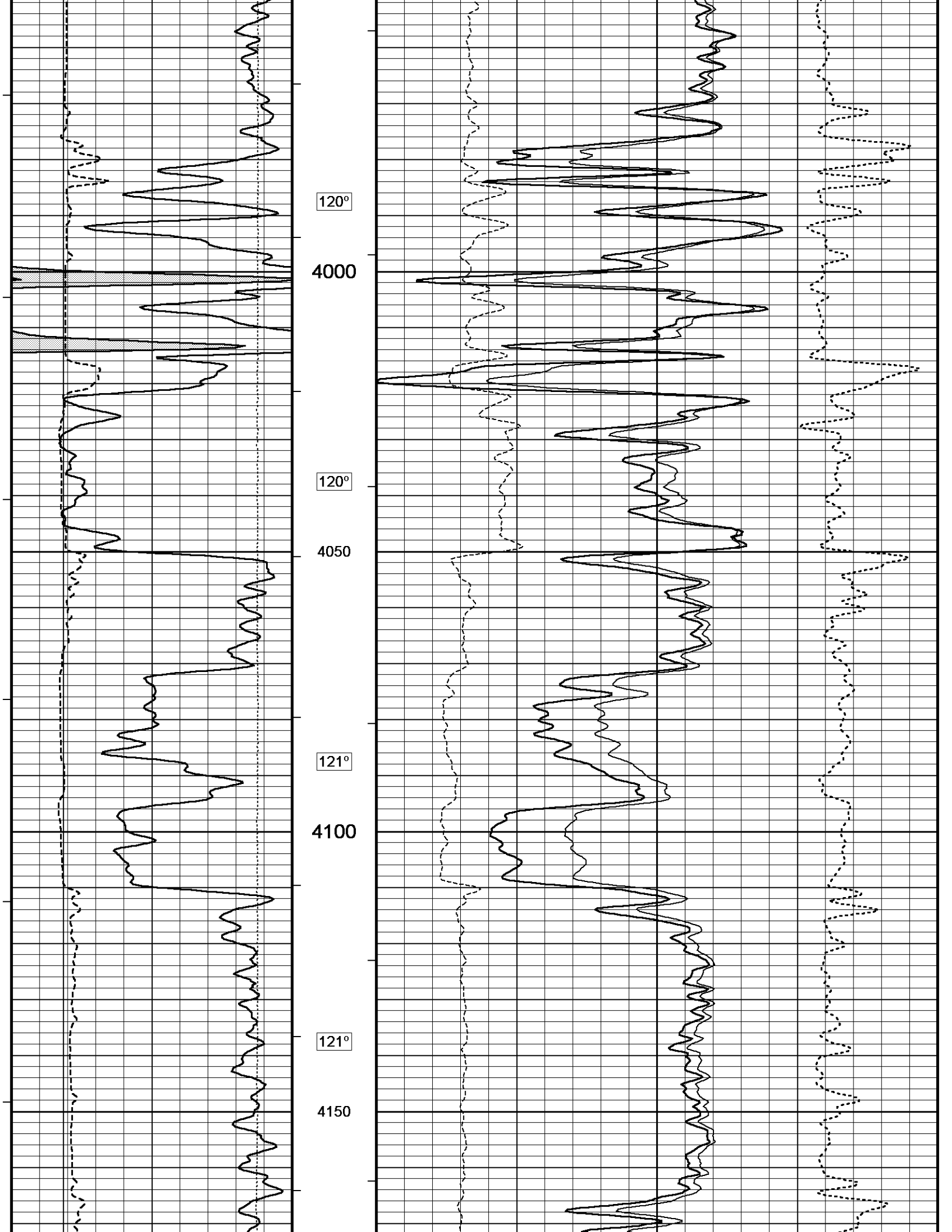
PE
barns/electron
0 5 10

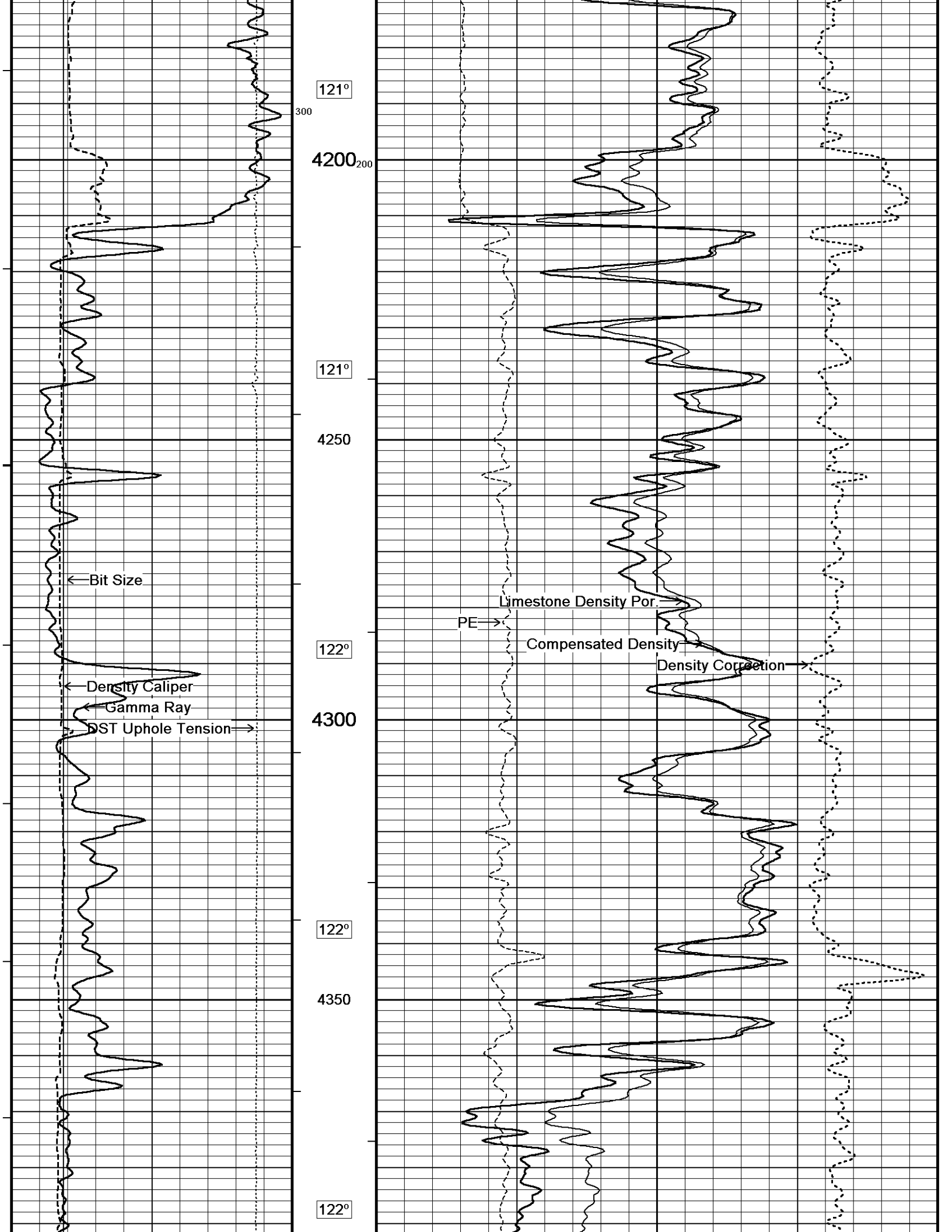
Density Correction
grams/cc
-0.25 0 0.25

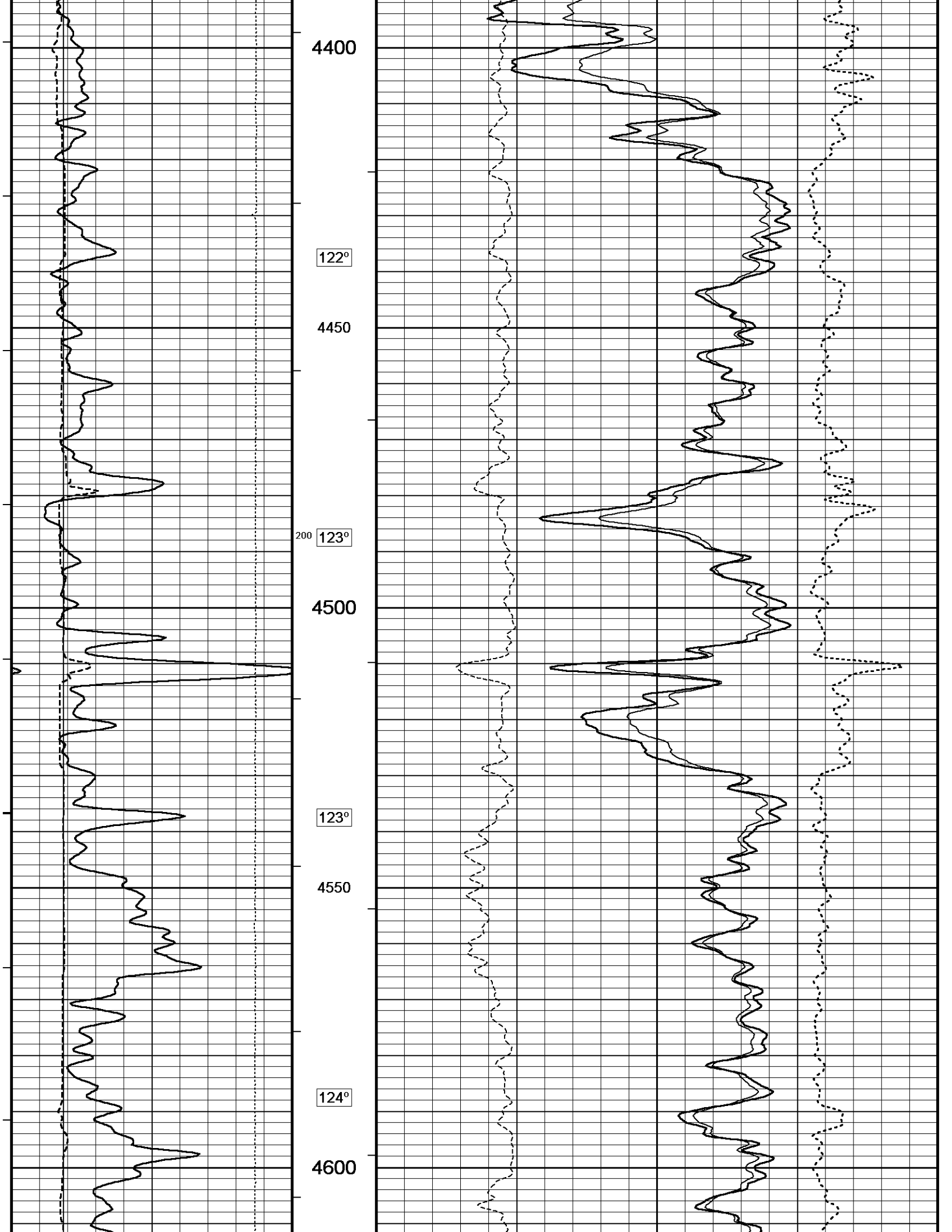
DST Uphole Tension
pounds
5000 0

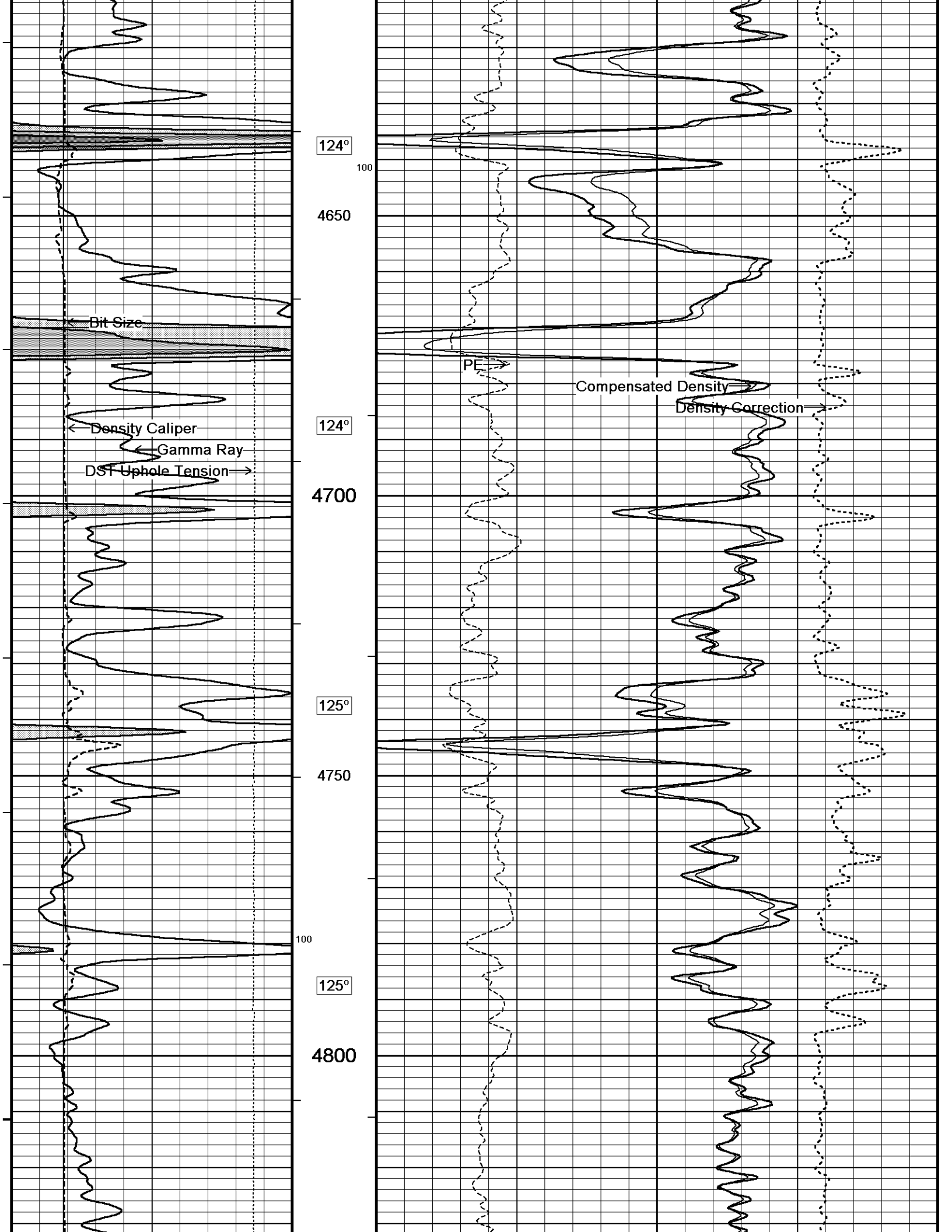
Replay Scale 1:240

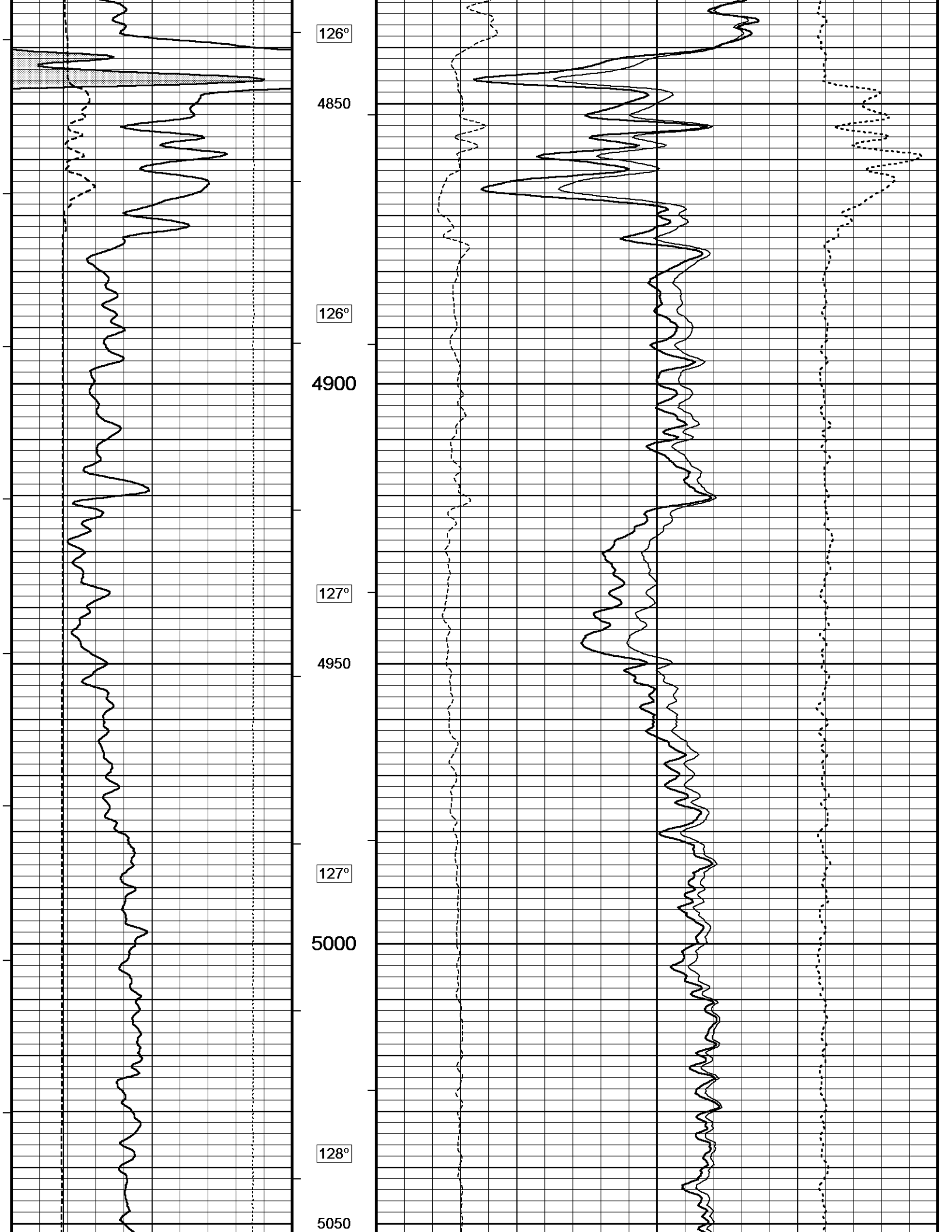


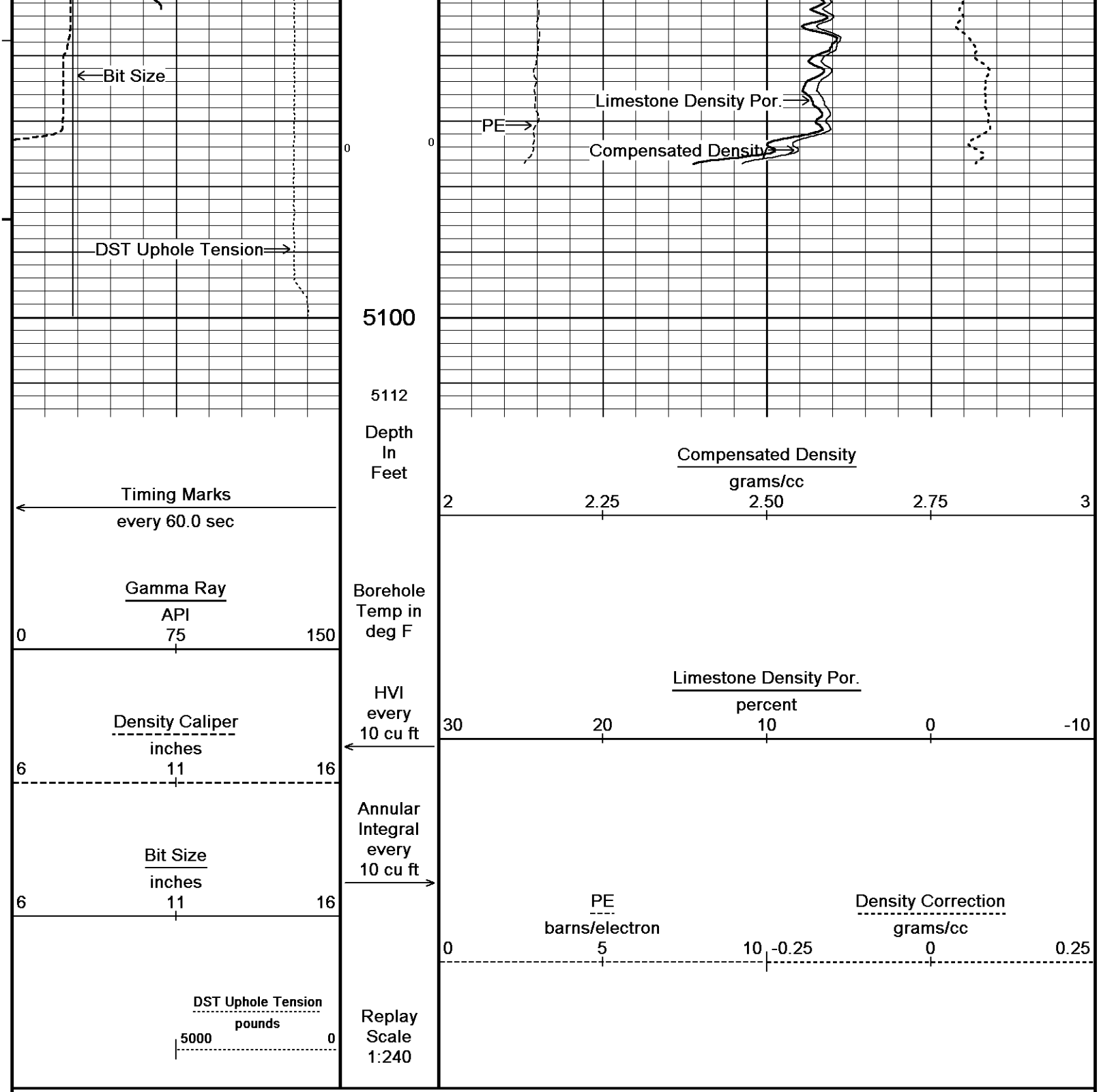

120°
4000
120°
4050
121°
4100
121°
4150


121°
300
4200
200
121°
4250
Bit Size
Limestone Density Por.
PE
Compensated Density
Density Correction
122°
Density Caliper
Gamma Ray
DST Uphole Tension
4300
122°
4350
122°


4400
122°
4450
200
123°
4500
123°
4550
124°
4600


124°
100
4650
Bit Size
PE
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
124°
4700
125°
4750
100
125°
4800


126°
4850
126°
4900
127°
4950
127°
5000
128°
5050



Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-JUL-2011 02:37
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_002.dta
Recorded on 21-JUL-2011 23:23
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-JUL-2011 02:37
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_001.dta
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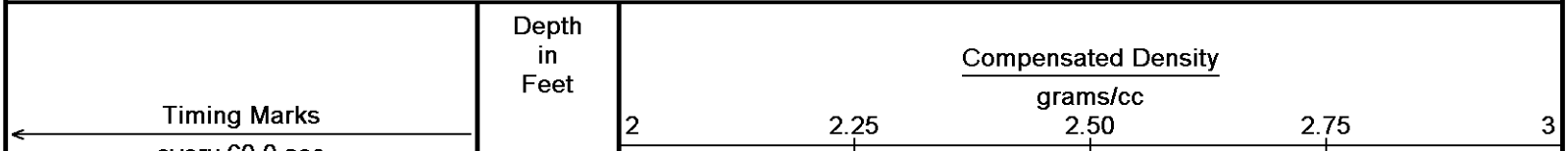
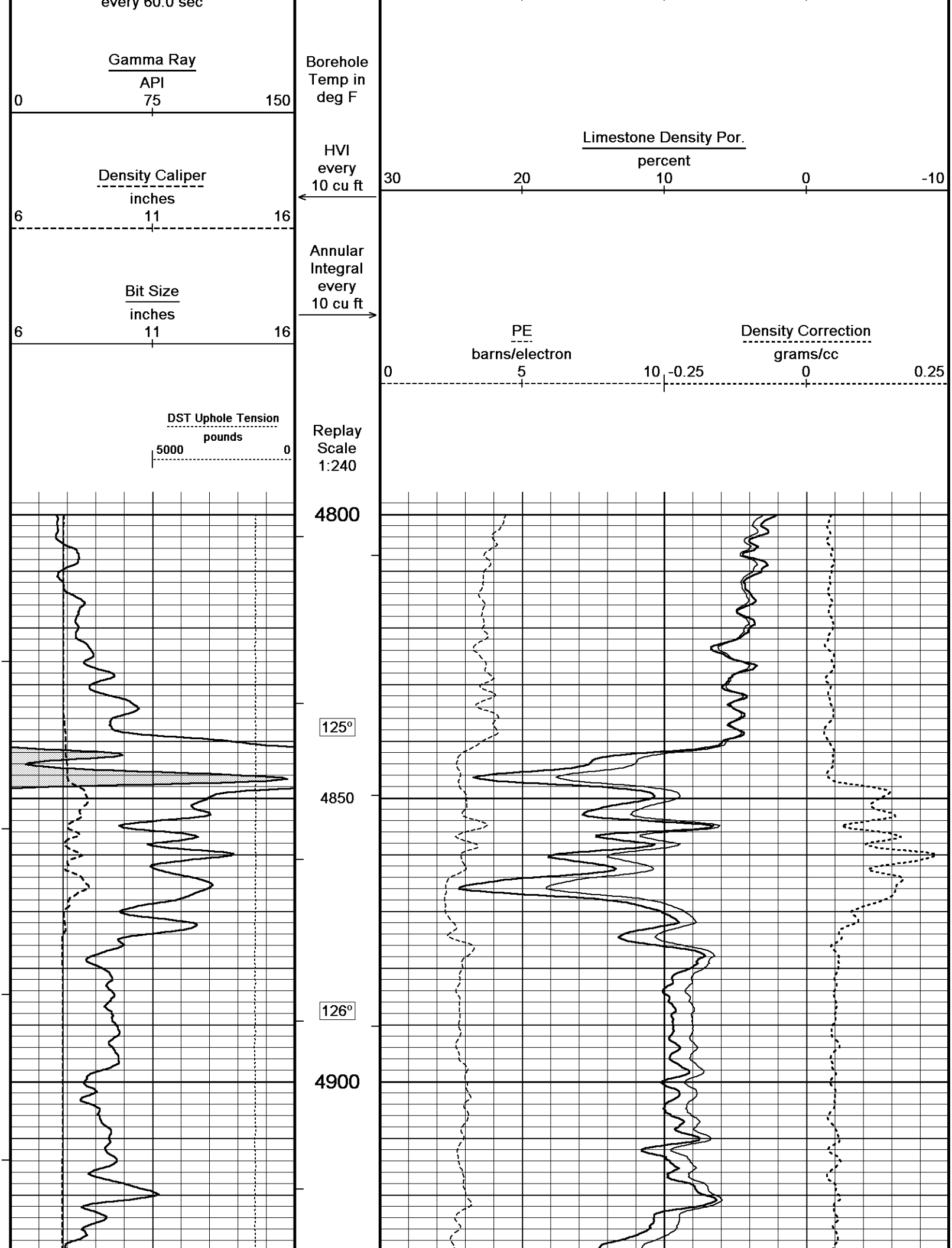
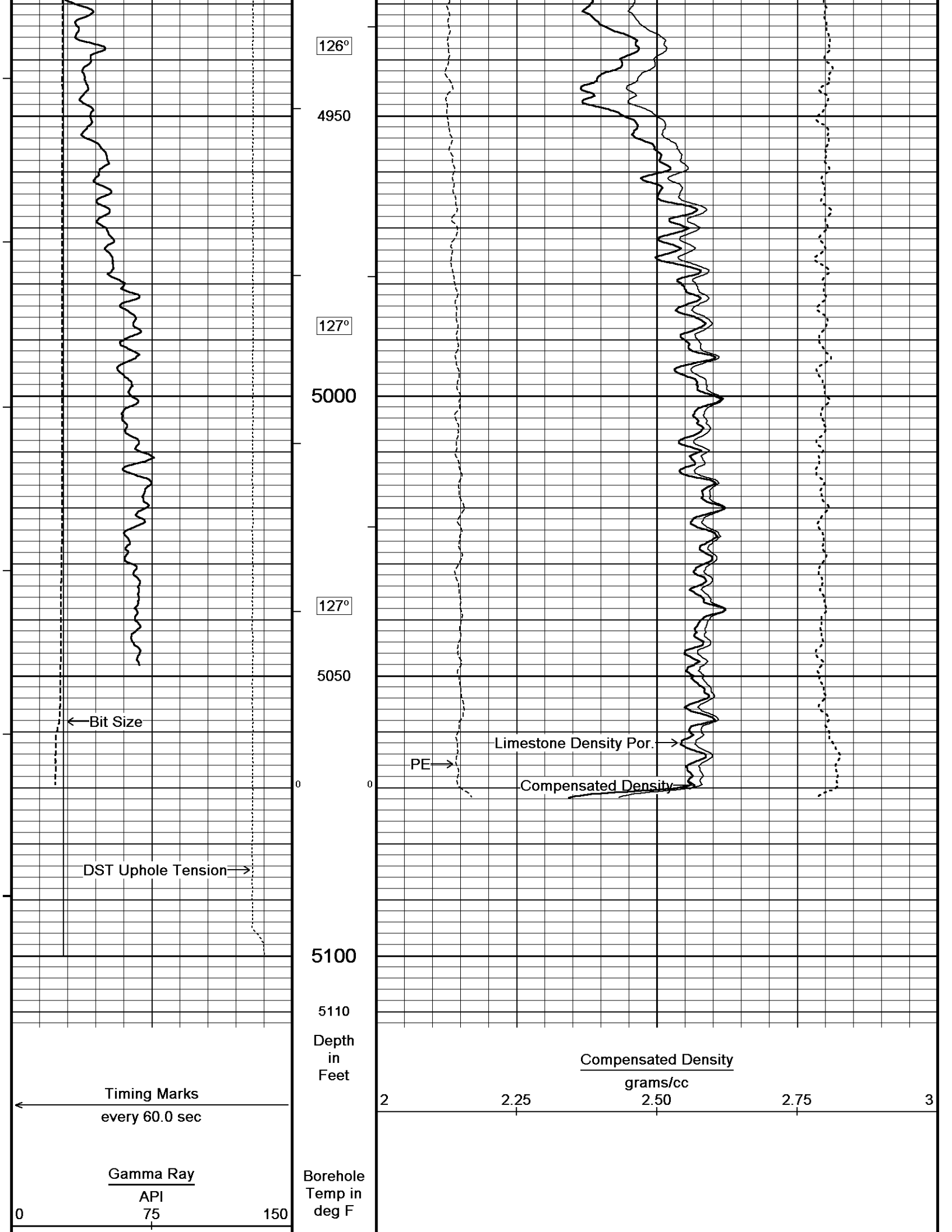
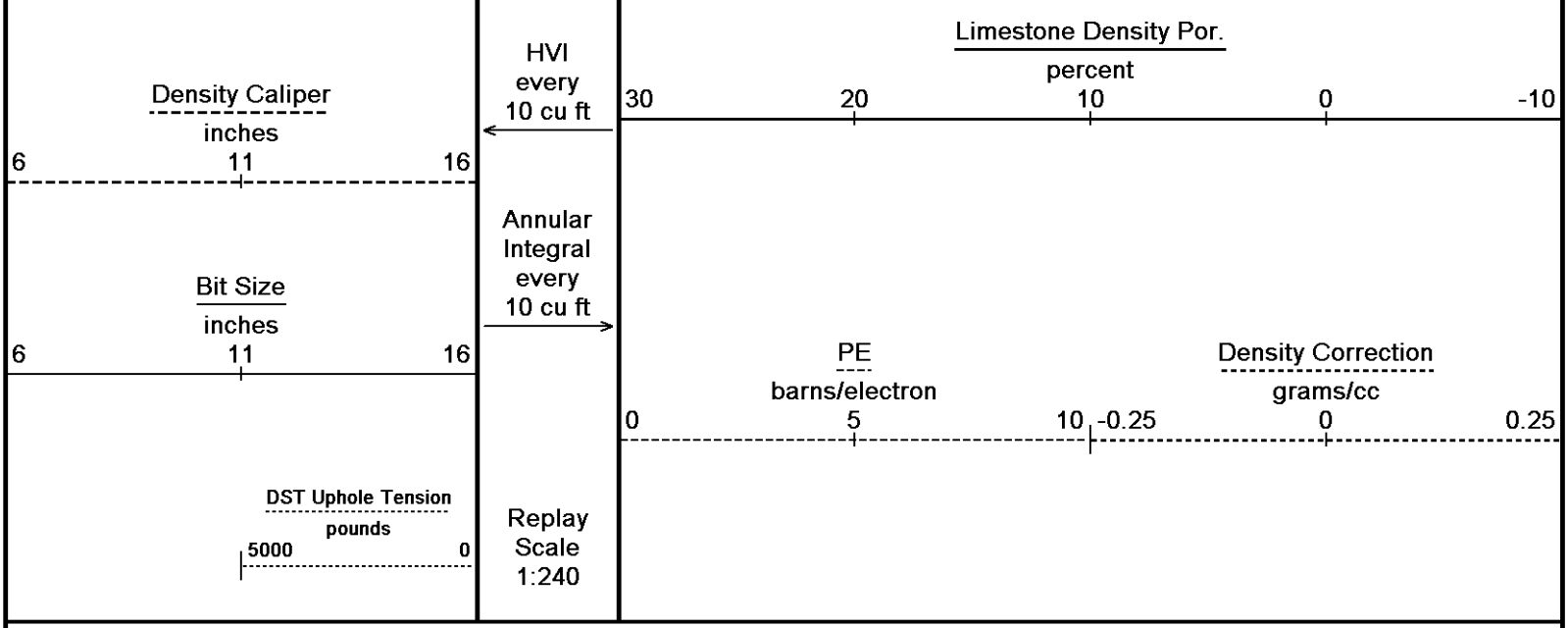
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789




every 60.0 sec
Gamma Ray
API
0
75
150
Borehole Temp in deg F
HVI every 10 cu ft
Limestone Density Por.
percent
30
20
10
0
-10
Density Caliper
inches
6
11
16
Annular Integral every 10 cu ft
Bit Size
inches
6
11
16
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.25
0
0.25
DST Uphole Tension
pounds
5000
0
Replay Scale 1:240
4800
125°
4850
126°
4900


126°
4950
127°
5000
127°
5050
5100
5110
Bit Size
DST Uphole Tension
PE
Limestone Density Por.
Compensated Density
0
0
Depth
in
Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
Borehole
Temp in
deg F
Compensated Density
grams/cc
2
2.25
2.50
2.75
3



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 22-JUL-2011 02:37
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_001.dta — Recorded on 21-JUL-2011 22:53
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA.dta

General Constants All 000

Last Edited on 21-JUL-2011,22:24

General Parameters		
Mud Resistivity	0.840	ohm-metres
Mud Resistivity Temperature	88.000	degrees F
Water Level	0.000	feet
Density/Neutron 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	4.500	inches
Caliper for Differential Caliper	None	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

Down-hole Tension Calibration All 000

Field Calibration on 30-JUN-2010

Reading No	Measured	Calibrated (lbs)
1	14112.01	10.00
2	15164.79	427.00

Down-hole Tension Calibration SMS 0

Field Calibration on 30-JUN-2010

Reading No	Measured	Calibrated (lbs)
1	14112.01	10.00
2	15164.79	427.00

High Resolution Temperature Calibration MCG-C 139

Field Calibration on 19-JUL-2011,08:50

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MCG-C 139

Last Edited on

Pre-filter Length	11

SP Calibration MCG-C 139

Field Calibration on 19-JUL-2011,08:49

	Measured	Calibrated (mV)
Reference 1	103.5	100.0
Reference 2	-96.9	-100.0

Gamma Calibration MCG-C 139

Field Calibration on 21-JUL-2011,16:17

	Measured	Calibrated (API)
Background	67	45
Calibrator (Gross)	1143	770
Calibrator (Net)	1076	725

Gamma Constants MCG-C 139

Last Edited on 19-JUL-2011,15:35

Gamma Calibrator Number	grc38	
Mud Density	1.14	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

Micro Normal and Micro Inverse Calibration MML-A 16

Base Calibration on 30-JUN-2011 16:33
Field Check on 21-JUL-2011,16:17

Base Calibration

	Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.2	60.2	2.6	12.8
Micro Inverse	15.6	78.3	1.7	8.4

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	32.1	32.1
Micro Inverse	16.3	16.3

Micro Normal and Micro Inverse Constants MML-A 16

Last Edited on 16-JUL-2011,14:39

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 16

Base Calibration on 30-JUN-2011 16:22
Field Calibration on 21-JUL-2011,16:17

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14119	5.98
2	17415	7.97
3	20689	9.86
4	24692	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.94	5.96

Neutron Calibration MDN-A.B 66

Base Calibration on 30-JUN-2011 17:46
Field Check on 21-JUL-2011,16:17

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3227	102	3714	110
Ratio	31.653		33.764	

Field Calibrator at Base	Calibrated (cps)	
	1604	2288
Ratio	0.701	

Field Check	Calibrated (cps)	
	1595	2263
Ratio	0.705	

Neutron Constants MDN-A.B 66

Last Edited on 21-JUL-2011,21:04

Neutron Source Id	P58125B	
Neutron Jig Number	5824NE	
Epithermal Neutron	No	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	Constant Value	
Formation Pressure	0.00	kpsi
Temperature Source	MCG External Temperature	
Temperature	N/A	degrees F
Mud Salinity	0.00	kppm
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-A.A 52

Base Calibration on 30-JUN-2011 15:35
Field Check on 21-JUL-2011,16:16

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.4	126.8
Base Check		279.9
Field Check		280.1

FE Constants MFE-A.A 52

Last Edited on 21-JUL-2011,21:04

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Caliper Source for FE correction	Density Caliper	
Caliper Value for FE correction	N/A	inches
Rm Source for FE correction	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
Stand-off	0.5	inches

Sonic Constants MSS-C.K 330

Last Edited on 21-JUL-2011,16:27

Maximum Boundary Contrast	100.00	micro-sec/ft
Fluid Transit Time	189.00	micro-sec/ft
Limestone Transit Time	47.50	micro-sec/ft
Sandstone Transit Time	55.50	micro-sec/ft
Dolomite Transit Time	43.50	micro-sec/ft
Sonic used for Porosities	3-5' Compensated	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	0.00	micro-sec
MX3FT	1500.00	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft
Sonde Mode	Compensated	
Hole Type	Open Hole	

Sonde Parameters

	Measured	Calibrated
Offset	0.0000	0.0000
Free Pipe	0.0000	0.0000

Peak Amplitude Source 0

Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	0	0	0	0	0
4'	0	0	0	0	0
5'	0	0	0	0	0
6'	0	0	0	0	0

Processed Fixed Gate Parameters

Waveform Used For Processing N/A

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

Full Waveform Parameters

Use 3' Waveform to derive TR	No	
Use 4' Waveform to derive TR	No	
Use 5' Waveform to derive TR	No	
Use 6' Waveform to derive TR	No	
3' Waveform Discriminator Level	0.30	mV
4' Waveform Discriminator Level	0.30	mV
5' Waveform Discriminator Level	0.15	mV
6' Waveform Discriminator Level	0.15	mV
3' Waveform Filter	0	
4' Waveform Filter	0	
5' Waveform Filter	0	
6' Waveform Filter	0	
Semblance Level	0.50	
Semblance Window Width	120.00	micro-sec
Sonic 1 Despiker	100.00	micro-sec/ft
Sonic 2 Despiker	100.00	micro-sec/ft

High Resolution Temperature Calibration MAI-A.A 167

Field Calibration on 21-JUL-2011,16:15

	Measured	Calibrated(Deg F)
Lower	1.00	33.80
Upper	11.00	51.80

High Resolution Temperature Constants MAI-A.A 167

Last Edited on

Pre-filter Length	11

Induction Calibration MAI-A.A 167

Base Calibration on 11-MAR-2011,09:58
Field Check on 21-JUL-2011,16:15

Base Calibration

Test Loop Calibration	Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High
1	17.3	474.2	9.3	966.2
2	6.3	388.4	7.6	821.4
3	3.3	259.4	5.2	566.0
4	1.9	133.0	2.6	279.2
Array Temperature		76.8	Deg F	

Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1	0.0	0.0	14.1	3836.5	
2	0.0	0.0	29.8	3472.9	
3	0.0	0.0	29.2	3049.0	
4	0.0	0.0	19.7	2078.8	
Deep	0.0	0.0	18.6	2046.1	
Medium	0.0	0.0	42.2	3985.7	
Shallow	0.0	0.0	43.4	5048.5	
Array Temperature		0.0		90.6	Deg F

Induction Constants MAI-A.A 167

Last Edited on 21-JUL-2011,22:23

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	N/A	inches
Tool Centred	No	
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
Borehole Corr. Rm Source	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
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

Apparent Porosity and Water Saturation Constants

Archie Constant (A)	1.00	
Cementation Exponent (M)	2.00	
Saturation Exponent (N)	2.00	
Saturation of Water for Apor	100.00	percent
Resistivity of Water for Apor and Sw	0.05	ohm-m
Resistivity of Mud Filtrate for Sw	0.00	ohm-m
Source for Rt	0.00	
Source for Rxo	0.00	

Caliper Calibration MPD-B 35

Base Calibration on 11-JUL-2011 10:31
Field Calibration on 21-JUL-2011,16:16

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	19039	3.99
2	29274	5.98
3	39568	7.97
4	49173	9.86
5	60065	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.98	5.98

Photo Density Calibration MPD-B 35

Base Calibration on 11-JUL-2011 10:49
Field Check on 21-JUL-2011,16:16

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	57974	27718	59556	30836
Reference 2	23445	2602	24941	2541

Field Check at Base

1165.1	1390.6

Field Check

1169.8	1387.5

PE Calibration

Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	207	1031		
Reference 1	21348	57768	0.373	0.371
Reference 2	6208	23295	0.270	0.272

Field Check at Base

207.5	1031.2

Field Check

208.6	1029.9

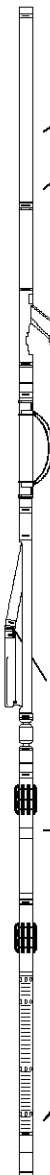
Density Constants MPD-B 35 — Last Edited on 19-JUL-2011,15:34

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	1.14	gm/cc
Mud Density Z/A Multiplier	1.11	
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	

Matrix Density (gm/cc)	Depth (ft)
2.71	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

DOWNHOLE EQUIPMENT

C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA.dta



Compact Comms Gamma
MCG-C 139 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in
- 57.56 ft GRGC - Gamma Ray
- 54.65 ft CGXT - MCG External Temperature

Compact Micro-log
MML-A 16 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in
- 47.93 ft MINV - Micro-inverse
- 47.93 ft MNRL - Micro-normal
- 48.92 ft MLTC - MML Caliper

Compact Neutron
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in
- 43.13 ft NPRL - Limestone Neutron Por.

Compact Density/Caliper
MPD-B 35 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in
- 35.89 ft CLDC - Density Caliper
- 33.96 ft DPRL - Limestone Density Por.
- 33.96 ft DEN - Compensated Density
- 33.96 ft DCOR - Density Correction

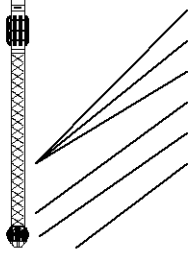
SKJ-D.A Compact Knuckle Joint
SKJ-D.A 36 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in
- 33.90 ft PDPE - PE

Compact Focussed Electric
MFE-A.A 52 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in
- 26.24 ft FEFE - Shallow FE

Compact Sonic
MSS-C.K 330 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in
- 12.96 ft DT35 - 3-5' Compensated Sonic
- 12.96 ft SPRL - Wyllie Lime. Sonic Por.

Compact Induction
MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 62.84 ft Weight: 480.6 lb



3.34 ft	R40O - Array Ind. One Res 40
3.34 ft	RTAO - Array Ind. One Res Rt
3.34 ft	R60O - Array Ind. One Res 60
0.23 ft	SPCG - Spontaneous Potential
Tool Zero	(0.13ft from bottom)
-0.13 ft	SMTU - DST Uphole Tension

All measurements relative to tool zero.

COMPANY	M&M EXPLORATION
WELL	Z-BAR #19-13
FIELD	AETNA GAS AREA
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1668.00	feet	First Reading	5048.00	feet
Elevation Drill Floor	1667.00	feet	Depth Driller	5100.00	feet
Elevation Ground Level	1656.00	feet	Depth Logger	5096.00	feet

Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG

40 Years of Wireline 1970 2010

Weatherford®

ARRAY INDUCTION SHALLOW FOCUSSED ELECTRIC LOG

COMPANY	M&M EXPLORATION
WELL	Z-BAR #19-13
FIELD	AETNA GAS AREA
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	500' FSL 950' FWL, SW/4 NW SE SW SW

40 Years of Wireline 1970 2010

SEC	TWP	RGE
19	34S	14W

API Number 15-071-23701
Permit Number

Other Services
MPD/MDN
MML
MSS

Permanent Datum GL, Elevation 1656 feet
Log Measured From K.B. @ 12 FEET above Permanent Datum
Drilling Measured From K.B.

Elevations:	feet
KB	1668.00
DF	1667.00
GL	1656.00

Date	21-JUL-2011			
Run Number	ONE			
Depth Driller	5100.00	feet		
Depth Logger	5096.00	feet		
First Reading	5093.00	feet		
Last Reading	912.50	feet		
Casing Driller	914.00	feet		
Casing Logger	912.50	feet		
Bit Size	7.880	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.10 g/c3	58.00 CP		
PH / Fluid Loss	9.20	58.00 ml/30Min		
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.84 @ 88.0	ohm-m		
Rmf @ Measured Temp	0.67 @ 88.0	ohm-m		
Rmc @ Measured Temp	1.01 @ 88.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.58 @128.0	ohm-m		
Time Since Circulation	5 HOURS			
Max Recorded Temp	128.00	deg F		
Equipment Name	COMPACT			
Equipment / Base	13025	LIB		
Recorded By	W. STAMBAUGH			
Witnessed By	B. BROCK			

BOREHOLE RECORD

Last Edited: 22-JUL-2011 02:02

Bit Size inches	Depth From feet	Depth To feet
7.880	912.50	5096.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	912.50	24.00

REMARKS

Tools Run: MAI, MPD, MCG, MDN, MFE, MML, MSS in tool string but not presented on final presentation.
Hardware: MPD: 8 inch profile plate used. MAI and MFE: 0.5 inch standoffs used. MDN: Dual Eccentralizer used.
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.
Annular volume with 4.5 inch production casing 270 Cubic Feet
Total hole volume to top of detail section 405 Cubic feet
Service order #3531139
Rig: Southland Drilling #70
Engineer: William Stambaugh
Operator(s): Billy Reeves, Nick Adame

2 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_002.dta
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

Plotted on 22-JUL-2011 02:39
Recorded on 21-JUL-2011 23:23

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150

Spontaneous Potential
millivolts
− → | 20 | ← +

DST Uphole Tension
pounds
5000 0

Depth In Feet

Borehole Temp in deg F

Replay Scale 1:600

Array Ind. One Cond Ct
mmhos
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

910

1000

Array Ind. One Res Rt 194

Array Ind. One Cond Ct

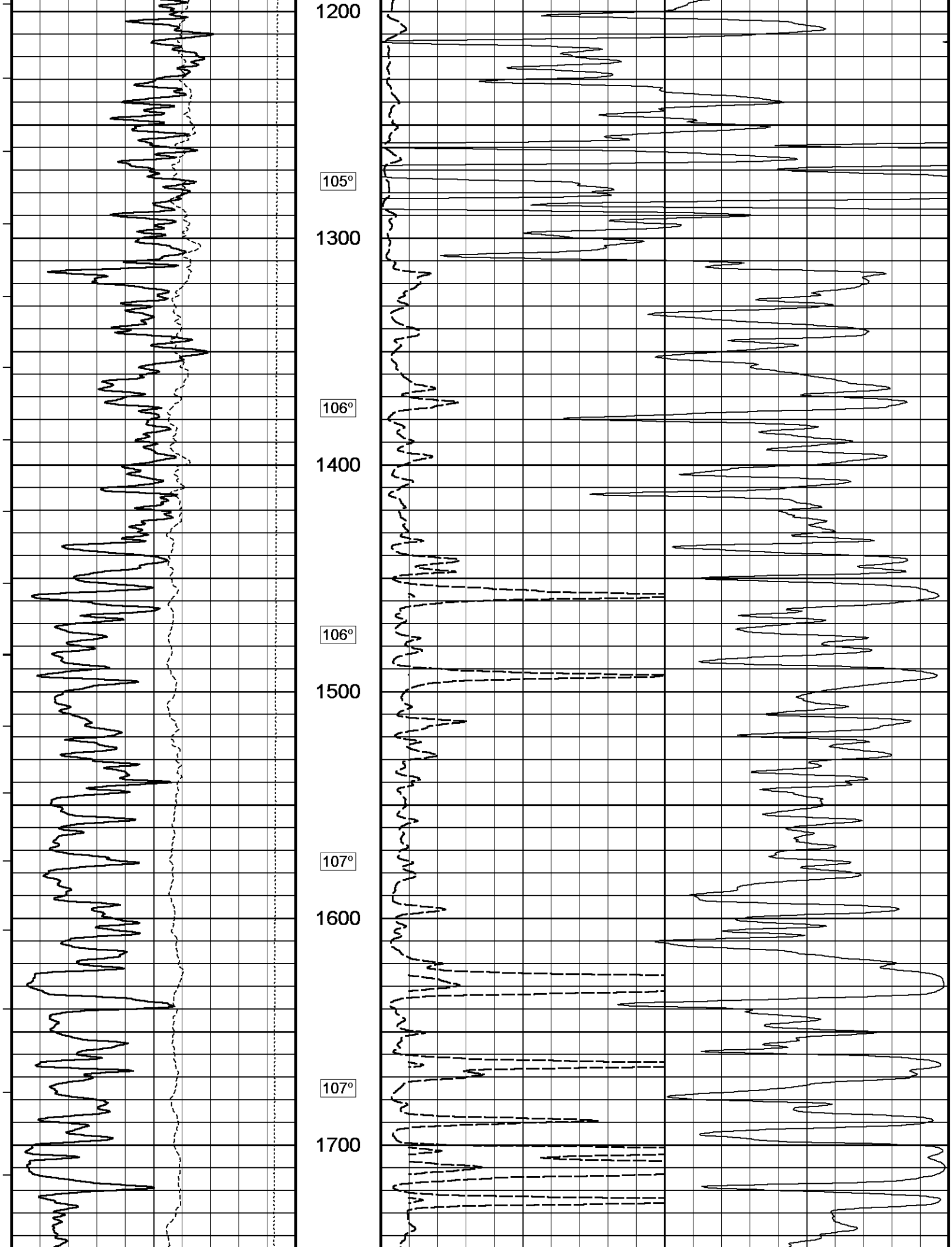
1100

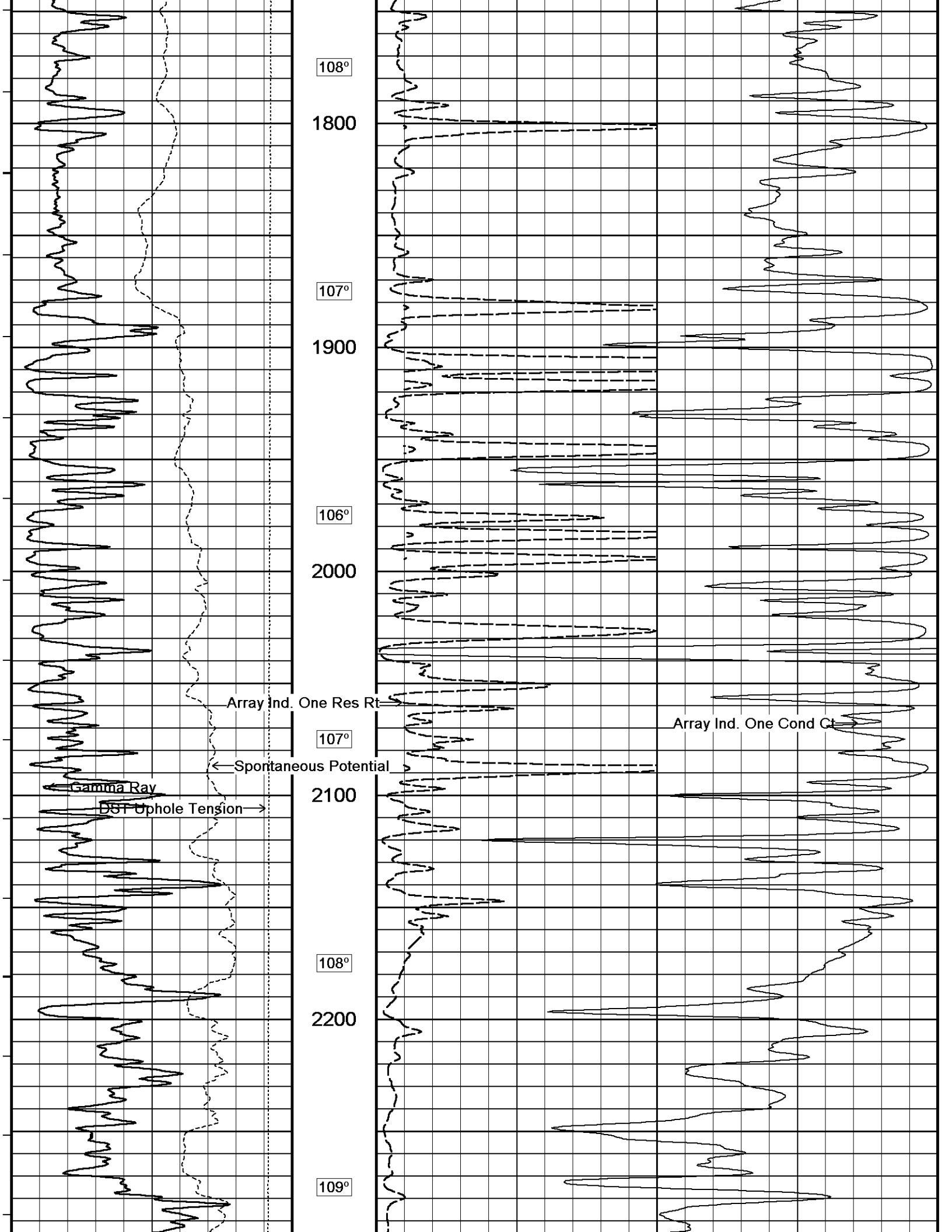
Spontaneous Pc

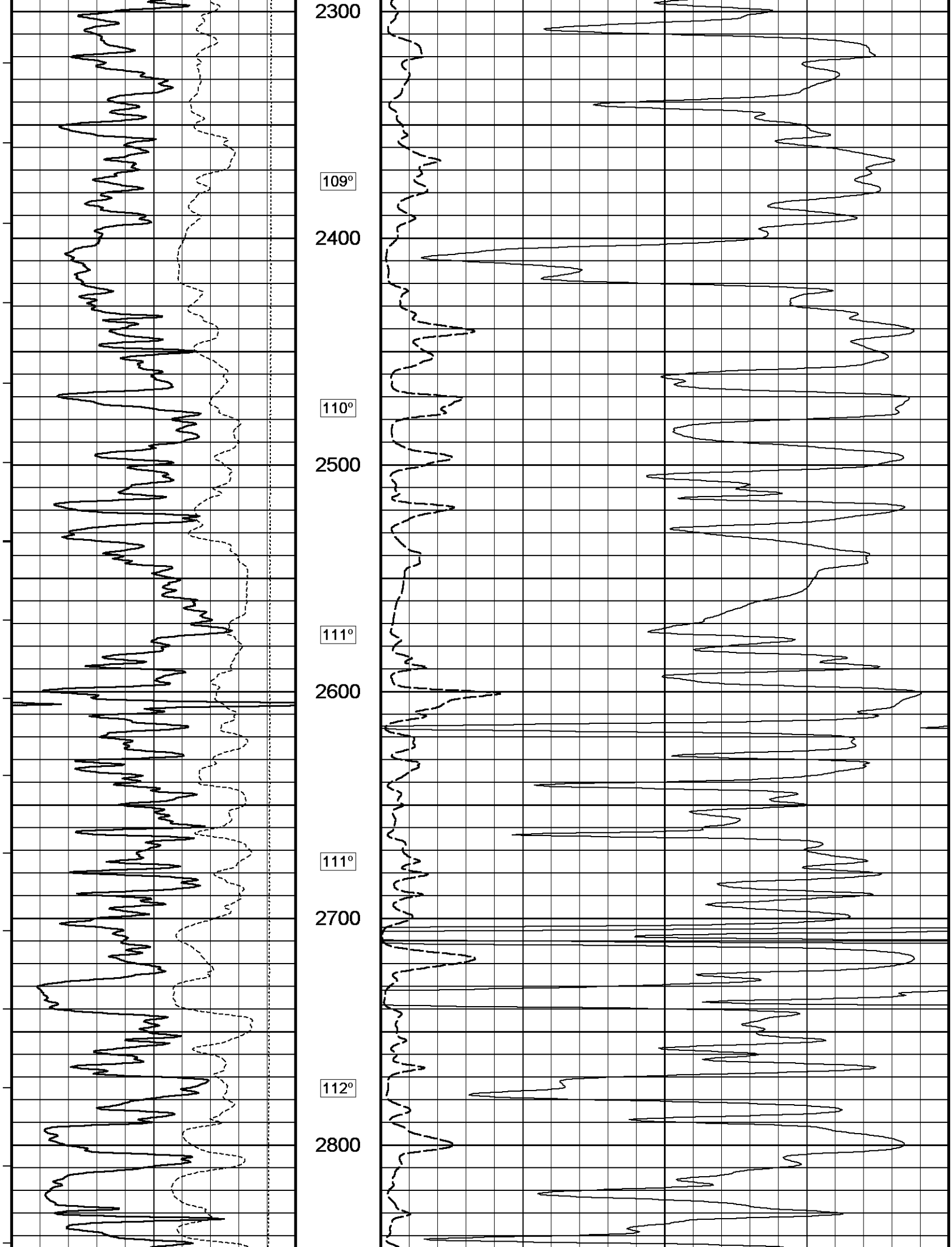
Gamma Ray

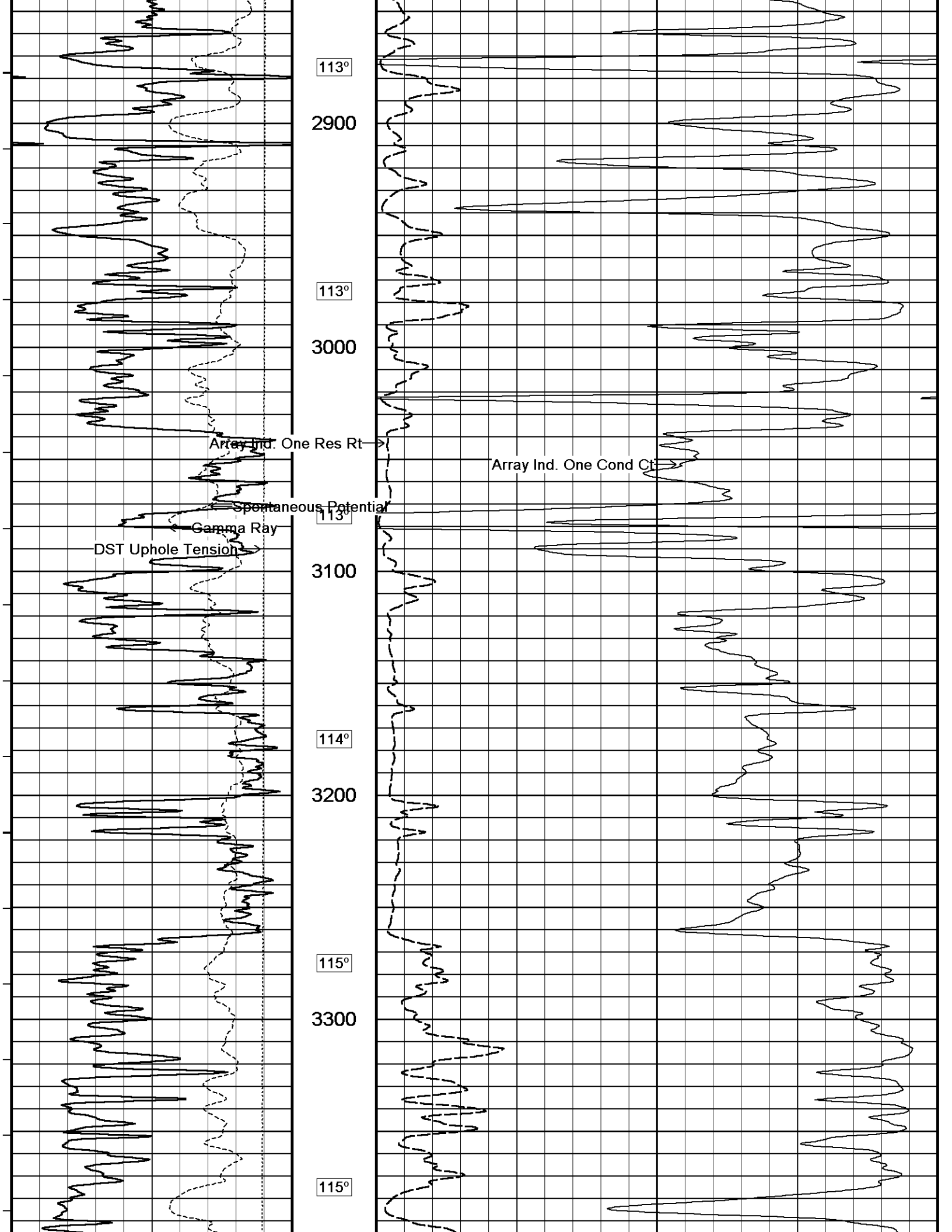
DST Uphole Tension

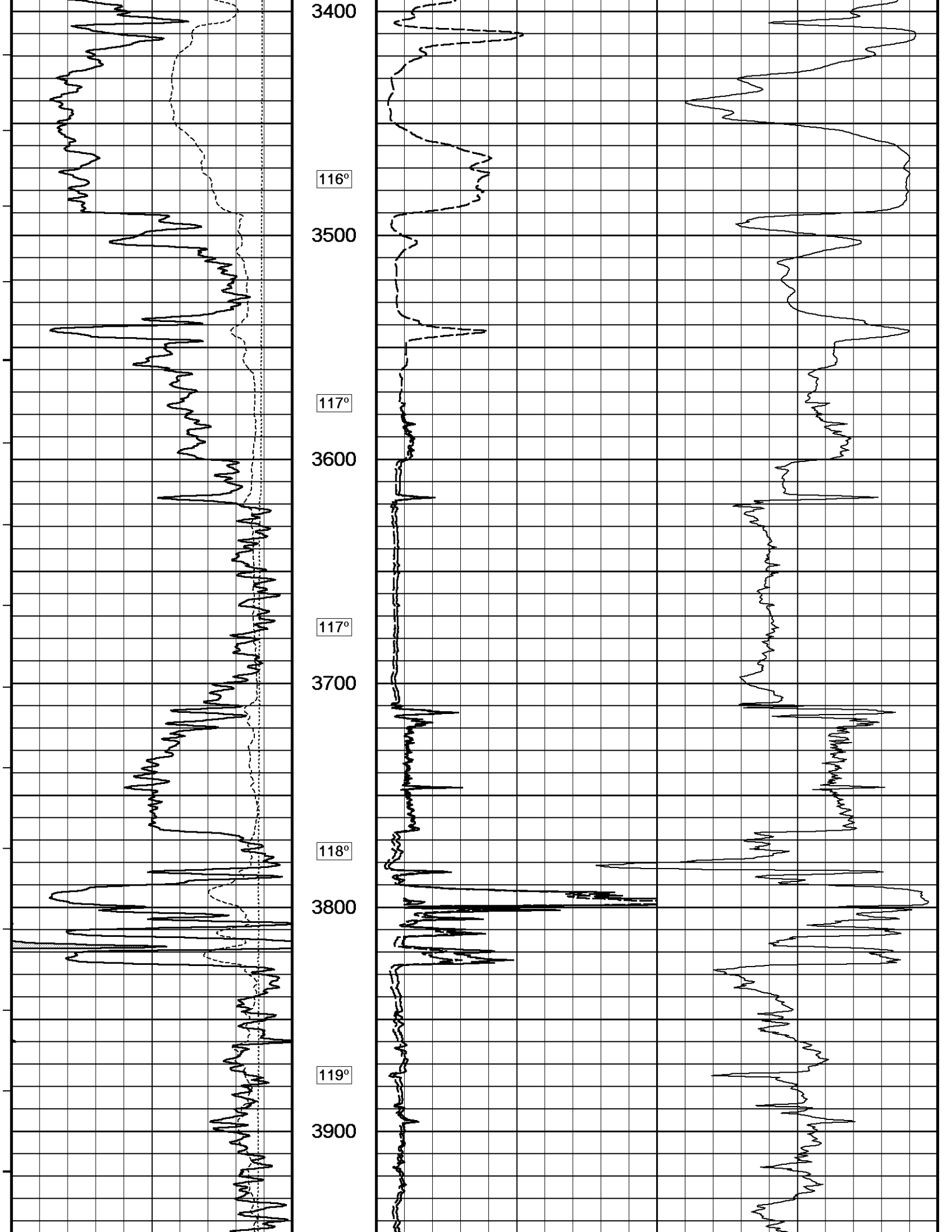
105°

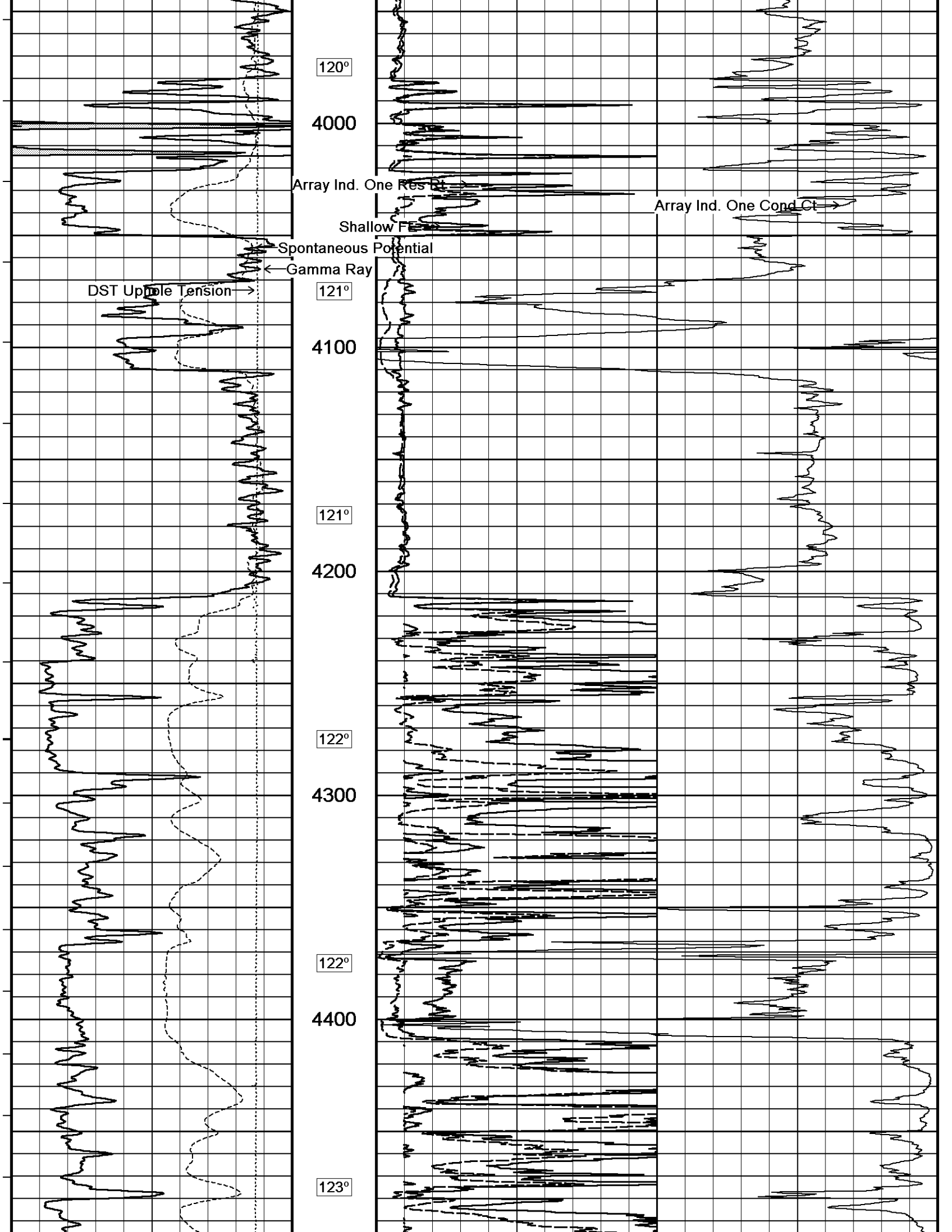

1200
105°
1300
106°
1400
106°
1500
107°
1600
107°
1700

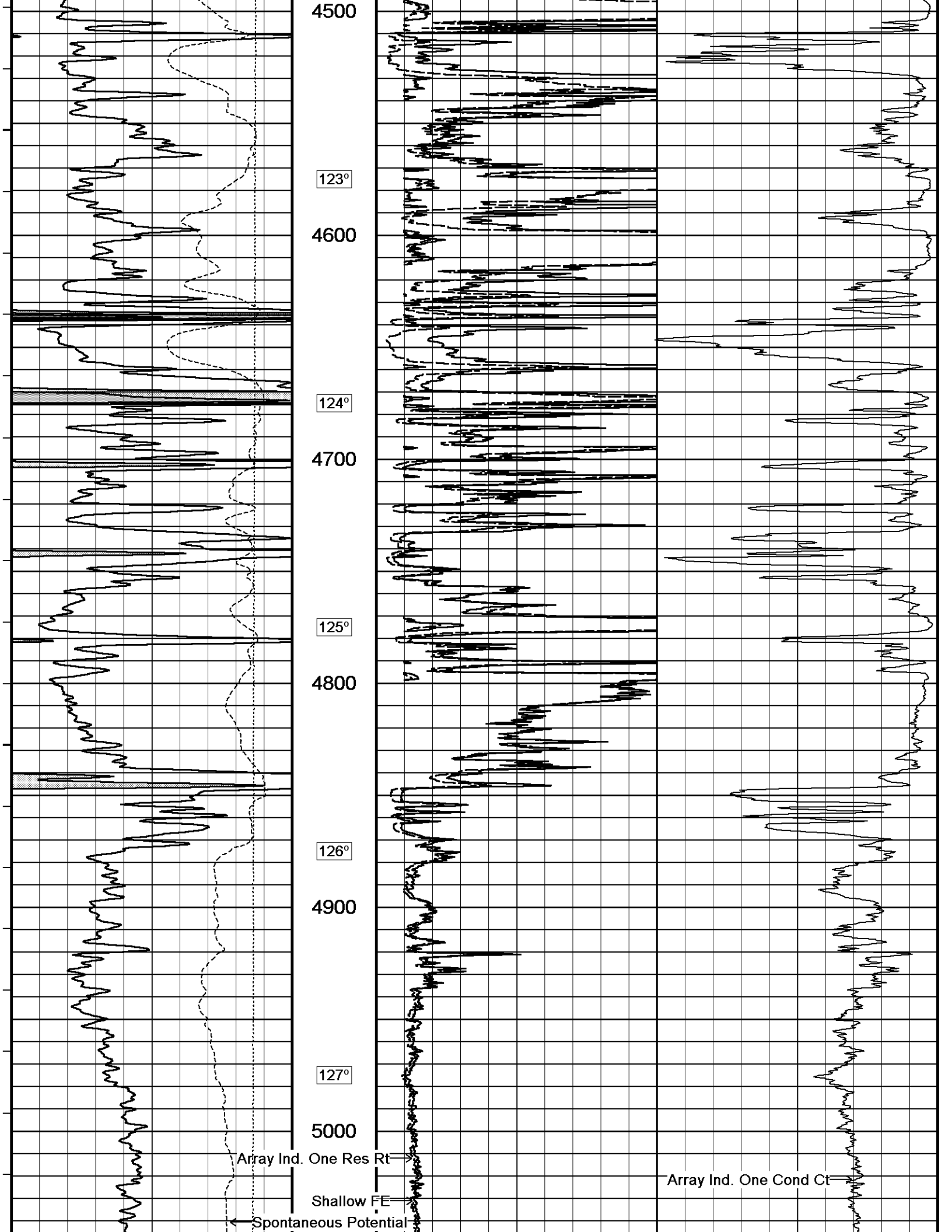

108°
1800
107°
1900
106°
2000
Array Ind. One Res Rt
Array Ind. One Cond Ct
107°
Spontaneous Potential
Gamma Ray
DST Uphole Tension
2100
108°
2200
109°

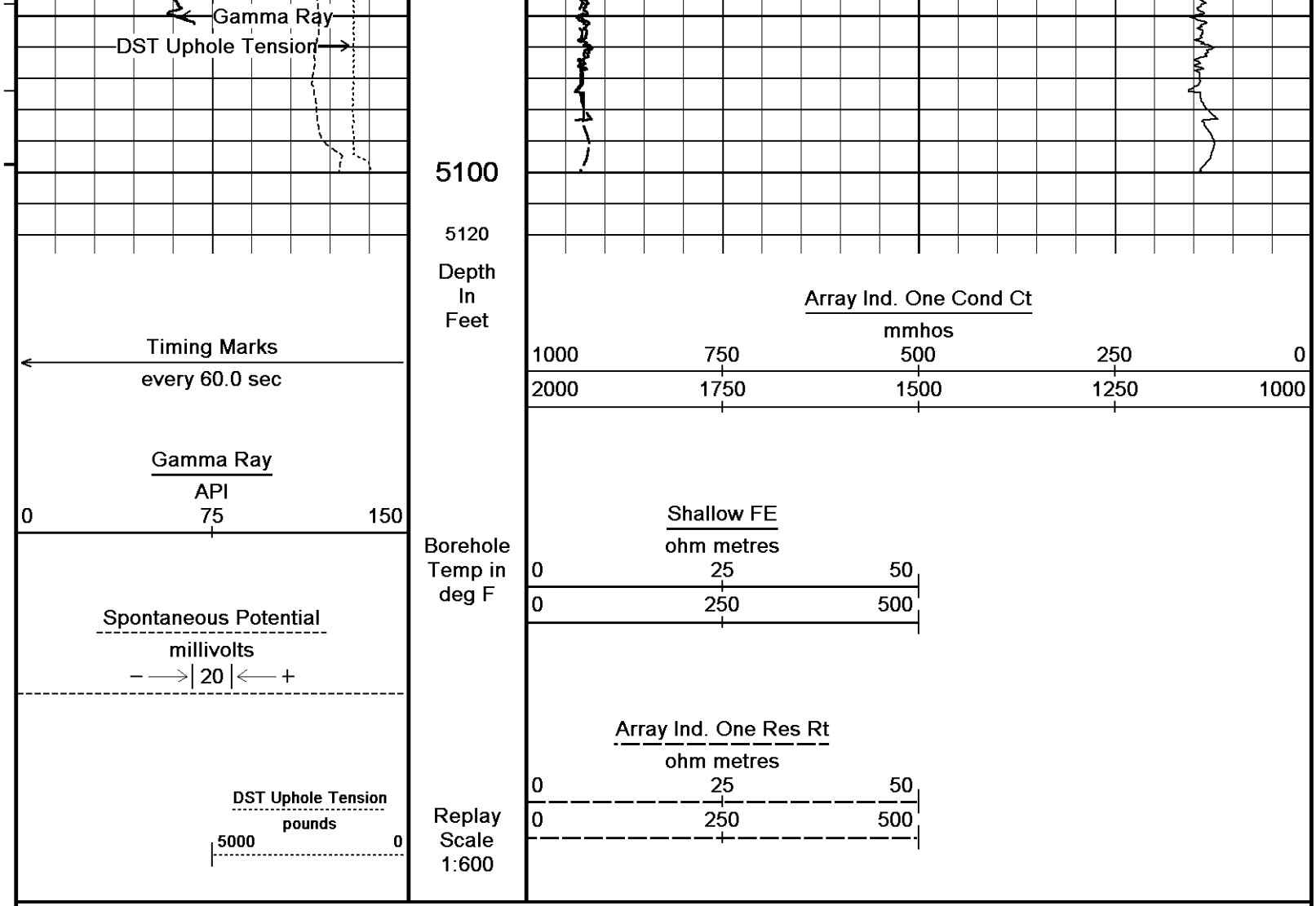

2300
109°
2400
110°
2500
111°
2600
111°
2700
112°
2800


113°
2900
113°
3000
Array Ind. One Res Rt
Array Ind. One Cond Ct
Spontaneous Potential
113°
Gamma Ray
DST Uphole Tension
3100
114°
3200
115°
3300
115°


3400
116°
3500
117°
3600
117°
3700
118°
3800
119°
3900


120°
4000
Array Ind. One Res Rt
Array Ind. One Cond Ct
Shallow Res
Spontaneous Potential
Gamma Ray
DST Uphole Tension
121°
4100
121°
4200
122°
4300
122°
4400
123°


4500
123°
4600
124°
4700
125°
4800
126°
4900
127°
5000
Array Ind. One Res Rt
Shallow FE
Spontaneous Potential
Array Ind. One Cond Ct

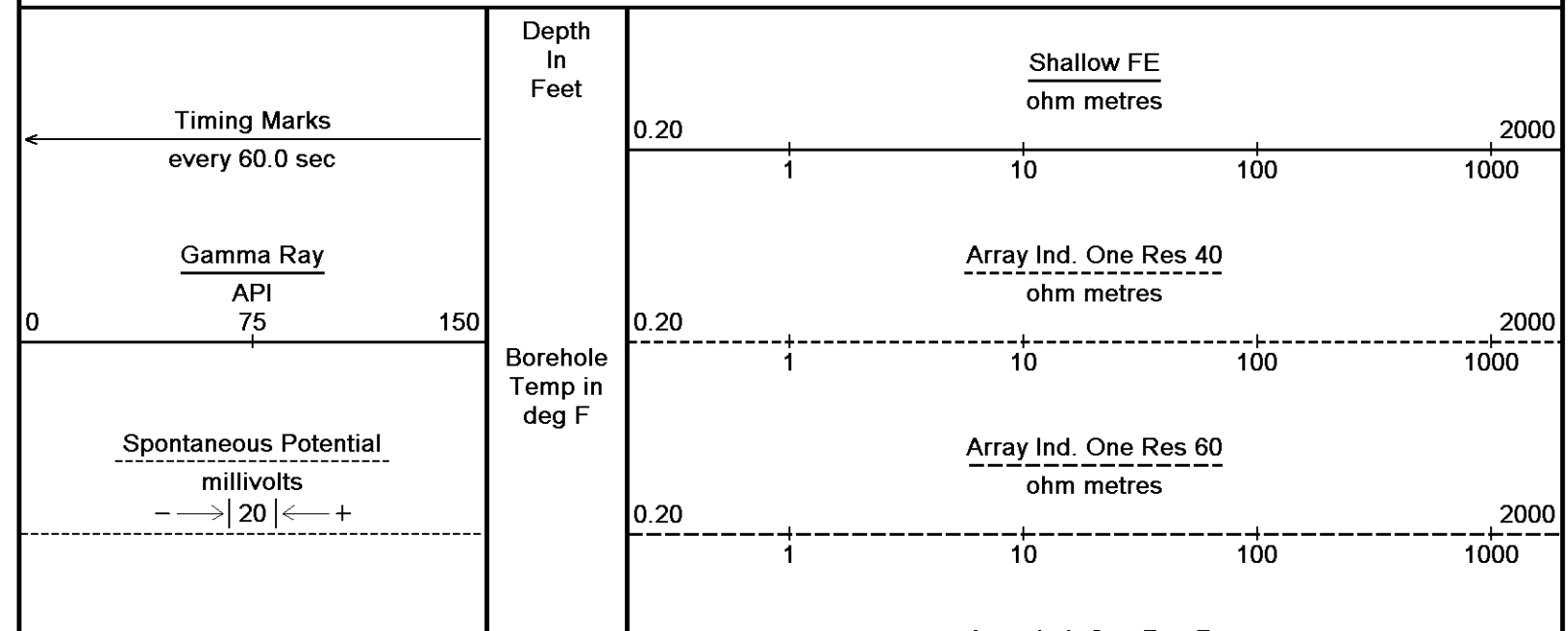


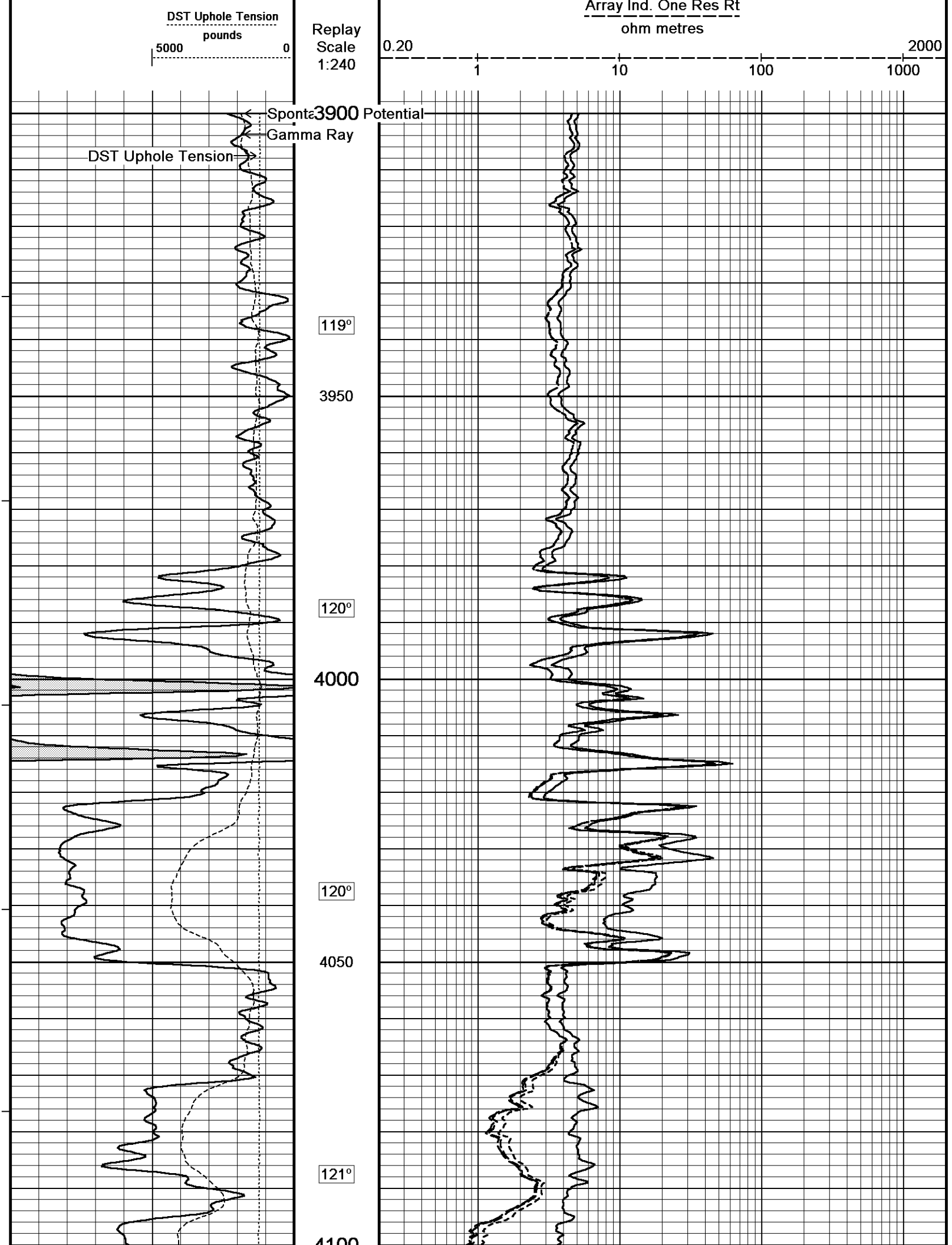
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-JUL-2011 02:39
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_002.dta
Recorded on 21-JUL-2011 23:23
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

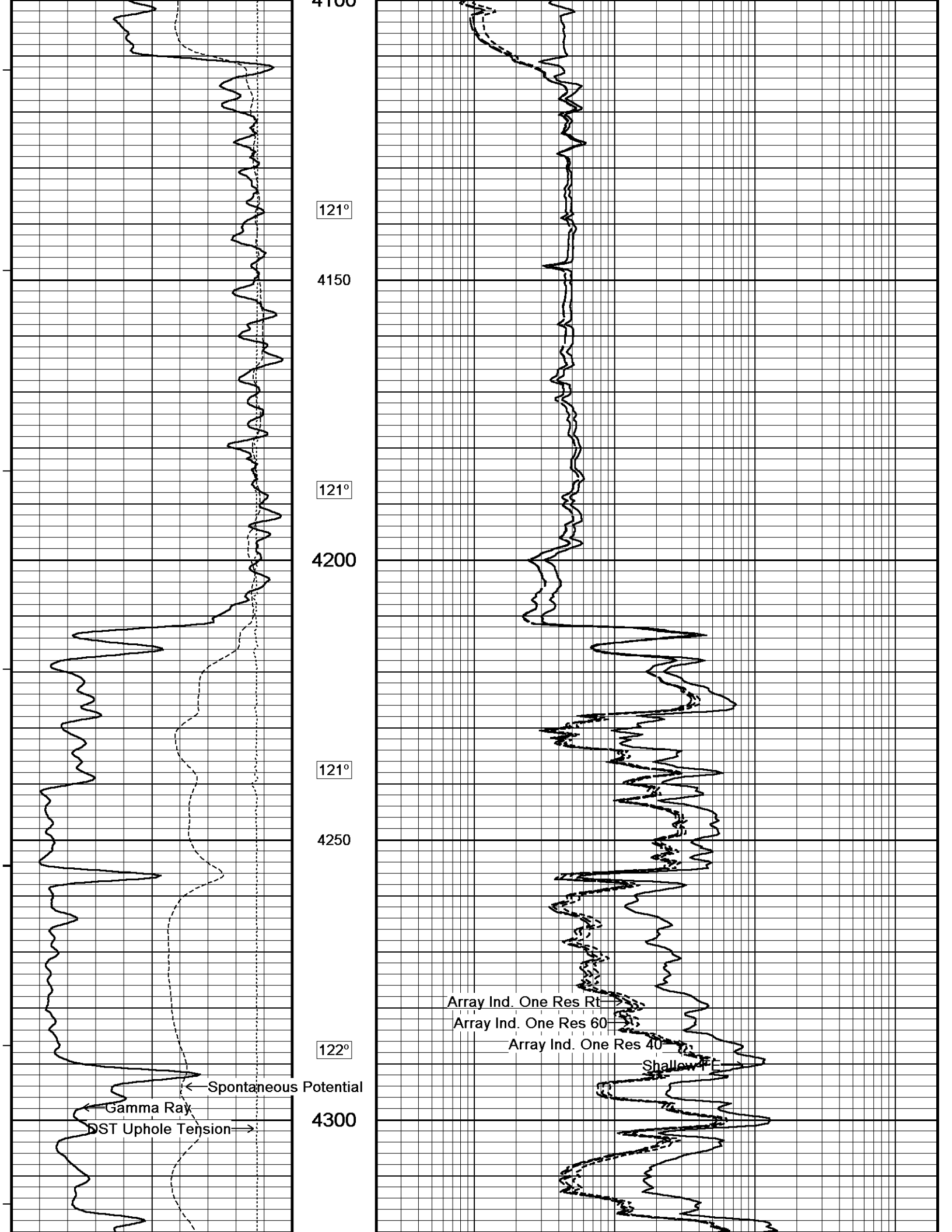
2 INCH MAIN

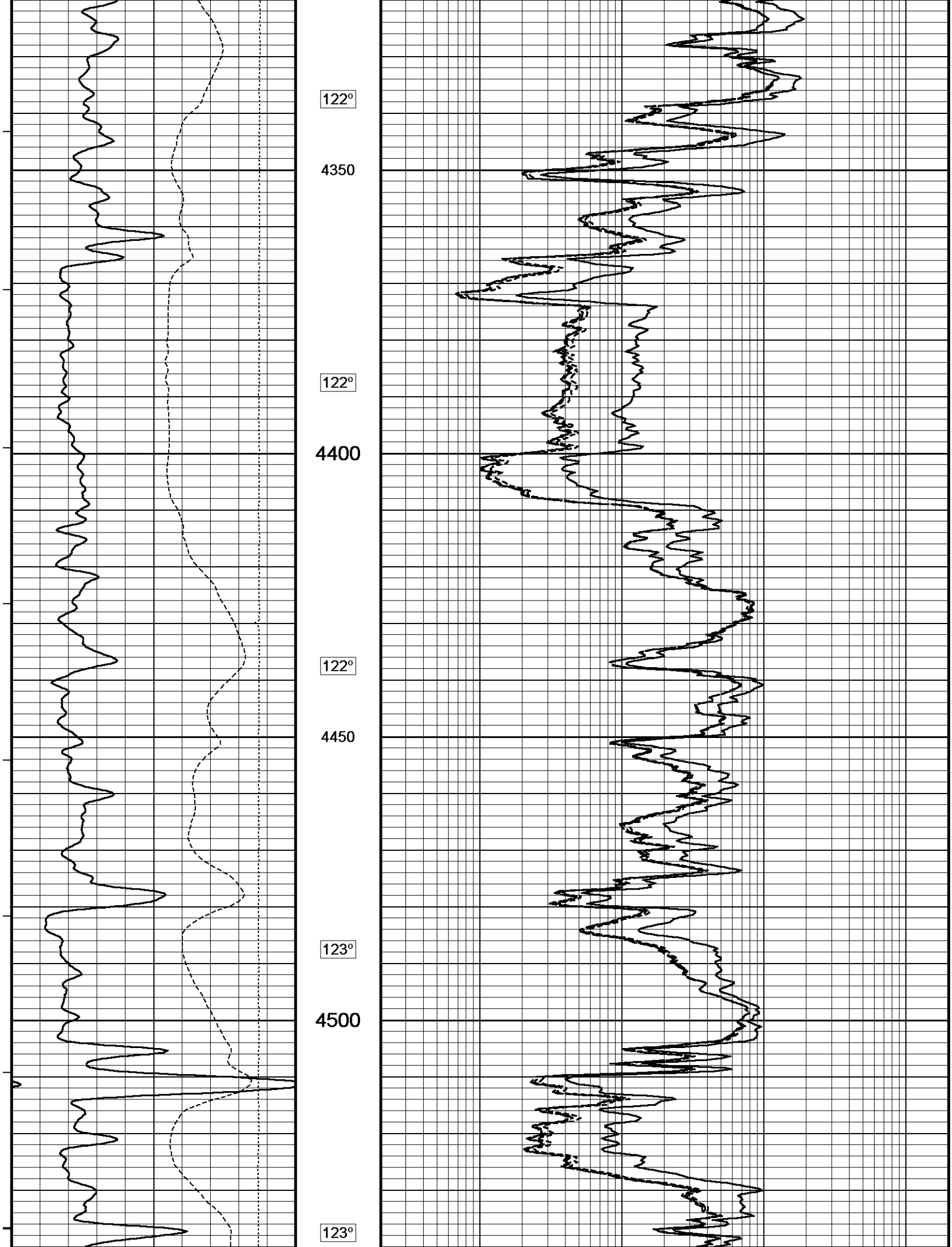
5 INCH MAIN

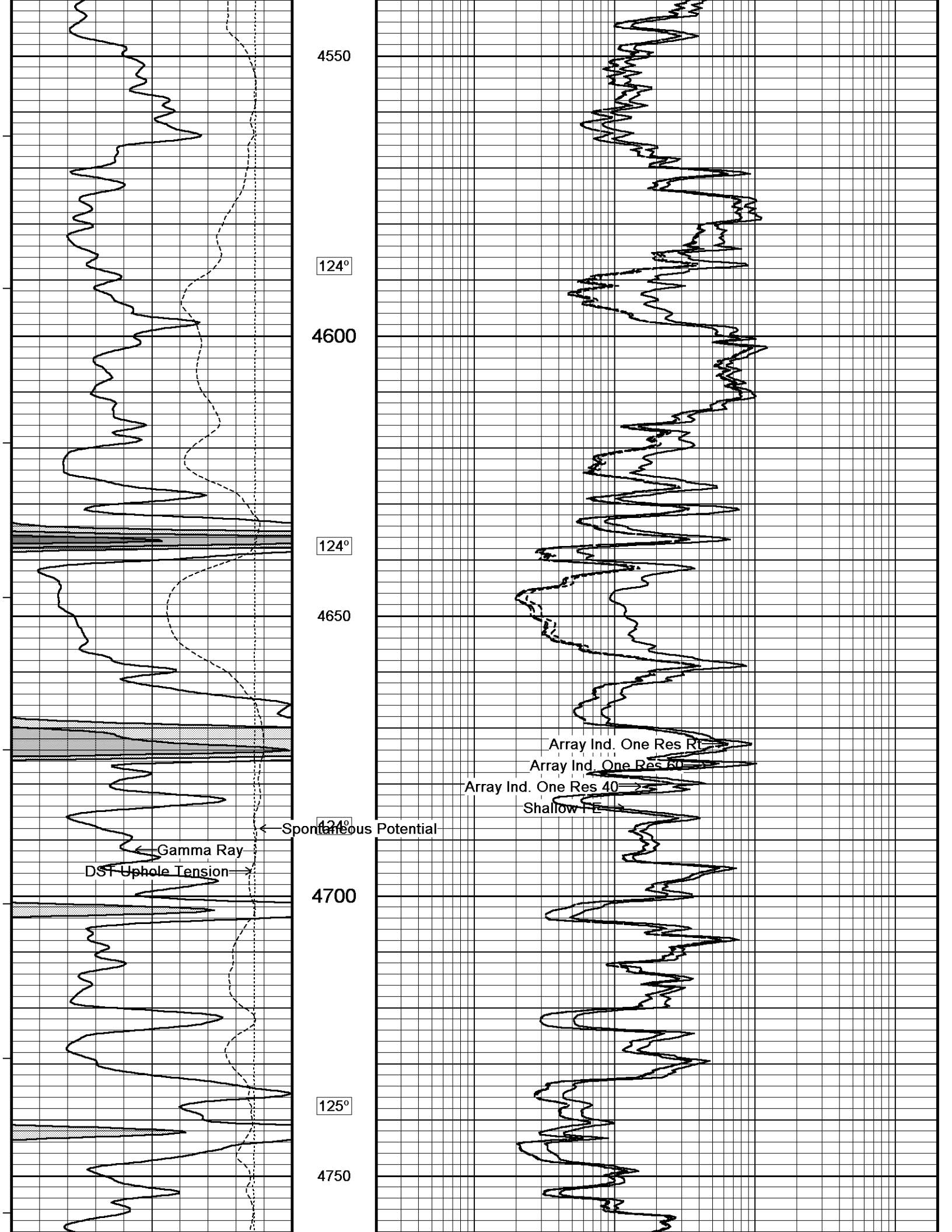
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-JUL-2011 02:39
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_002.dta
Recorded on 21-JUL-2011 23:23
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

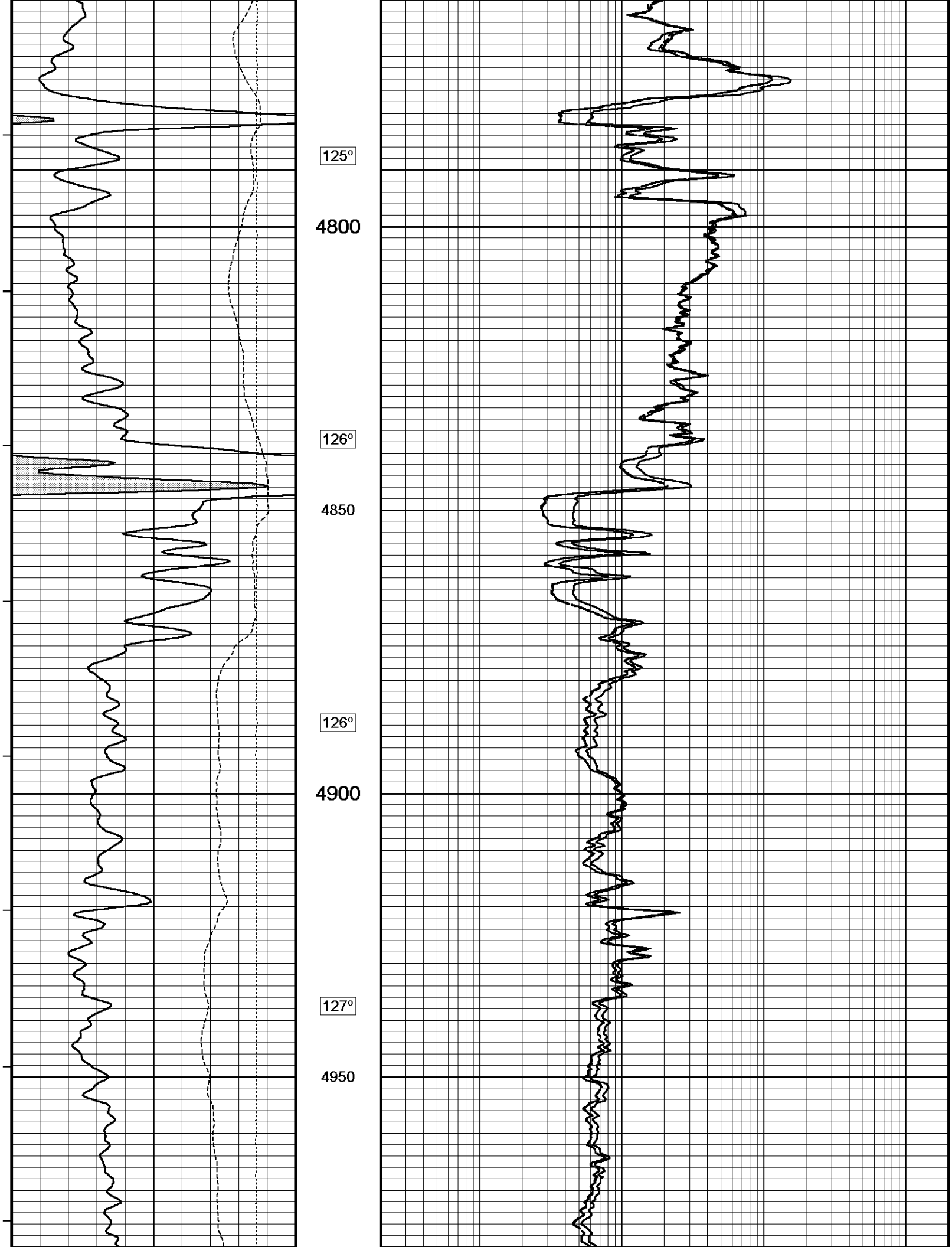


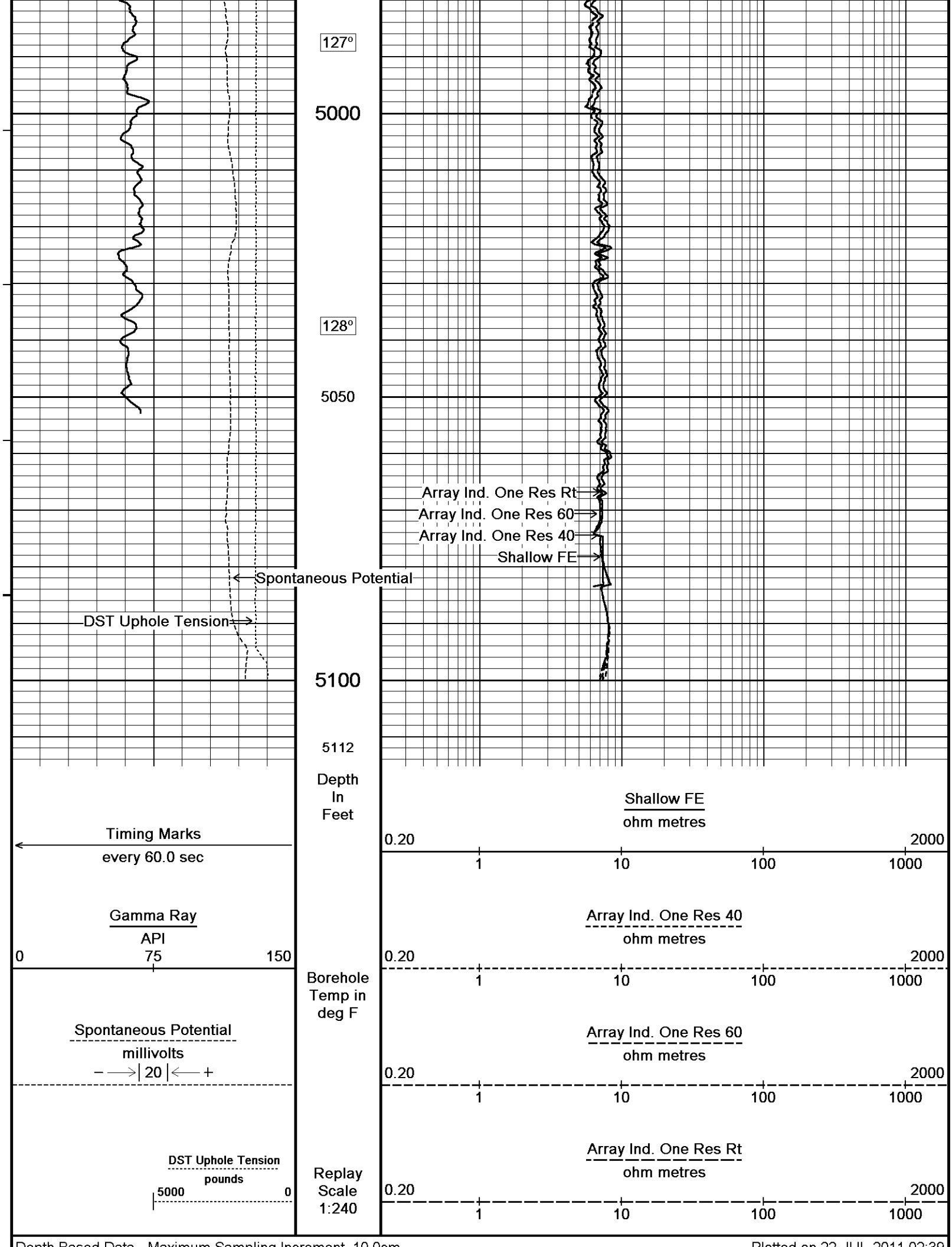

DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
Array Ind. One Res Rt
ohm metres
0.20
2000
1
10
100
1000
Sponta
3900
Potential
Gamma Ray
DST Uphole Tension
119°
3950
120°
4000
120°
4050
121°
4100


4100
121°
4150
121°
4200
121°
4250
122°
4300
Spontaneous Potential
Gamma Ray
DST Uphole Tension
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow Ft


122°
4350
122°
4400
122°
4450
123°
4500
123°


4550
124°
4600
124°
4650
124°
4700
125°
4750
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow Rt
Spontaneous Potential
Gamma Ray
DST Uphole Tension


125°
4800
126°
4850
126°
4900
127°
4950



Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 22-JUL-2011 02:39

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 22-JUL-2011 02:39
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_002.dta — Recorded on 21-JUL-2011 23:23
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 22-JUL-2011 02:39
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_001.dta — Recorded on 21-JUL-2011 22:53
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

Timing Marks
every 60.0 sec

Gamma Ray
API
0 — 75 — 150

Spontaneous Potential
millivolts
− → | 20 | ← +

DST Uphole Tension
pounds
5000 — 0

Depth in Feet

Borehole Temp in deg F

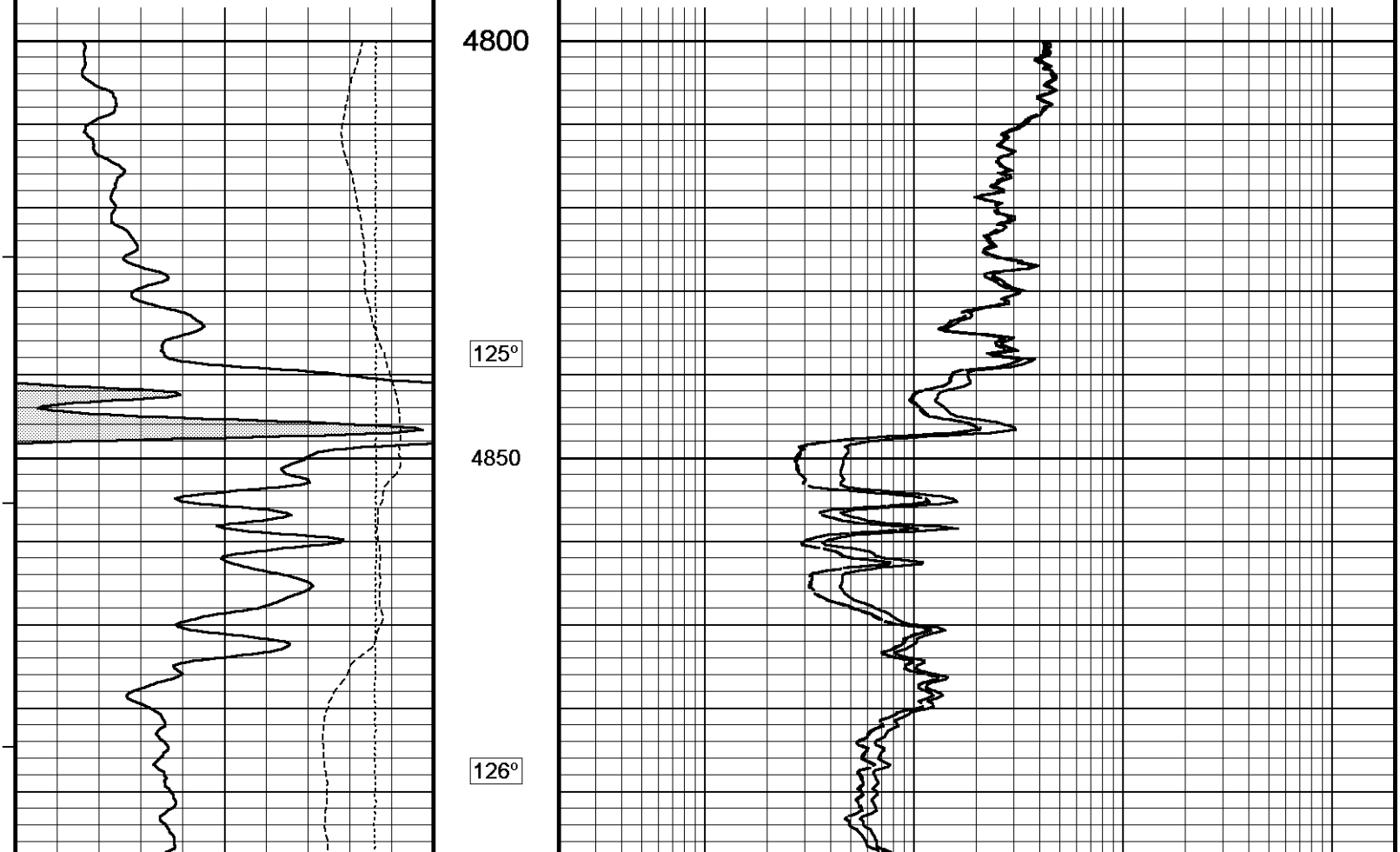
Replay Scale 1:240

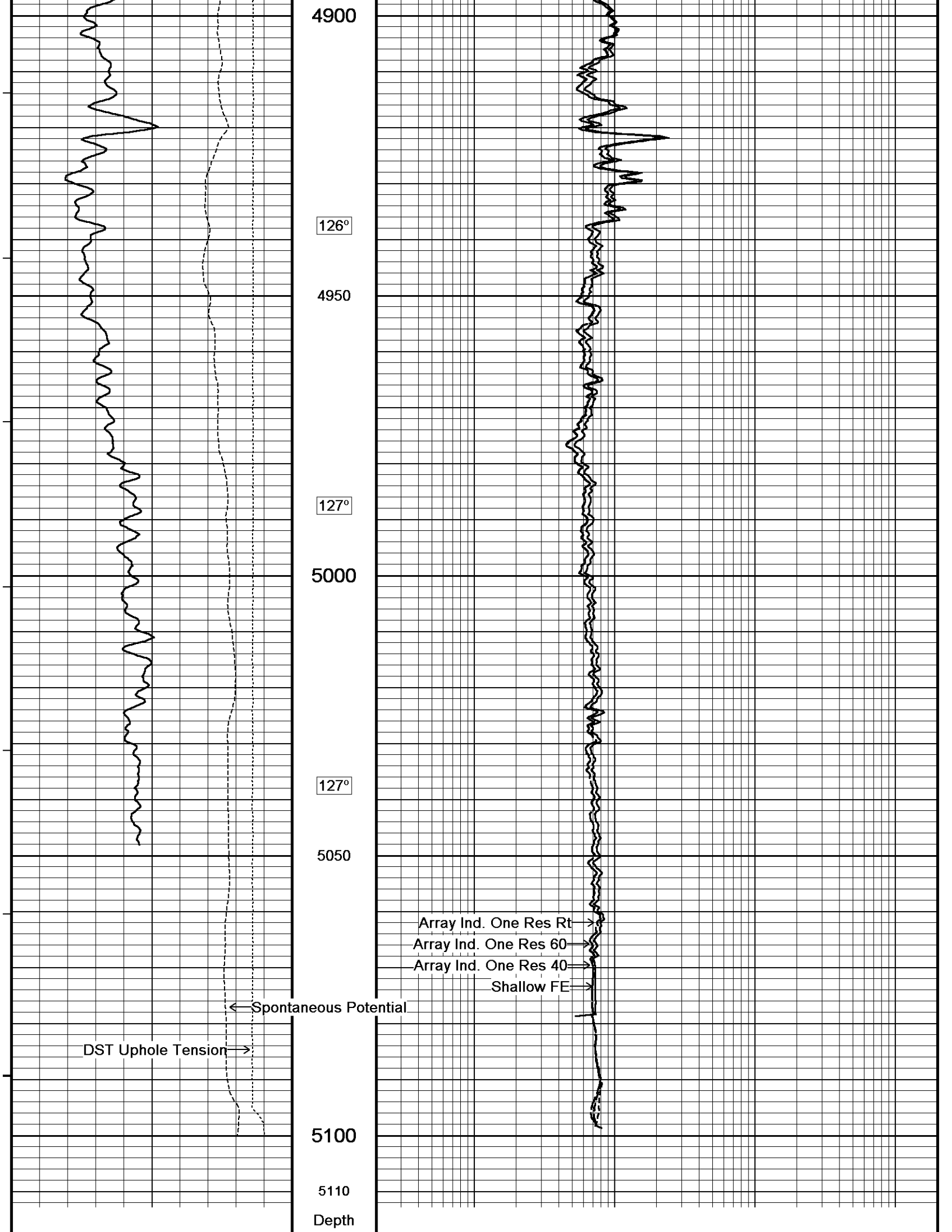
Shallow FE
ohm metres
0.20 — 1 — 10 — 100 — 1000 — 2000

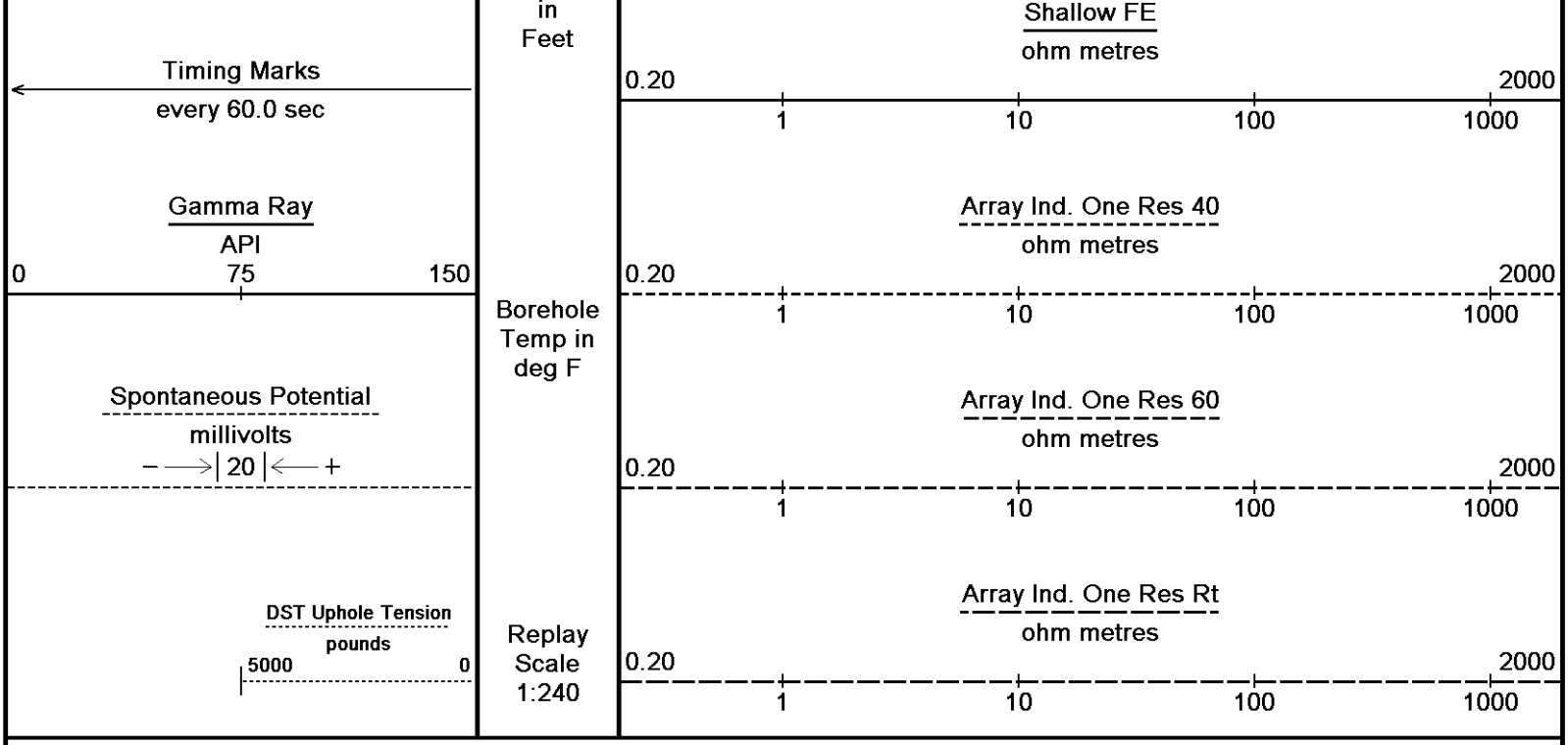
Array Ind. One Res 40
ohm metres
0.20 — 1 — 10 — 100 — 1000 — 2000

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




4900
126°
4950
127°
5000
127°
5050
Array Ind. One Res Rt
Array Ind. One Res 60
Array Ind. One Res 40
Shallow FE
Spontaneous Potential
DST Uphole Tension
5100
5110
Depth



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 22-JUL-2011 02:39

Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_001.dta — Recorded on 21-JUL-2011 22:53

System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA.dta

General Constants All 000

Last Edited on 21-JUL-2011,22:24

General Parameters		
Mud Resistivity	0.840	ohm-metres
Mud Resistivity Temperature	88.000	degrees F
Water Level	0.000	feet
Density/Neutron 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	4.500	inches
Caliper for Differential Caliper	None	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

Down-hole Tension Calibration All 000

Field Calibration on 30-JUN-2010

Reading No	Measured	Calibrated (lbs)
1	14112.01	10.00
2	15164.79	427.00

Down-hole Tension Calibration SMS 0

Field Calibration on 30-JUN-2010

Reading No	Measured	Calibrated (lbs)
1	14112.01	10.00
2	15164.79	427.00

High Resolution Temperature Calibration MCG-C 139

Field Calibration on 19-JUL-2011,08:50

	Measured	Calibrated(Deg F)

Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MCG-C 139

Last Edited on

Pre-filter Length	11

SP Calibration MCG-C 139

Field Calibration on 19-JUL-2011,08:49

	Measured	Calibrated (mV)
Reference 1	103.5	100.0
Reference 2	-96.9	-100.0

Gamma Calibration MCG-C 139

Field Calibration on 21-JUL-2011,16:17

	Measured	Calibrated (API)
Background	67	45
Calibrator (Gross)	1143	770
Calibrator (Net)	1076	725

Gamma Constants MCG-C 139

Last Edited on 19-JUL-2011,15:35

Gamma Calibrator Number	grc38	
Mud Density	1.14	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

Micro Normal and Micro Inverse Calibration MML-A 16

Base Calibration on 30-JUN-2011 16:33
Field Check on 21-JUL-2011,16:17

Base Calibration

	Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.2	60.2	2.6	12.8
Micro Inverse	15.6	78.3	1.7	8.4

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	32.1	32.1
Micro Inverse	16.3	16.3

Micro Normal and Micro Inverse Constants MML-A 16

Last Edited on 16-JUL-2011,14:39

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 16

Base Calibration on 30-JUN-2011 16:22
Field Calibration on 21-JUL-2011,16:17

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14119	5.98
2	17415	7.97
3	20689	9.86
4	24692	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.94	5.96

Neutron Calibration MDN-A.B 66

Base Calibration on 30-JUN-2011 17:46
Field Check on 21-JUL-2011,16:17

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3227	102	3714	110
Ratio	31.653		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	1604	2288
Ratio	0.701	

Field Check	Calibrated (cps)	
	1595	2263
Ratio	0.705	

Neutron Constants MDN-A.B 66

Last Edited on 21-JUL-2011,21:04

Neutron Source Id	P58125B	
Neutron Jig Number	5824NE	
Epithermal Neutron	No	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	Constant Value	
Formation Pressure	0.00	kpsi
Temperature Source	MCG External Temperature	
Temperature	N/A	degrees F
Mud Salinity	0.00	kppm
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-A.A 52

Base Calibration on 30-JUN-2011 15:35
Field Check on 21-JUL-2011,16:16

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.4	126.8
Base Check		279.9
Field Check		280.1

FE Constants MFE-A.A 52

Last Edited on 21-JUL-2011,21:04

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Caliper Source for FE correction	Density Caliper	
Caliper Value for FE correction	N/A	inches
Rm Source for FE correction	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
Stand-off	0.5	inches

Sonic Constants MSS-C.K 330

Last Edited on 21-JUL-2011,16:27

Maximum Boundary Contrast	100.00	micro-sec/ft
Fluid Transit Time	189.00	micro-sec/ft
Limestone Transit Time	47.50	micro-sec/ft
Sandstone Transit Time	55.50	micro-sec/ft
Dolomite Transit Time	43.50	micro-sec/ft
Sonic used for Porosities	3-5' Compensated	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	0.00	micro-sec
MX3FT	1500.00	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft
Sonde Mode	Compensated	
Hole Type	Open Hole	

Sonde Parameters

	Measured	Calibrated
Offset	0.0000	0.0000
Free Pipe	0.0000	0.0000

Peak Amplitude Source 0

Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	0	0	0	0	0
4'	0	0	0	0	0

5'	0	0	0	0	0
6'	0	0	0	0	0

Processed Fixed Gate Parameters

Waveform Used For Processing N/A

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

Full Waveform Parameters

Use 3' Waveform to derive TR	No	
Use 4' Waveform to derive TR	No	
Use 5' Waveform to derive TR	No	
Use 6' Waveform to derive TR	No	
3' Waveform Discriminator Level	0.30	mV
4' Waveform Discriminator Level	0.30	mV
5' Waveform Discriminator Level	0.15	mV
6' Waveform Discriminator Level	0.15	mV
3' Waveform Filter	0	
4' Waveform Filter	0	
5' Waveform Filter	0	
6' Waveform Filter	0	
Semblance Level	0.50	
Semblance Window Width	120.00	micro-sec
Sonic 1 Despiker	100.00	micro-sec/ft
Sonic 2 Despiker	100.00	micro-sec/ft

High Resolution Temperature Calibration MAI-A.A 167

Field Calibration on 21-JUL-2011,16:15

	Measured	Calibrated(Deg F)
Lower	1.00	33.80
Upper	11.00	51.80

High Resolution Temperature Constants MAI-A.A 167

Last Edited on

Pre-filter Length	11

Induction Calibration MAI-A.A 167

Base Calibration on 11-MAR-2011,09:58
Field Check on 21-JUL-2011,16:15

Base Calibration

Test Loop Calibration	Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High
1	17.3	474.2	9.3	966.2
2	6.3	388.4	7.6	821.4
3	3.3	259.4	5.2	566.0
4	1.9	133.0	2.6	279.2
Array Temperature		76.8	Deg F	

Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1	0.0	0.0	14.1	3836.5	
2	0.0	0.0	29.8	3472.9	
3	0.0	0.0	29.2	3049.0	
4	0.0	0.0	19.7	2078.8	
Deep	0.0	0.0	18.6	2046.1	
Medium	0.0	0.0	42.2	3985.7	
Shallow	0.0	0.0	43.4	5048.5	
Array Temperature		0.0		90.6	Deg F

Induction Constants MAI-A.A 167

Last Edited on 21-JUL-2011,22:23

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	N/A	inches
Tool Centred	No	
Stand-off Type	Fins	

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
Borehole Corr. Rm Source	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
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

Apparent Porosity and Water Saturation Constants

Archie Constant (A)	1.00	
Cementation Exponent (M)	2.00	
Saturation Exponent (N)	2.00	
Saturation of Water for Apor	100.00	percent
Resistivity of Water for Apor and Sw	0.05	ohm-m
Resistivity of Mud Filtrate for Sw	0.00	ohm-m
Source for Rt	0.00	
Source for Rxo	0.00	

Caliper Calibration MPD-B 35

Base Calibration on 11-JUL-2011 10:31
Field Calibration on 21-JUL-2011,16:16

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	19039	3.99
2	29274	5.98
3	39568	7.97
4	49173	9.86
5	60065	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.98	5.98

Photo Density Calibration MPD-B 35

Base Calibration on 11-JUL-2011 10:49
Field Check on 21-JUL-2011,16:16

Density Calibration

Base Calibration

	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	57974	27718	59556	30836
Reference 2	23445	2602	24941	2541

Field Check at Base

1165.1	1390.6

Field Check

1169.8	1387.5

PE Calibration

Base Calibration

	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	207	1031		
Reference 1	21348	57768	0.373	0.371
Reference 2	6208	23295	0.270	0.272

Field Check at Base

	207.5	1031.2
Field Check		
	208.6	1029.9

Density Constants MPD-B 35

Last Edited on 19-JUL-2011,15:34

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	1.14	gm/cc
Mud Density Z/A Multiplier	1.11	
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	

Matrix Density (gm/cc)	Depth (ft)
2.71	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

DOWNHOLE EQUIPMENT

C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA.dta

Compact Comms Gamma
MCG-C 139 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

- 57.56 ft GRGC - Gamma Ray
- 54.65 ft CGXT - MCG External Temperature

Compact Micro-log
MML-A 16 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

- 47.93 ft MINV - Micro-inverse
- 47.93 ft MNRL - Micro-normal
- 48.92 ft MLTC - MML Caliper

Compact Neutron
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

- 43.13 ft NPRL - Limestone Neutron Por.

Compact Density/Caliper
MPD-B 35 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

- 35.89 ft CLDC - Density Caliper
- 33.96 ft DPRL - Limestone Density Por.
- 33.96 ft DEN - Compensated Density
- 33.96 ft DCOR - Density Correction

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 36 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

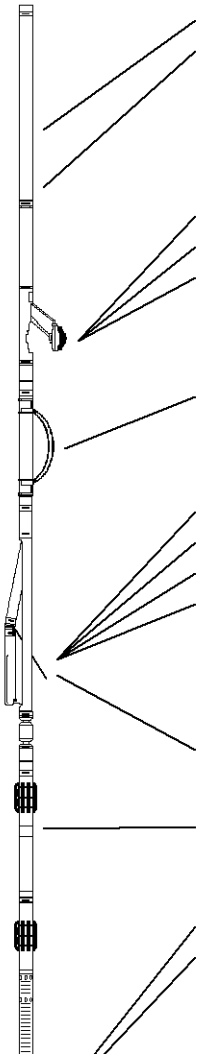
- 33.90 ft PDPE - PE

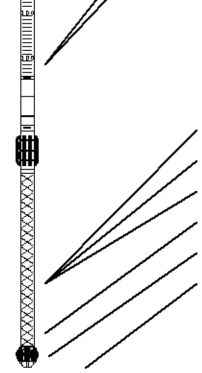
Compact Focussed Electric
MFE-A.A 52 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

- 26.24 ft FEFE - Shallow FE

Compact Sonic
MSS-C.K 330 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

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





Compact Induction
MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 62.84 ft Weight: 480.6 lb

3.34 ft	R40O - Array Ind. One Res 40
3.34 ft	RTAO - Array Ind. One Res Rt
3.34 ft	R60O - Array Ind. One Res 60
0.23 ft	SPCG - Spontaneous Potential
Tool Zero	(0.13ft from bottom)
-0.13 ft	SMTU - DST Uphole Tension

All measurements relative to tool zero.

COMPANY	M&M EXPLORATION
WELL	Z-BAR #19-13
FIELD	AETNA GAS AREA
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1668.00	feet	First Reading	5093.00	feet
Elevation Drill Floor	1667.00	feet	Depth Driller	5100.00	feet
Elevation Ground Level	1656.00	feet	Depth Logger	5096.00	feet

Weatherford®

ARRAY INDUCTION
SHALLOW FOCUSSED
ELECTRIC LOG

40 Years of Wireline 1970 2010

Weatherford

ARRAY INDUCTION SHALLOW FOCUSSED ELECTRIC LOG

COMPANY	M&M EXPLORATION
WELL	Z-BAR #19-13
FIELD	AETNA GAS AREA
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	500' FSL 950' FWL, SW/4 NW SE SW SW

SEC	TWP	RGE	Other Services
19	34S	14W	MPD/MDN MSS MML

API Number 15-071-23701
Permit Number

Permanent Datum GL, Elevation 1656 feet
Log Measured From K.B. @ 12 FEET above Permanent Datum
Drilling Measured From K.B.

Elevations: feet
KB 1668.00
DF 1667.00
GL 1656.00

Date	21-JUL-2011	
Run Number	ONE	
Depth Driller	5100.00 feet	
Depth Logger	5096.00 feet	
First Reading	5093.00 feet	
Last Reading	3900.00 feet	
Casing Driller	914.00 feet	
Casing Logger	912.50 feet	
Bit Size	7.880 inches	
Hole Fluid Type	CHEMICAL	
Density / Viscosity	9.10 g/c3	58.00 CP
PH / Fluid Loss	9.20	58.00 ml/30Min
Sample Source	FLOWLINE	
Rm @ Measured Temp	0.84 @ 88.0 ohm-m	
Rmf @ Measured Temp	0.67 @ 88.0 ohm-m	
Rmc @ Measured Temp	1.01 @ 88.0 ohm-m	
Source Rmf / Rmc	CALC	CALC
Rm @ BHT	0.58 @ 128.0 ohm-m	
Time Since Circulation	5 HOURS	
Max Recorded Temp	128.00 deg F	
Equipment Name	COMPACT	
Equipment / Base	13025	LIB
Recorded By	W. STAMBAUGH	
Witnessed By	B. BROCK	

1 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_002.dta
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

Plotted on 22-JUL-2011 02:39
Recorded on 21-JUL-2011 23:23

Timing Marks every 60.0 sec

Gamma Ray API 0 75 150

Spontaneous Potential millivolts −→|20|←+

DST Uphole Tension pounds 5000 0

Depth In Feet

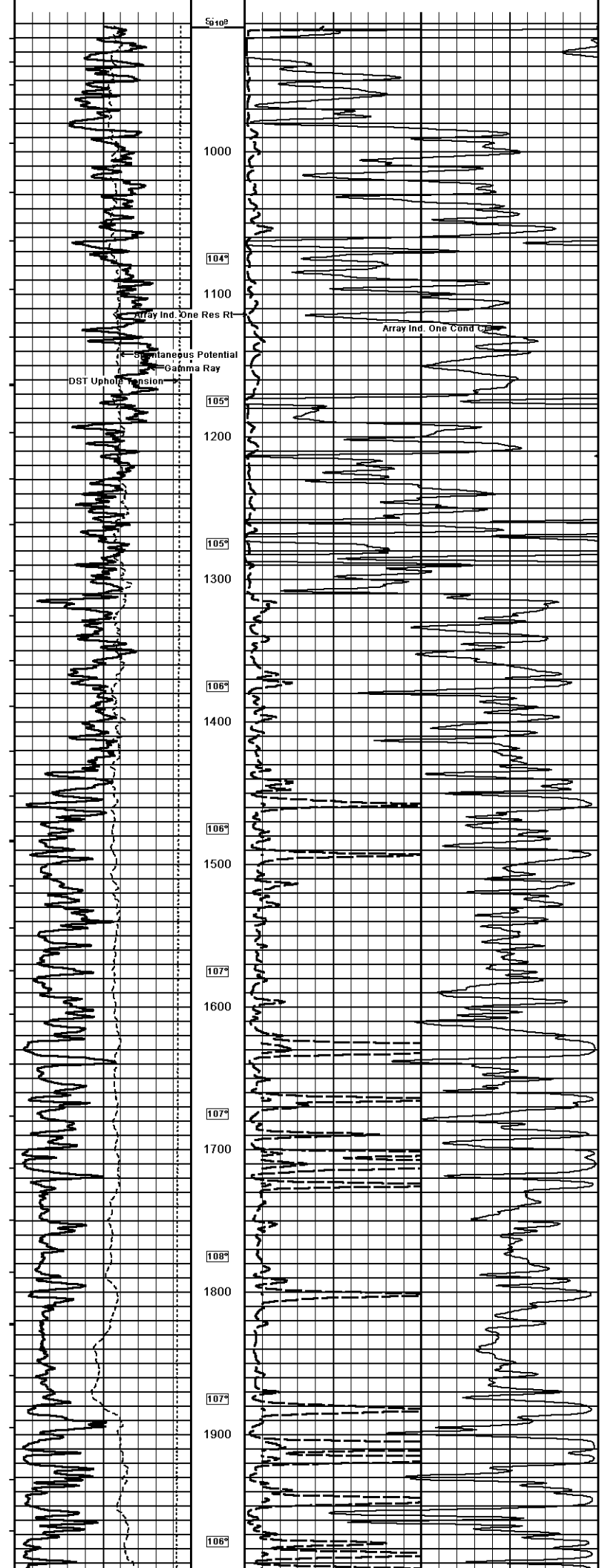
Borehole Temp in deg F

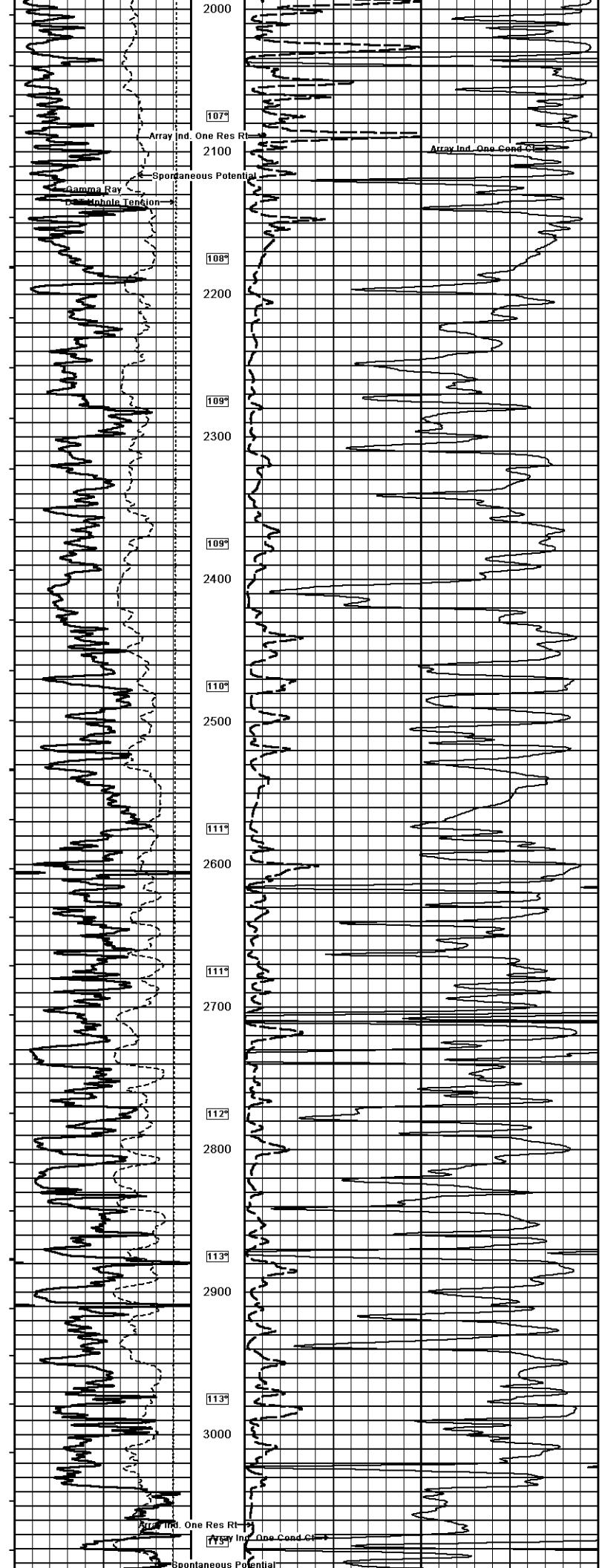
Replay Scale 1:600

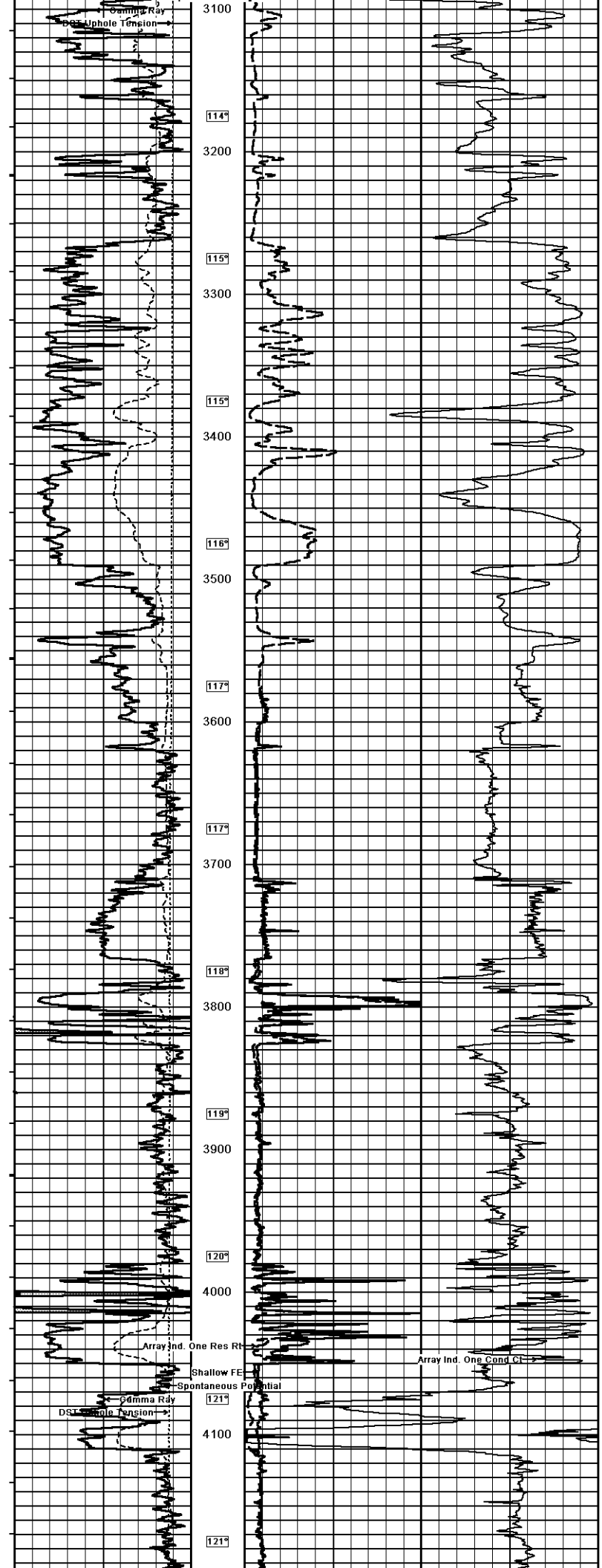
Array Ind. One Cond Ct mmhos 1000 750 500 250 0
2000 1750 1500 1250 1000

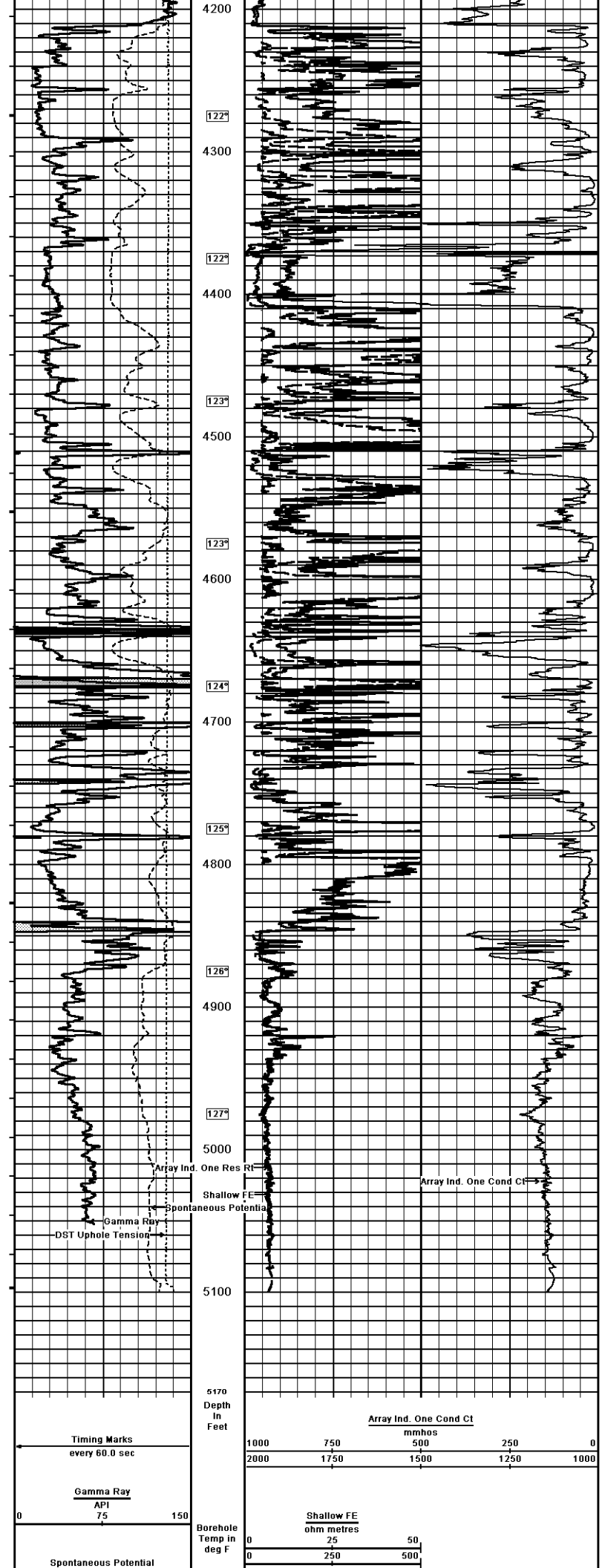
Shallow FE ohm metres 0 25 50
0 250 500

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


Array Ind. One Res Rt
Array Ind. One Cond Cl
Spontaneous Potential
Gamma Ray
DST Uphole Tension
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900


2000
107"
Array Ind. One Res Rt
2100
Array Ind. One Cond Ct
Spontaneous Potential
Gamma Ray
Cable Tension
108"
2200
109"
2300
109"
2400
110"
2500
111"
2600
111"
2700
112"
2800
113"
2900
113"
3000
Array Ind. One Res Rt
Array Ind. One Cond Ct
Spontaneous Potential


Gamma Ray
DST Uphole Tension
3100
114"
3200
115"
3300
115"
3400
116"
3500
117"
3600
117"
3700
118"
3800
119"
3900
120"
4000
Array Ind. One Res Rt
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
121"
4100
121"
Array Ind. One Cond Ct


4200
122"
4300
122"
4400
123"
4500
123"
4600
124"
4700
125"
4800
126"
4900
127"
5000
Array Ind. One Res Rt
Shallow FE
Spontaneous Potential
Gamma Ray
DST Uphole Tension
Array Ind. One Cond Ct
5100
5170
Depth In Feet
Timing Marks every 60.0 sec
Gamma Ray API 0 75 150
Borehole Temp in deg F
Spontaneous Potential
Array Ind. One Cond Ct mmhos 1000 750 500 250 0 2000 1750 1500 1250 1000
Shallow FE ohm metres 0 25 50 0 250 500

millivolts
−→|20|←+

DST Uphole Tension
pounds
5000 0

Replay
Scale
1:600

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

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 22-JUL-2011 02:39
Filename: C:\Minimus 11.03.2789\Data\ZBAR_19-13\ZBAR_19-13_DATA_002.dta — Recorded on 21-JUL-2011 23:23
System Versions: Logged with 11.03.2789 Processed with 11.03.2789 Plotted with 11.03.2789

1 INCH MAIN

COMPANY	M&M EXPLORATION
WELL	Z-BAR #19-13
FIELD	AETNA GAS AREA
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1668.00	feet	First Reading	5093.00	feet
Elevation Drill Floor	1667.00	feet	Depth Driller	5100.00	feet
Elevation Ground Level	1656.00	feet	Depth Logger	5096.00	feet

Weatherford

ARRAY INDUCTION
SHALLOW FOCUSSED
ELECTRIC LOG

40 Wireline

Conservation Division
Finney State Office Building
130 S. Market, Rm. 2078
Wichita, KS 67202-3802

Kansas
Corporation Commission

Phone: 316-337-6200
Fax: 316-337-6211
http://kcc.ks.gov/

October 27, 2011

Mike Austin
M & M Exploration, Inc.
4257 MAIN ST., #230
WESTMINSTER, CO 80031

Re: ACO1
API 15-007-23701-00-00
Z BAR 19-13
SW/4 Sec.19-34S-14W
Barber County, Kansas

Dear Production Department:

We are herewith requesting that the Well Completion Form ACO-1 and attached information for the subject well be held confidential for a period of two years.

Should you have any questions or need additional information regarding subject well, please contact our office.

Respectfully,
Mike Austin