Tucker ENERGY SERVICES

PHASED INDUCTION

SHALLOW FOCUS SP LOG

Company PICKRELL DRILLING CO., INC.
Well MATSON ESTATE #3
Field SPIVEY-GRABS-BASIL
County KINGMAN
State KANSAS
Country USA
API No. 15-095-22269-00-00

File No : TUL-58780
Company : PICKRELL DRILLING CO., INC.
Well : MATSON ESTATE #3
Field : SPIVEY-GRABS-BASIL
County : KINGMAN
State : KANSAS
Country : USA
API No : 15-095-22269-00-00

Location :
660' FSL & 1980' FWL
SE 1/4 SW 1/4

LSD : **Sect :** 31 **Twp :** 29S **Rge :** 06W

Permanent Datum:	GL	**Elevations:**		**Services:**	
Drilling Measured From:	KB	**KB**	1453.00 Ft	CNT	PIT
Log Measured From:	KB	**DF**	1452.00 Ft	LDT	
Above Permanent Datum:	10.00 Ft	**GL**	1443.00 Ft	MLT	

Date	2013-02-13						
Run Number	1						
Depth--Driller	4220.0	Ft					
Depth--Logger	4220.0	Ft					
First Reading	4219.0	Ft					
Last Reading	218.0	Ft					
Casing--Driller	217.0	Ft					
Casing--Logger	218.0	Ft					
Bit Size	7.875	In					
Casing Size	8.625	In					
Hole Fluid Type	WBM						
Density	9.3	LBS/GAL					
Fluid Loss	8.8	CC					
PH/Viscosity	10.5	46.0 SEC					
Sample Source	MEASURED						
RM@Measured Temp.	0.500 @ 55 F						
RMF@Measured Temp	0.430 @ 55 F						
RMC@Measured Temp.	0.580 @ 55 F						
Source RMF/RMC	CALCULATED	CALCULATED					
RM@BHT	0.260 @ 114 F						
Time Circulation Stopped							
Max Recorded Temp.	114	F					
Equipment/Base	TRK 123	TULSA					
Recorded By	R. FRANKLIN						
Witnessed By	R. STOLZLE						

Bitsize Intervals

Size (In)	Bottom (Ft)
7.875	4220.00

Casing Strings

Size (In)	Weight (Lbs)	Bottom (Ft)
8.625	36.00	217.00

Run Number	1	
Date	2013-02-13	
Date/Time On Bottom	2013-02-14 00:15	
Depth to Fluid	0.0 Ft	
Salinity	0.000 PPM	
RMF@BHT	0.220 @ 114 F	
RMC@BHT	0.290 @ 114 F	

Run Number 1

Comments

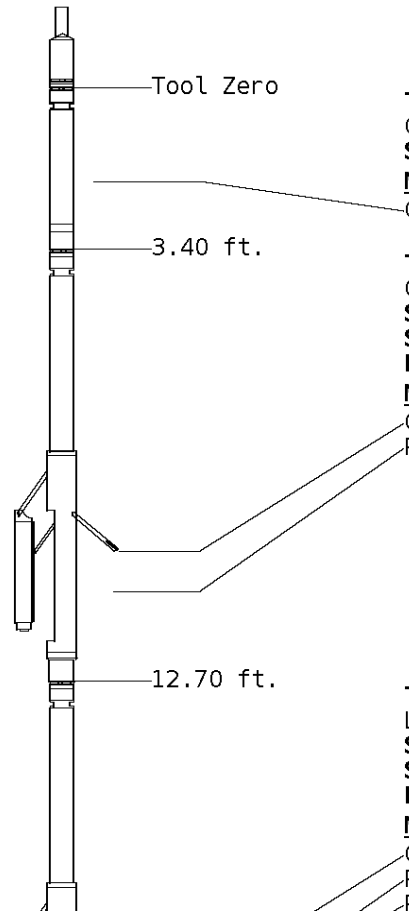
ALL PRESENTATIONS AS PER CUSTOMER REQUEST.
GRT, CNT, LDT, MLT, AND PIT RUN IN COMBINATION.
CALIPERS ORIENTED ON X-Y AXIS.
2.71 G/CC USED TO CALCULATED POROSITY.
ANNULAR HOLE VOLUME CALCULATED USING 4.50" PRODUCTION CASING.
PHIN IS CALIPER CORRECTED
NO MINERALOGY PRESENTED
DETAIL PRESENTED FROM TD TO 2800'

GRT: GRP.
CNT: PHIN, CLCNIN.
LDT: PORL, LCORN, PECLN, LDENN, PORLLS, CLLDIN.
MLT: NOR_RF, INV_RF, MSCLPIN.
PIT: ILD, ILM, SPU, SFLAEC, CIRD.

OPERATORS: S-3.5
J. KLINE
D. HOPPER

Tool String Schematic

Total Tool Length - 53.57 **ft.**
Maximum Outside diameter - 6.00 **in.**
Net Weight in Air - 943.00 **lbs.**



Tool: GRT-B **Length:** 3.40 **ft.** **O.D.** 3.60 **in.**
Gamma Ray Controller
Sonde ID :GRT-BC-41

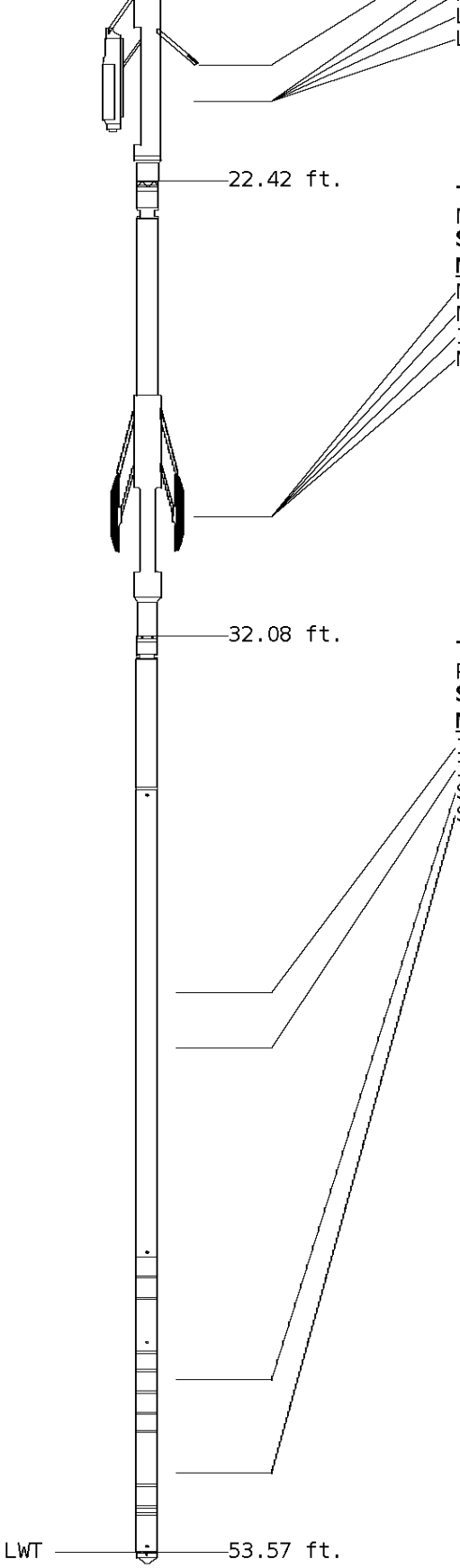
Measure Point	Tool Offset	Stack Offset	Bottom Offset
GRP	2.00	2.00	51.57

Tool: CNT-AA **Length:** 9.30 **ft.** **O.D.** 4.36 **in.**
Compensated Neutron A Pad on NDT-A
Sonde ID :NDT-BB-123
Source ID :N-1045
Pad ID :CNP-AA-024

Measure Point	Tool Offset	Stack Offset	Bottom Offset
CLCN	6.00	9.40	44.17
PHIN	6.80	10.20	43.37

Tool: LDT-DF **Length:** 9.72 **ft.** **O.D.** 4.80 **in.**
Litho Density D Pad on NDT-F
Sonde ID :PDT-GA-466
Source ID :2991GW
Pad ID :LDP-DA-066

Measure Point	Tool Offset	Stack Offset	Bottom Offset
CLLD	6.42	19.12	34.45
PEL	7.42	20.12	33.45
PES	7.82	20.52	33.05



LDEN	7.62	20.32	33.25
LCOR	7.62	20.32	33.25

Tool: MST-DA **Length:** 9.66 **ft.** **O.D.** 6.00 **in.**
Micro Spherically Focused (IC)
Sonde ID :MST-DA-36

Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	30.02	23.55
MSCLP	7.60	30.02	23.55
INV	7.60	30.02	23.55
NOR	7.60	30.02	23.55

Tool: PIT-CA **Length:** 21.49 **ft.** **O.D.** 3.62 **in.**
Phased Dual Induction w/ RM & D
Sonde ID :PIT-AB-005

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	41.00	12.56
ILM	10.10	42.18	11.39
SFLU	17.49	49.57	4.00
SP	20.60	52.68	0.88

Well File: pic_mat_3_feb_13_mstk **Scale:** 1:600
Segment: V1.D1.S12 MAIN **Acquired:** Not Available
Reference: 0 **Processed:** 2013-02/14 03:33 3.2.0-11401

TENSION LBS		DEEP INDUCTION OHMM	
10000	0	0.0	500.0
		0.0	50.0
SPONTANEOUS POTENTIAL mV		**SHALLOW FOCUSED RESISTIVITY OHMM**	
		0.0	500.0

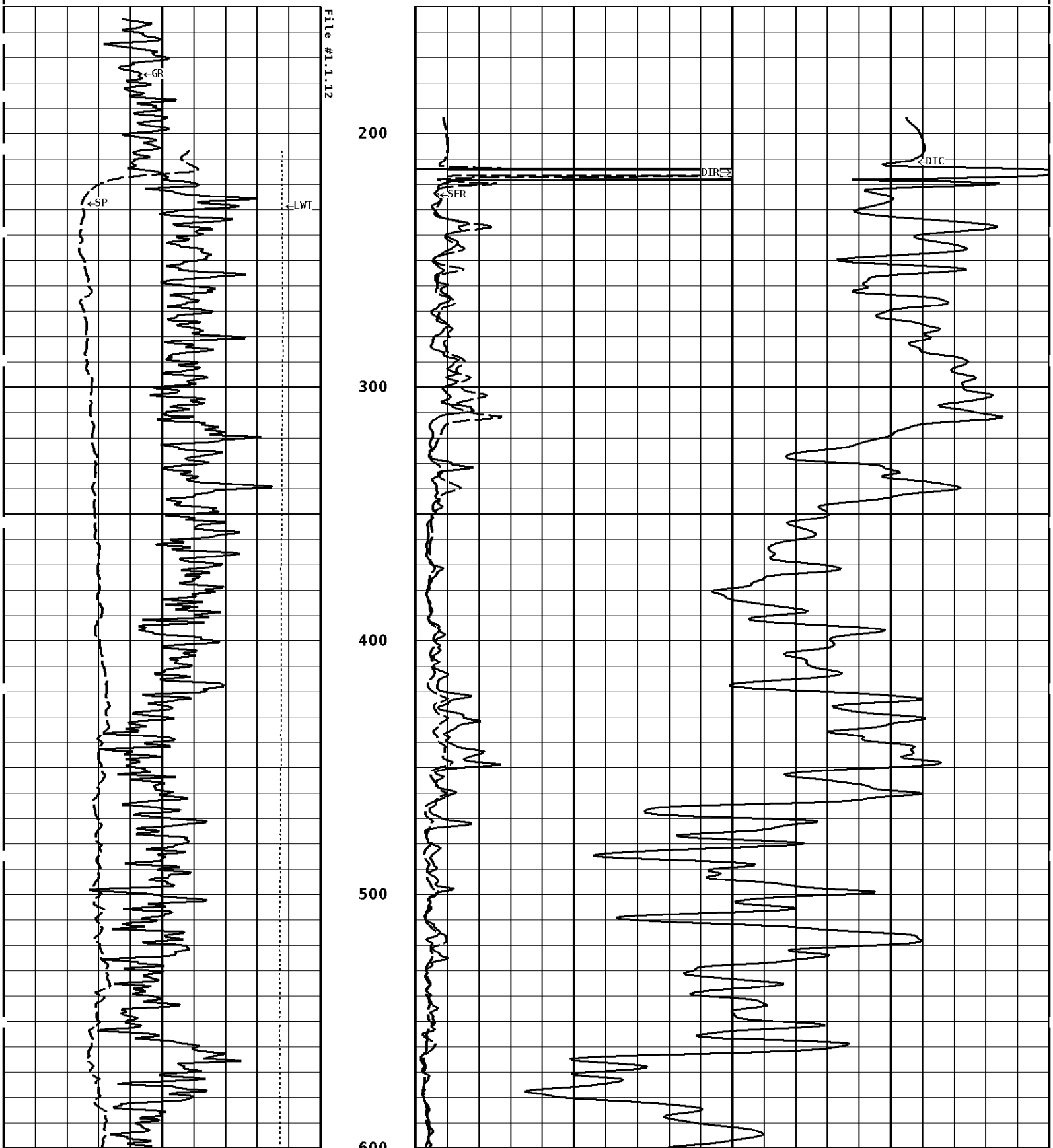
→ ←20

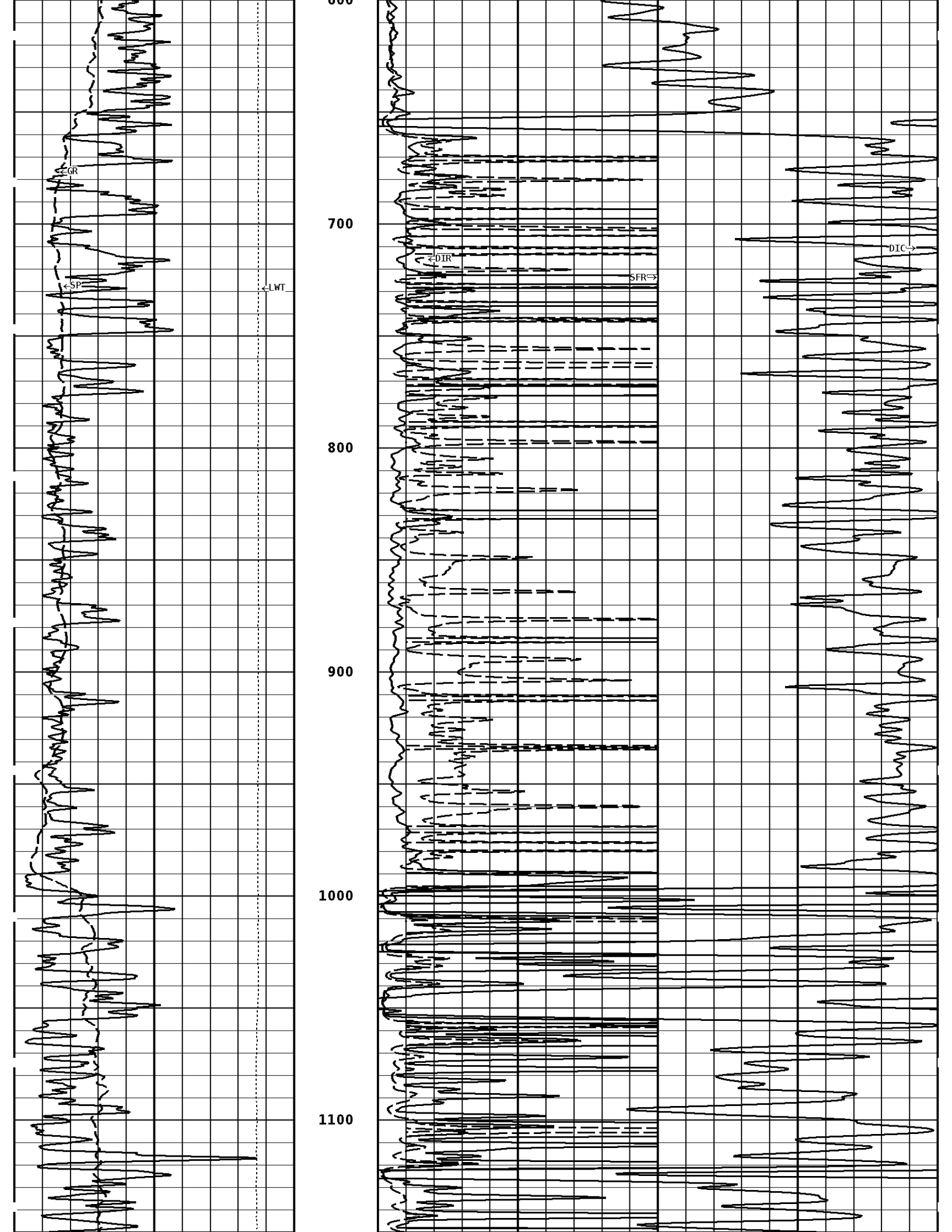
GAMMA RAY
API UNITS
150 300
0 150

0.0 500.0
0.0 50.0

DEEP CONDUCTIVITY
MMHO
2000 1000
1000 0

1:600 MAIN SECTION

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SP
LWT
DIR
SFR
DIC
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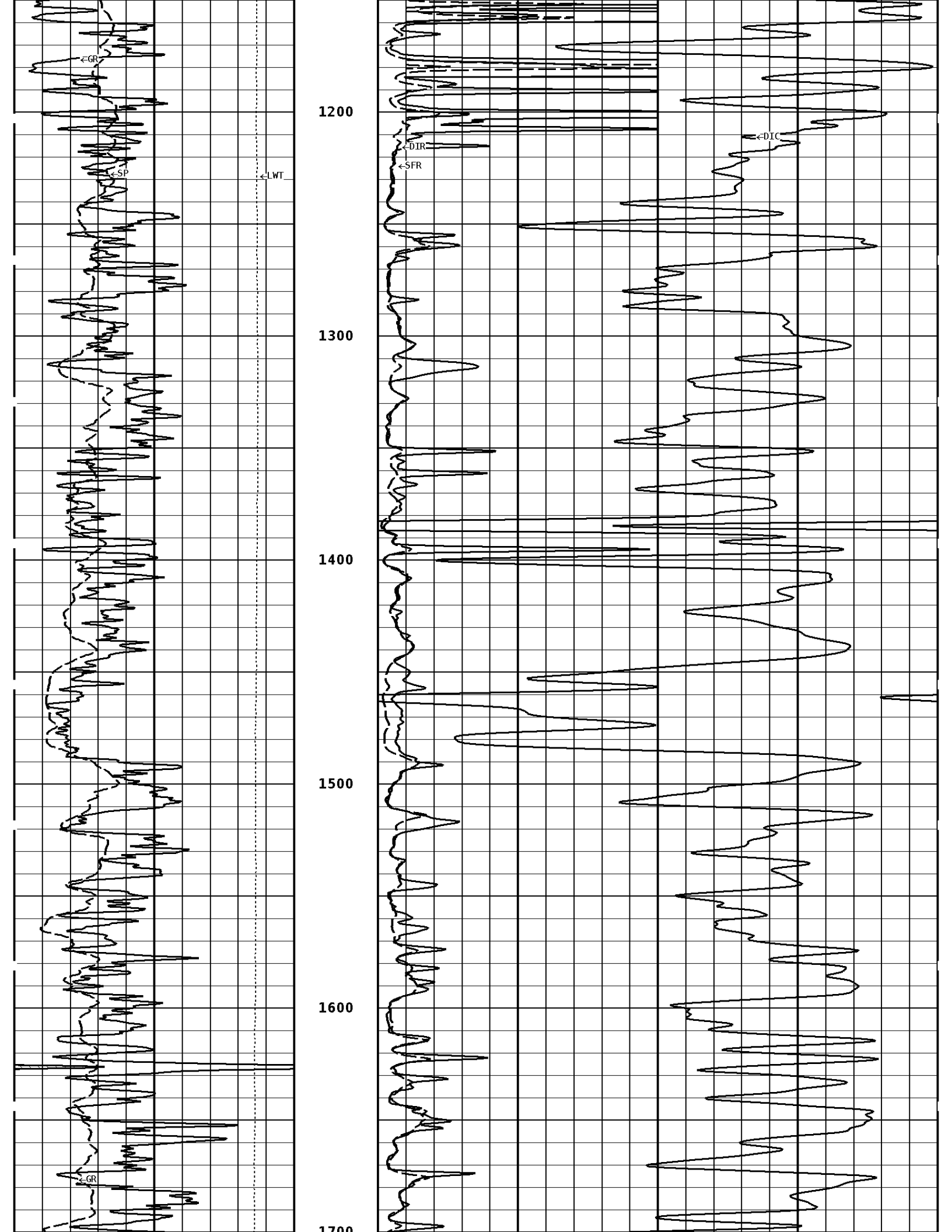
700
800
900
1000
1100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LWT
DIR
SFR
DIC
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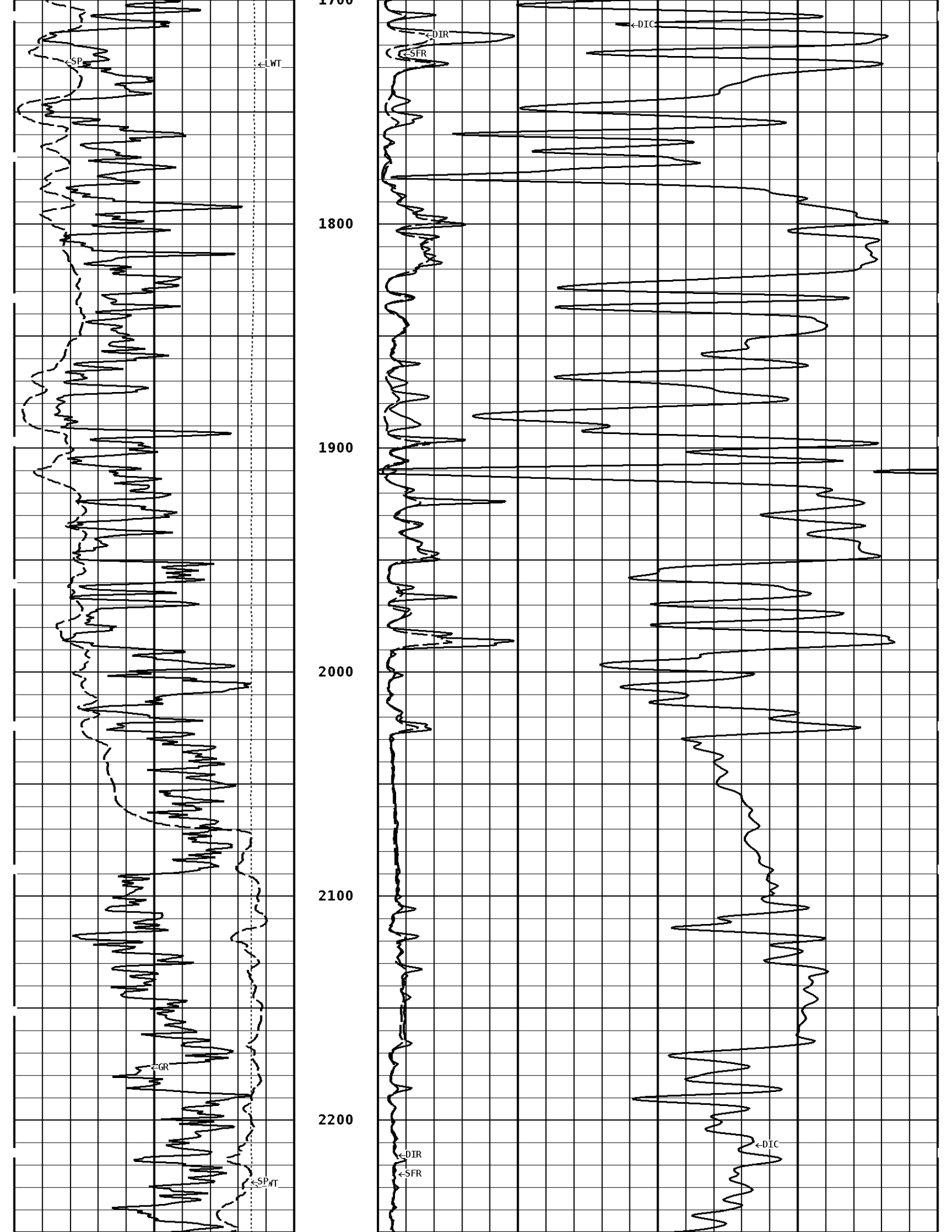
1300
1400
1500
1600
GR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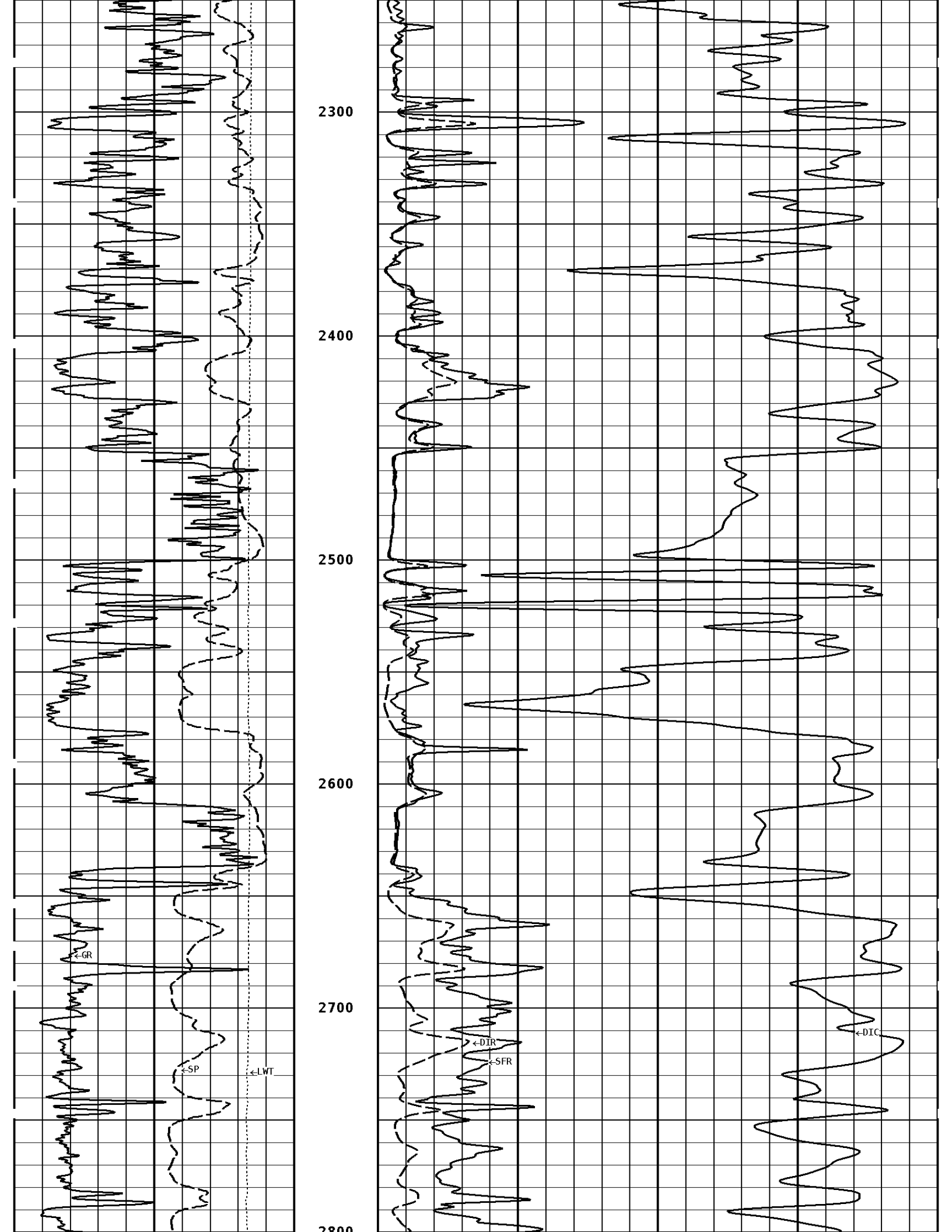
1800
1900
2000
2100
2200
SP
WT
GR
SP
WT
DIR
SFR
DIC
DIR
SFR
DIC


2300
2400
2500
2600
2700
2800
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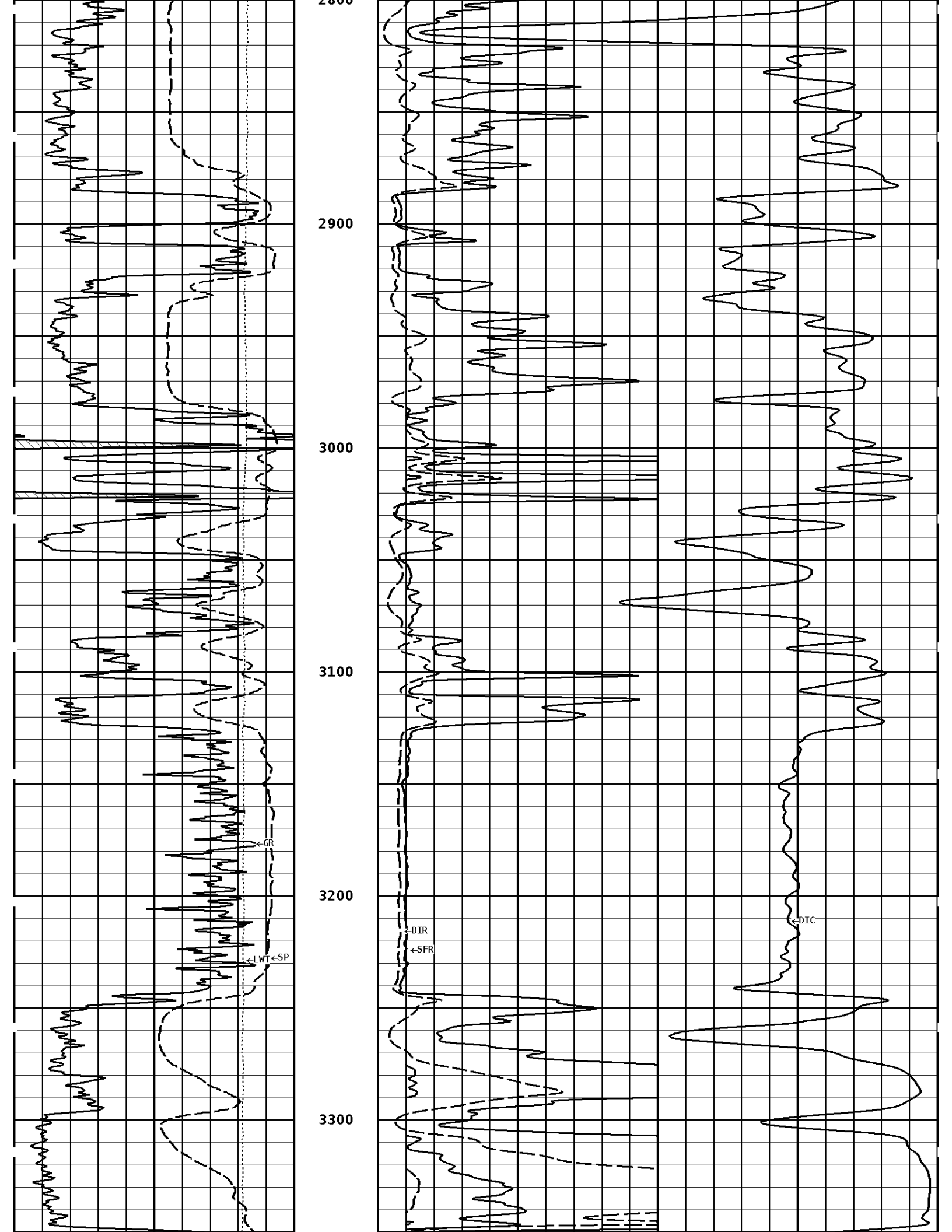
←SP
←LWT
←DIR
←SFR
←DIC


2800
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3000
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3200
3300
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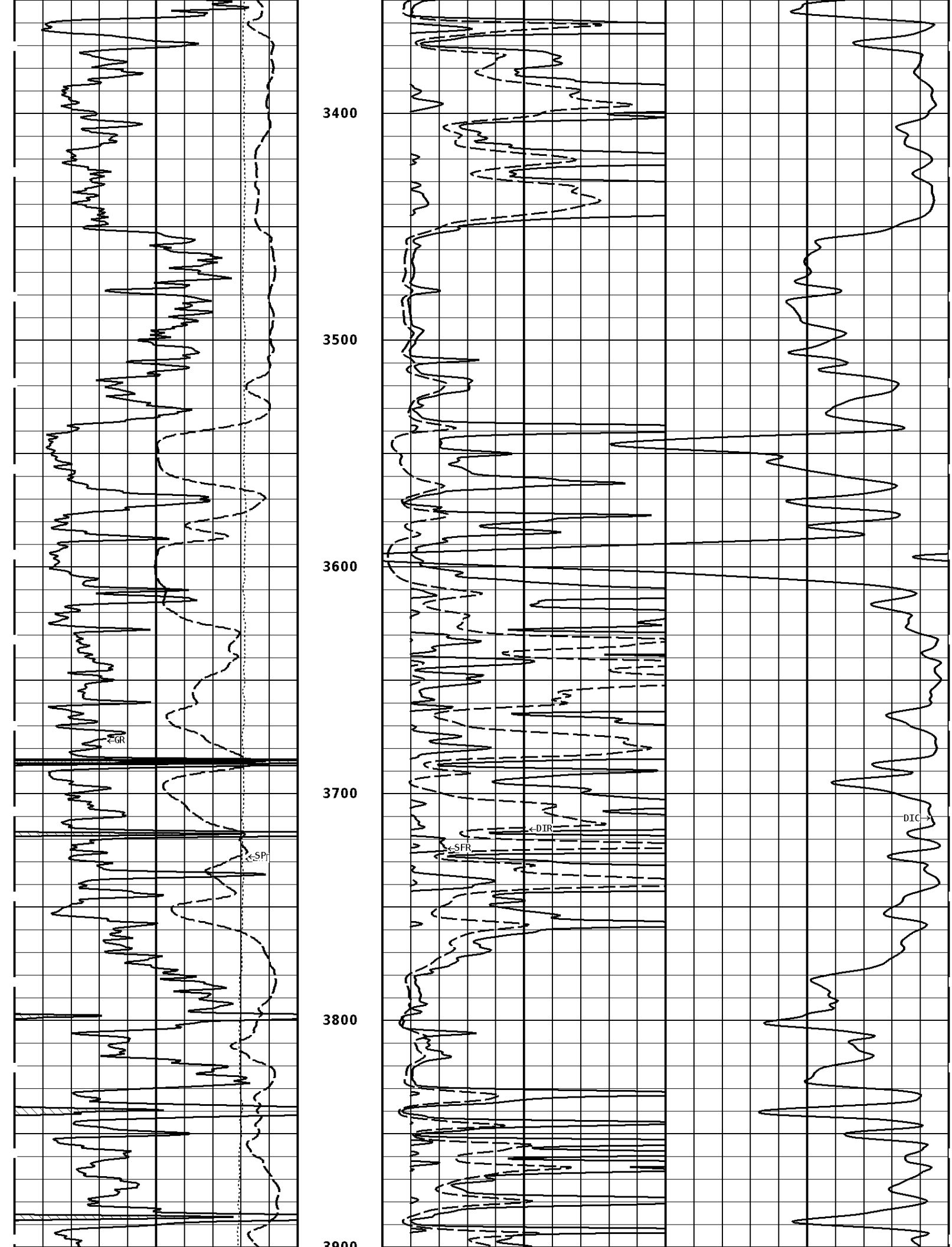
←LWT
←SP
←DIR
←SFR
←DIC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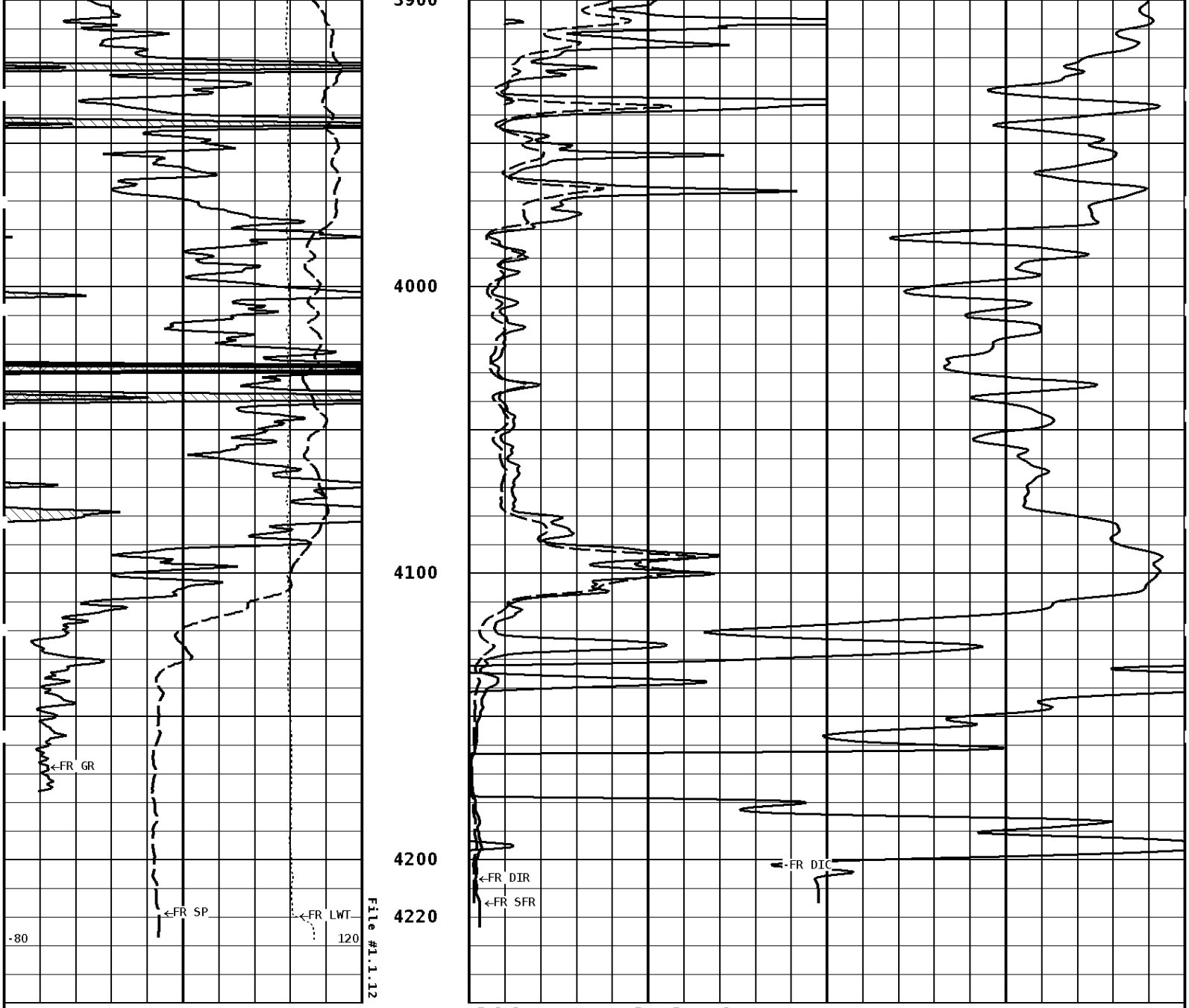
3500
3600
3700
3800
3900
GR
SP
DIR
SFR
DIC



1:600 MAIN SECTION

GAMMA RAY
API UNITS
150 300
0 150

SPONTANEOUS POTENTIAL
mV
→ ←20

TENSION
LBS
10000 0

DEEP CONDUCTIVITY
MMHO
2000 1000
1000 0

SHALLOW FOCUSED RESISTIVITY
OHMM
0.0 500.0
0.0 50.0

DEEP INDUCTION
OHMM
0.0 500.0
0.0 50.0

Well File: pic_mat_3_feb_13_mstk
Segment: V1.D1.S12 MAIN
Reference: 0

Scale: 1:240
Acquired: Not Available
Processed: 2013-02/14 03:33 3.2.0-11401

SPONTANEOUS POTENTIAL
mV

DEEP INDUCTION
OHMM

→ ←20

TENSION
LBS
10000 0

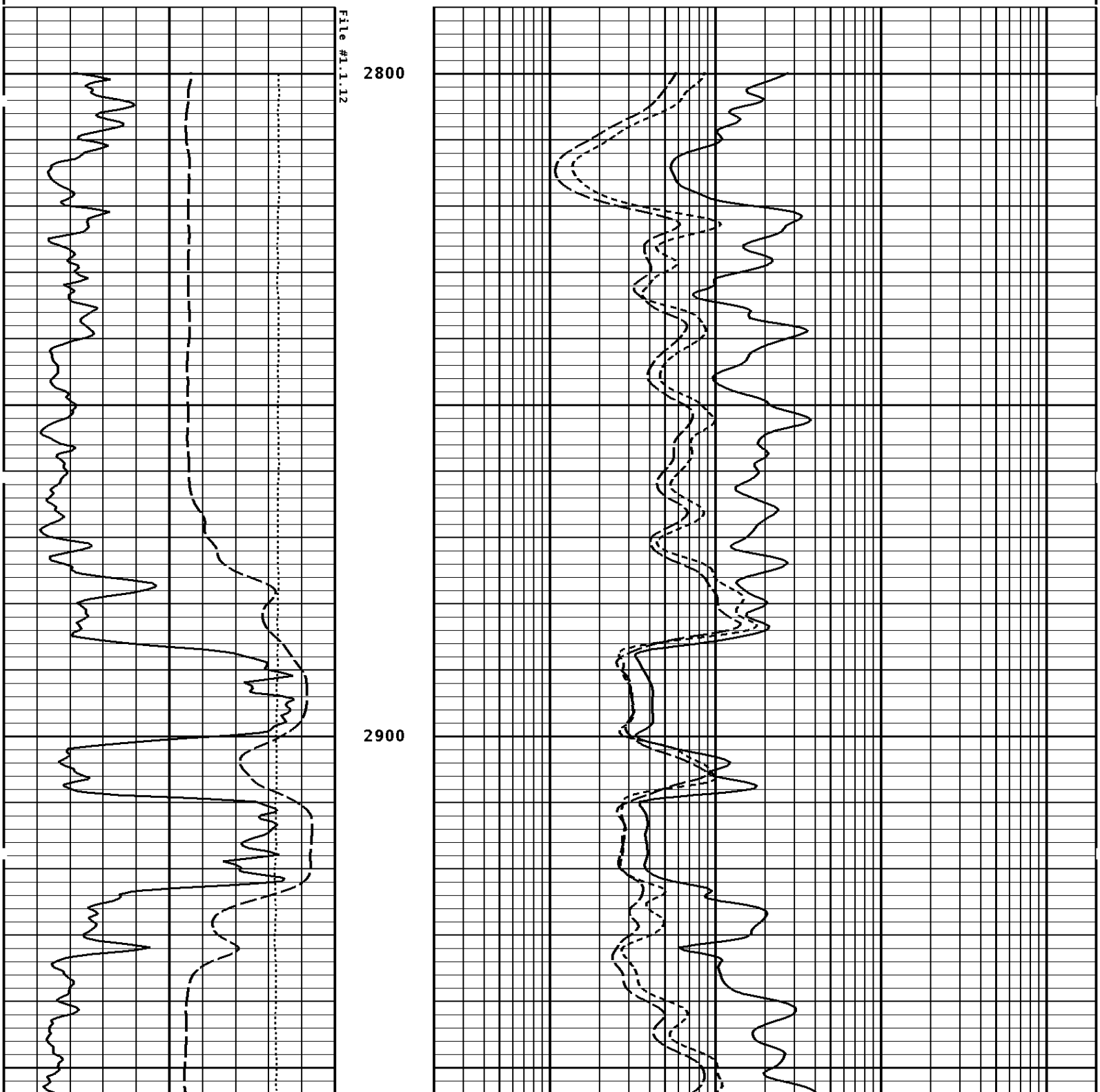
GAMMA RAY
API UNITS
150 300
0 150

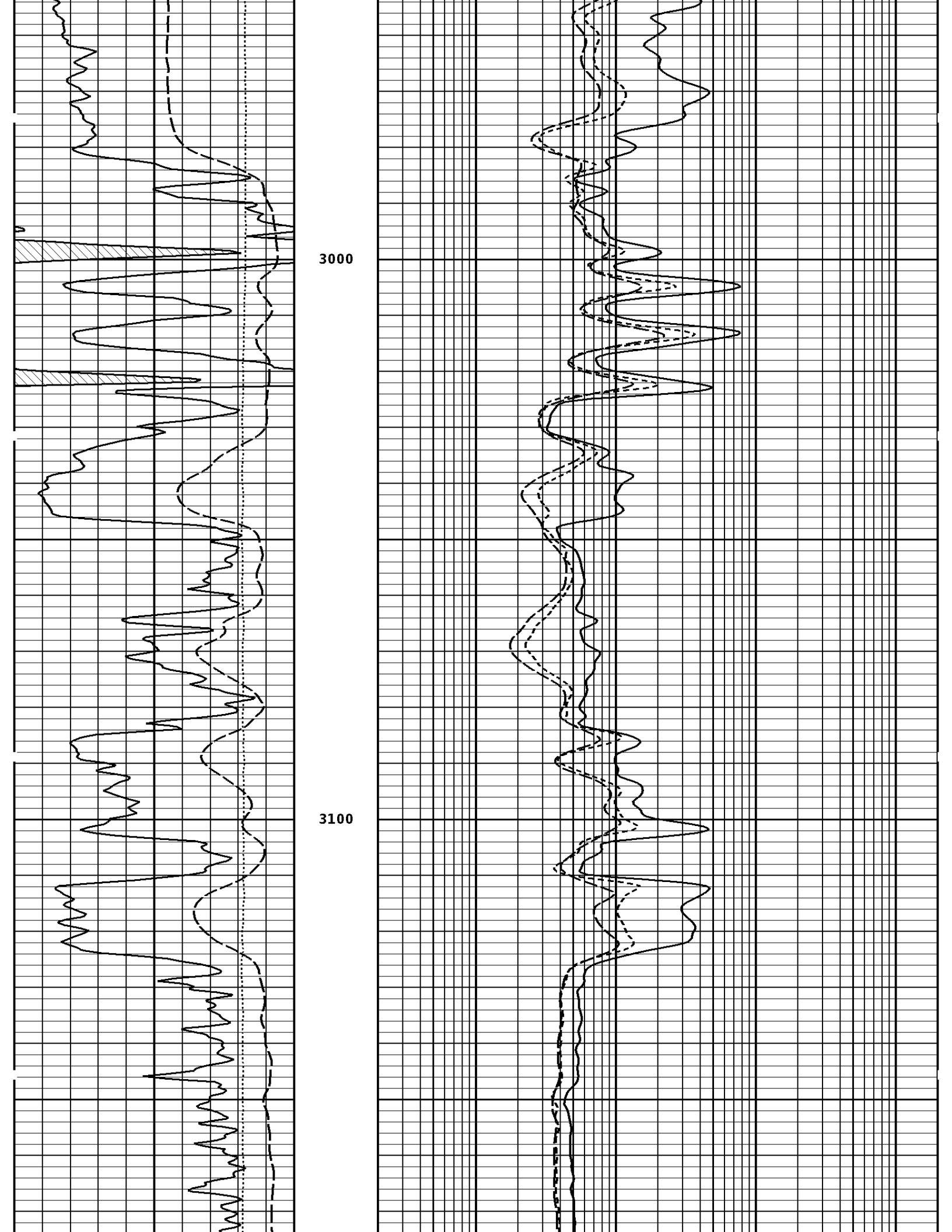
0.2 2000.0

MEDIUM INDUCTION
OHMM
0.2 2000.0

SHALLOW FOCUSED RESISTIVITY
OHMM
0.2 2000.0

1:240 MAIN SECTION

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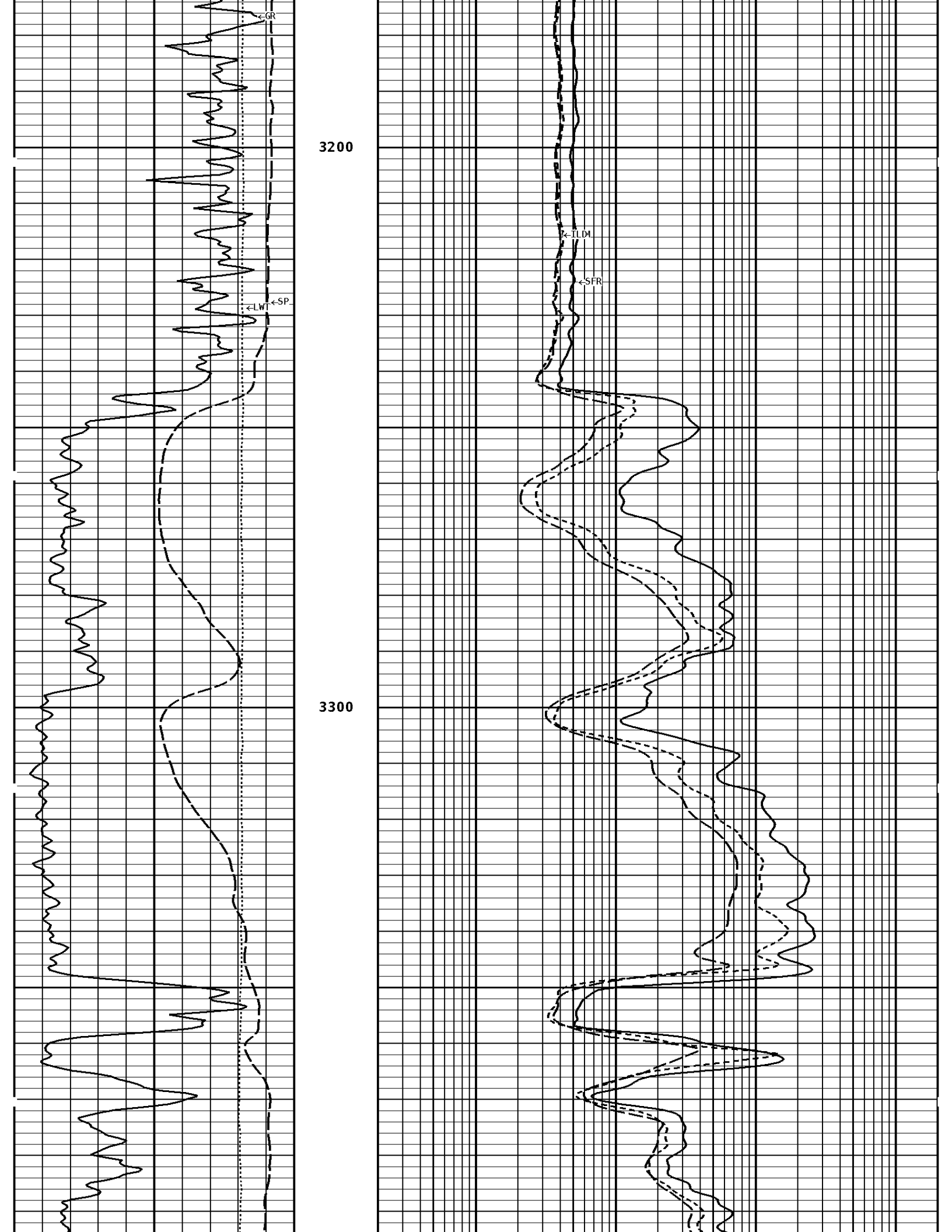
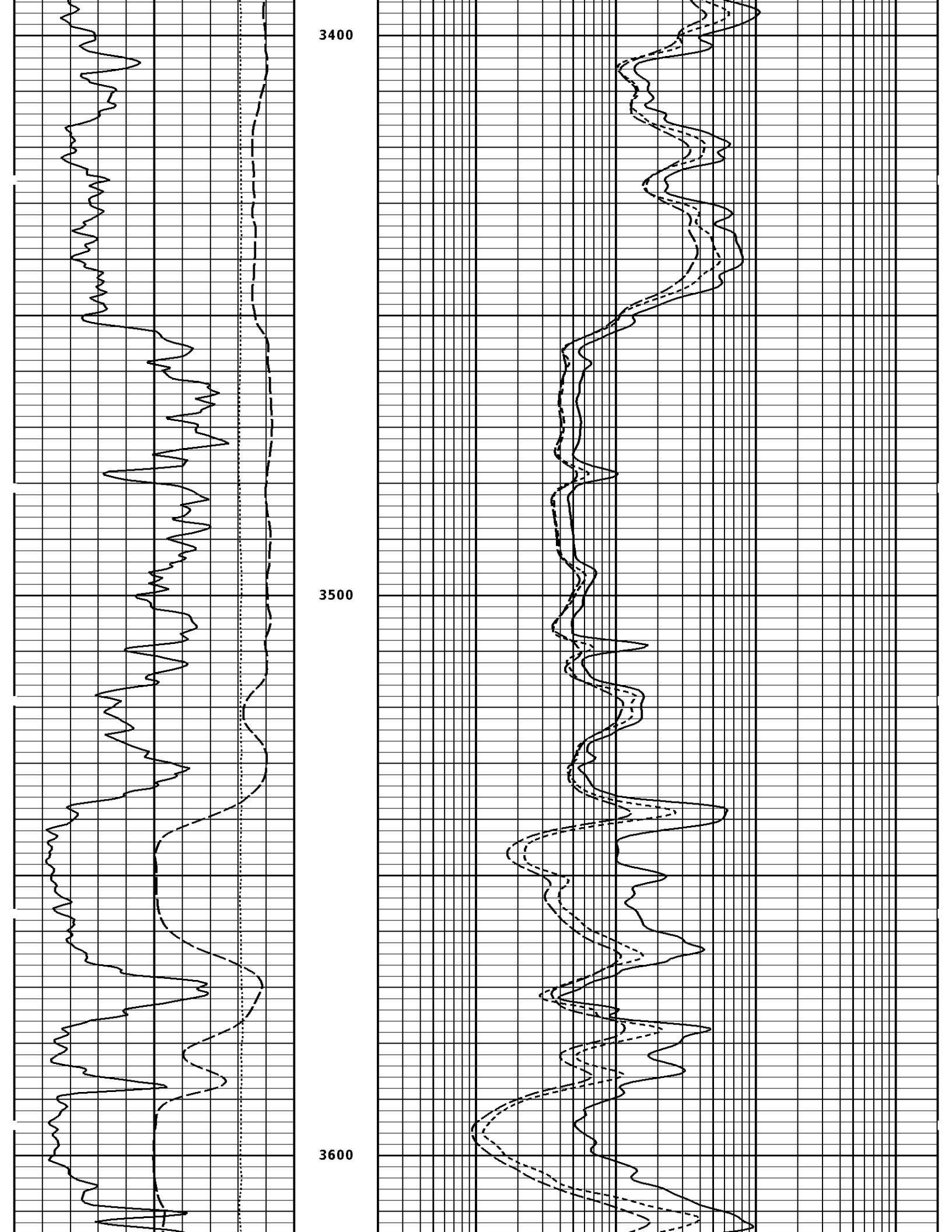
3100


←GR
←LWT
←SP
←TLDM
←SFR
3200
3300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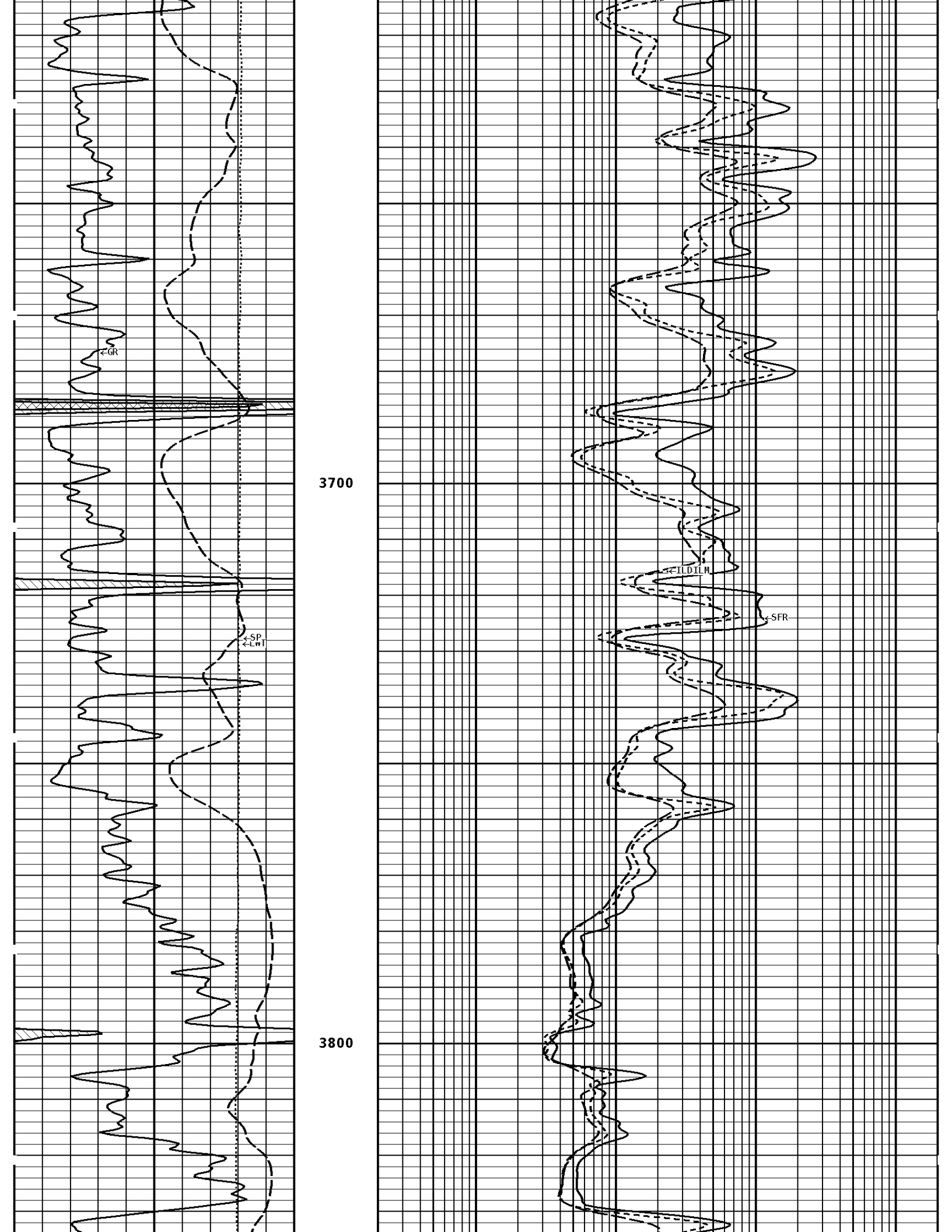
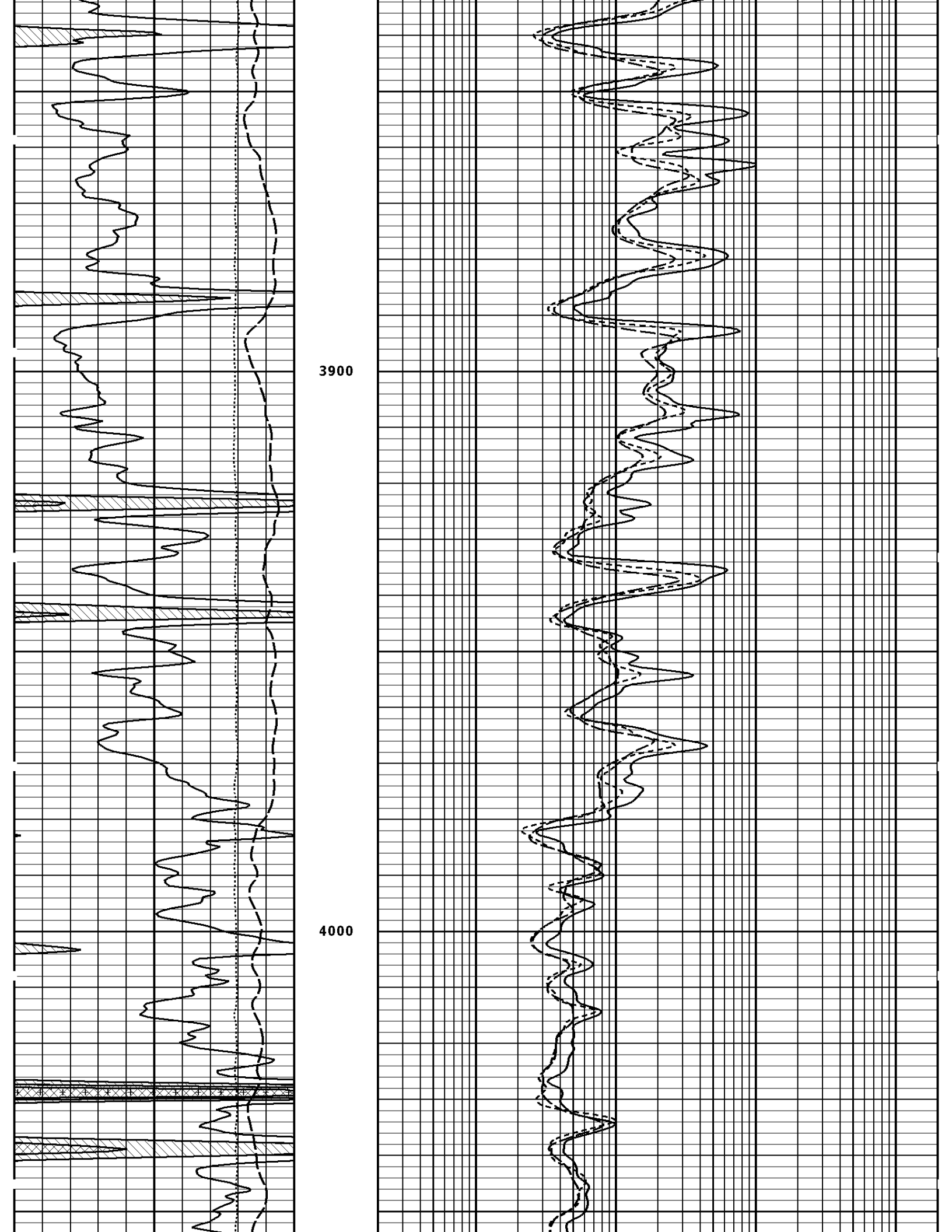
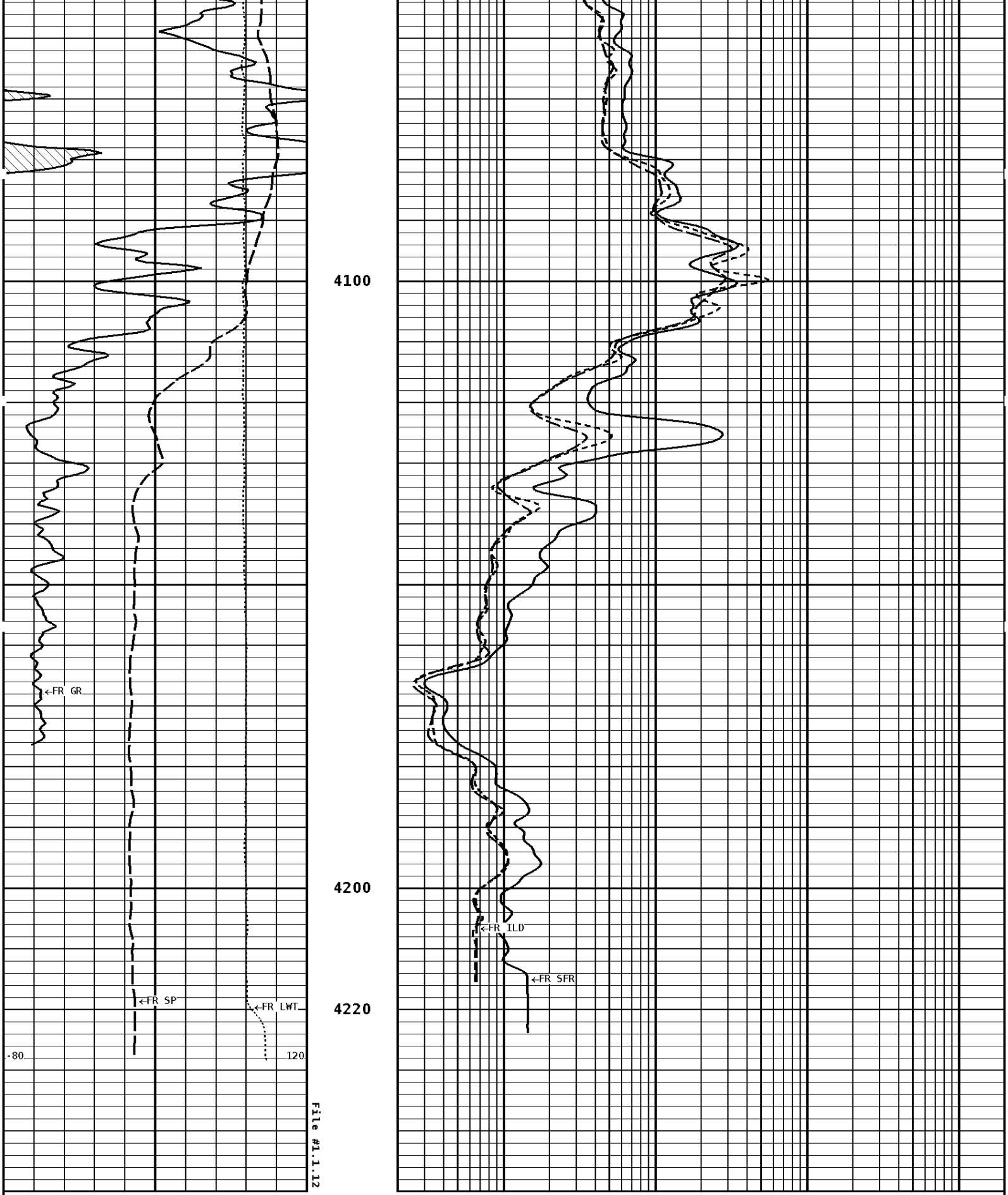
3500
3600


GR
SP
LWT
3700
ILDILM
SFR
3800


3900
4000



1:240 MAIN SECTION

GAMMA RAY API UNITS		SHALLOW FOCUSED RESISTIVITY OHMM
150 ... 300		

150	300
0	150

TENSION	
LBS	
10000	0

SPONTANEOUS POTENTIAL	
mV	
→|	|←20

0.2	2000.0

MEDIUM INDUCTION	
OHMM	
0.2	2000.0

DEEP INDUCTION	
OHMM	
0.2	2000.0

*** Borehole Zone Factors ***

Zone 1 99999.0 to 0.0 Feet

Drill Bit Size	7.875	in
Casing Diameter	4.500	in
BHT Depth	4220.000	ft
Borehole Temperature	114.0	degF
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	0.500	ohm/m
Resistivity Of Mud Temperature	55.00	degF

Well File: pic_mat_3_feb_13_mstk **Scale:** 1:240
Segment: V1.D1.S11 REPEAT **Acquired:** 2013-02/14 00:10 3.2.0-11401
Reference: 0 **Processed:** 2013-02/14 03:33 3.2.0-11401

SPONTANEOUS POTENTIAL	
mV	
→|	|←20

DEEP INDUCTION	
OHMM	
0.2	2000.0

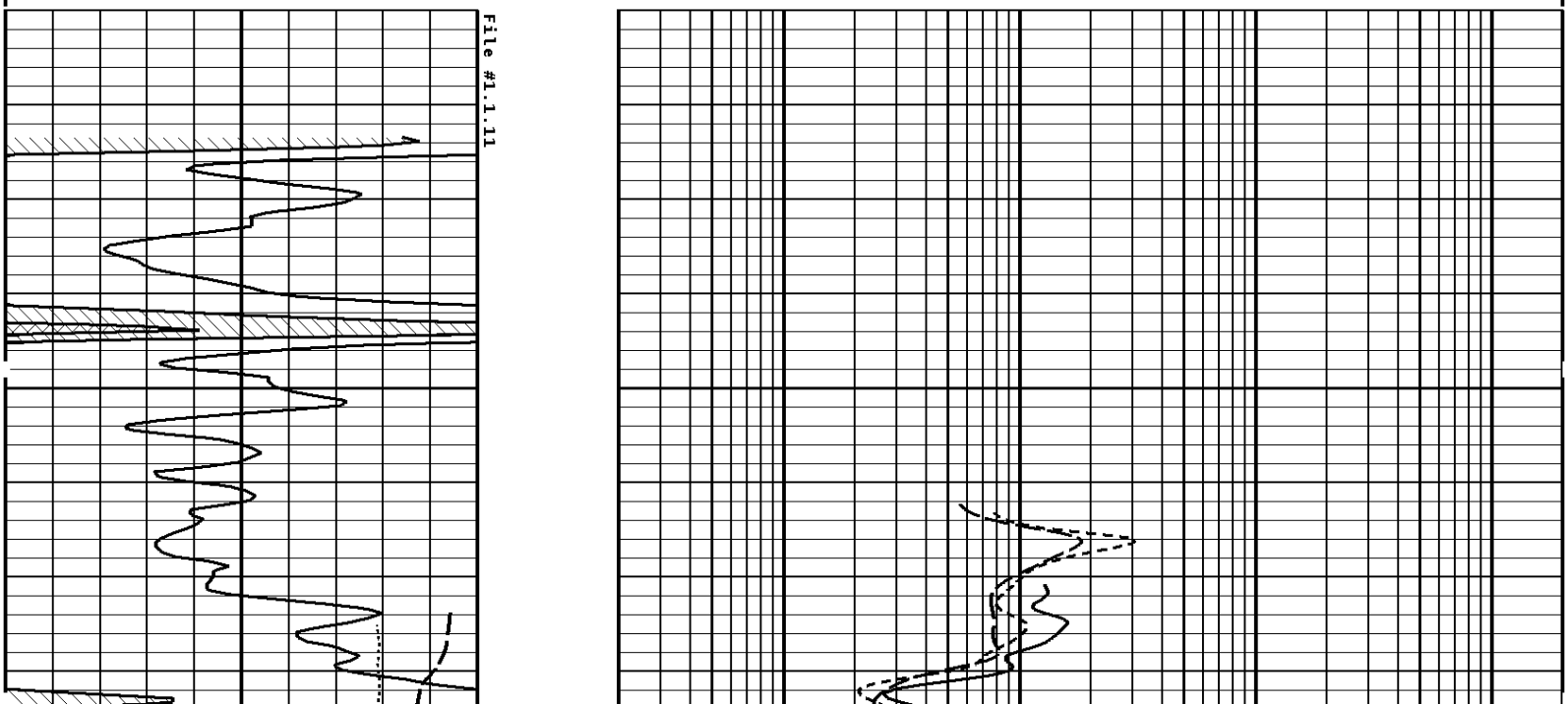
TENSION	
LBS	
10000	0

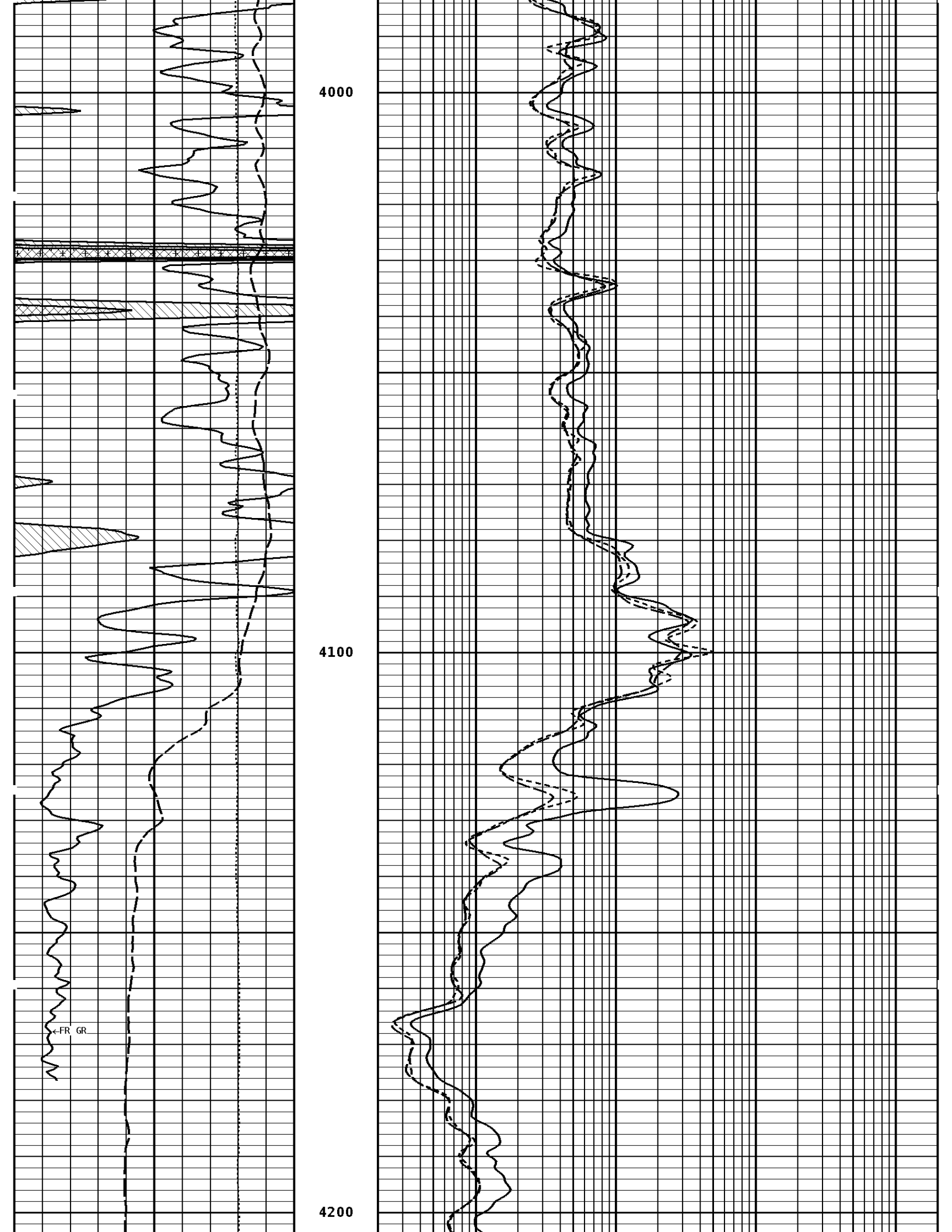
MEDIUM INDUCTION	
OHMM	
0.2	2000.0

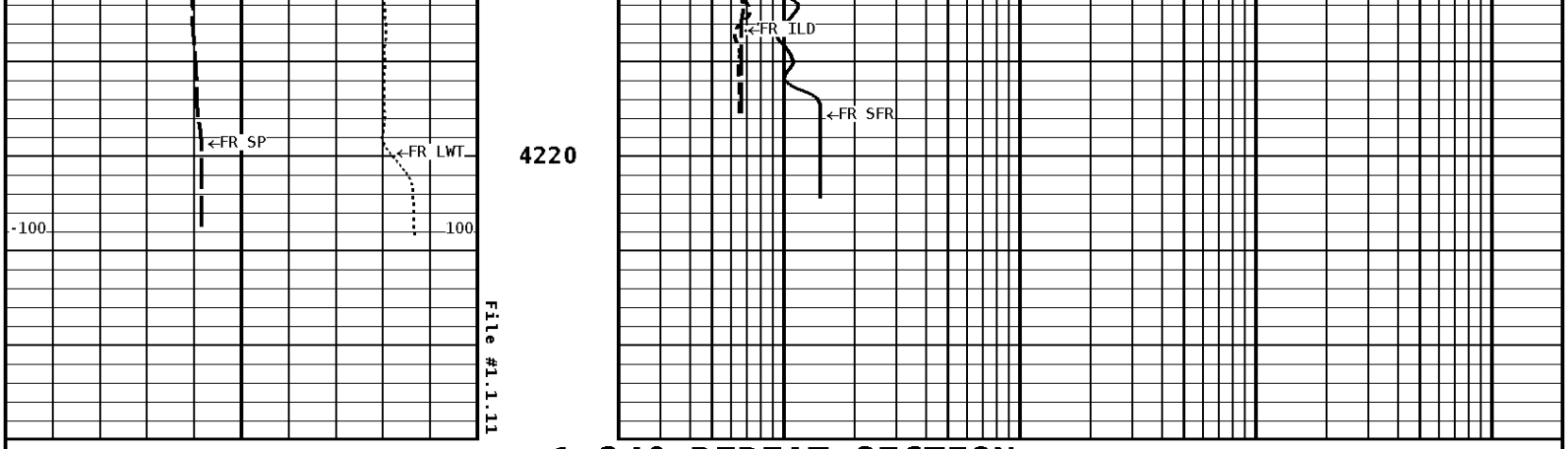
GAMMA RAY	
API UNITS	
150	300
0	150

SHALLOW FOCUSED RESISTIVITY	
OHMM	
0.2	2000.0

1:240 REPEAT SECTION




4000
4100
4200
←FR GR



1:240 REPEAT SECTION

GAMMA RAY **API UNITS** 150 300 0 150	**SHALLOW FOCUSED RESISTIVITY** **OHMM** 0.2 2000.0
TENSION **LBS** 10000 0	**MEDIUM INDUCTION** **OHMM** 0.2 2000.0
SPONTANEOUS POTENTIAL **mV** →| |←20	**DEEP INDUCTION** **OHMM** 0.2 2000.0

* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 Feet

Drill Bit Size	7.875	in
Casing Diameter	4.500	in
BHT Depth	4220.000	ft
Borehole Temperature	114.0	degF
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	0.500	ohm/m
Resistivity Of Mud Temperature	55.00	degF

* Calibration Summary *

Shop Calibration
GRT-B

Performed : 04-SEP-2012 Time : 19:28
Sensor Suite : GR-GR5 ID : GRT-BC-41

	Measured Background	Measured Jig	Units	Calibrated Jig	Units
GR	46	346	CPS	175	GRAPI

Shop Calibration
PIT-CA

Performed : 21-NOV-2012 Time : 14:36
Sensor Suite : P-IND-T ID : PIT-AB-005

Medium

	Measured R	Measured X	Calibrated R	Calibrated X	Units
Air	130351	131011	-0.2	-0.2	MMHOS
Zero	131064	131068	26.7	1.9	MMHOS
Reference	250174	250556	5026.7	5001.9	MMHOS
Loop	128308	218141	3560.1	3731.6	MMHOS
Sonde Error			-3.6	3.0	MMHOS
Cond			5026.7	5001.9	MMHOS

Deep

	Measured R	Measured X	Calibrated R	Calibrated X	Units

	Measured R	Measured X	Calibrated R	Calibrated X	Units
Air	128932	131135	-0.1	-0.0	MMHOS
Zero	131084	131072	43.9	-7.2	MMHOS
Reference	233274	233952	2043.9	1992.8	MMHOS
Loop	126596	219999	1681.7	1773.2	MMHOS
Sonde Error			-4.1	-7.7	MMHOS
Cond			2043.9	1992.8	MMHOS

Temperature

Measured Low	Measured High	Calibrated Low	Calibrated High	Units
16980.0	56920.0	70.0	350.0	DEGF

Performed : 21-Nov-2012 Time : 14:39
Sensor Suite : SFL ID : PIT-AB-005

Internal

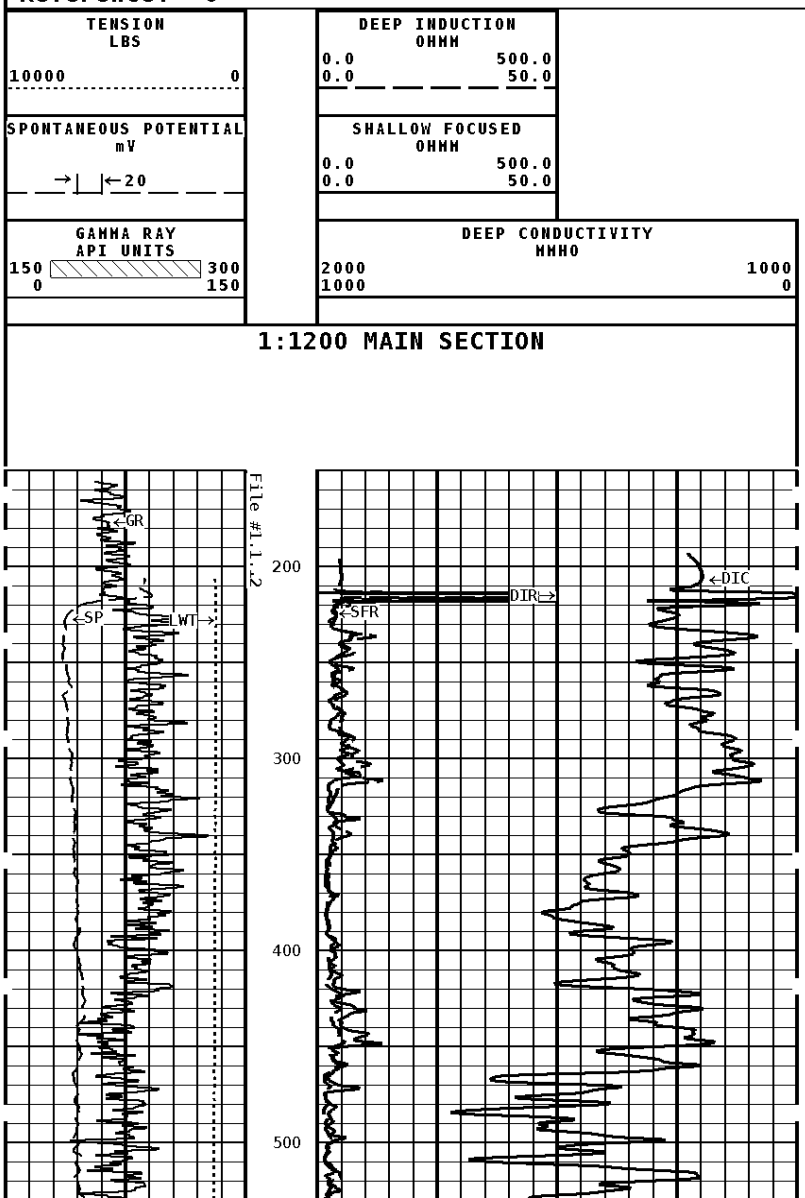
	Measured Zero	Measured Reference	Calibrated Zero	Calibrated Reference	Units
Im	32765.9	49467.5	0.0	7028.0	uA
Ib	32769.2	48720.1	0.0	1750.0	mA
MOM1	32713.4	56534.1	0.0	175.0	mV
Equivalent SFL				43.97	OHMM

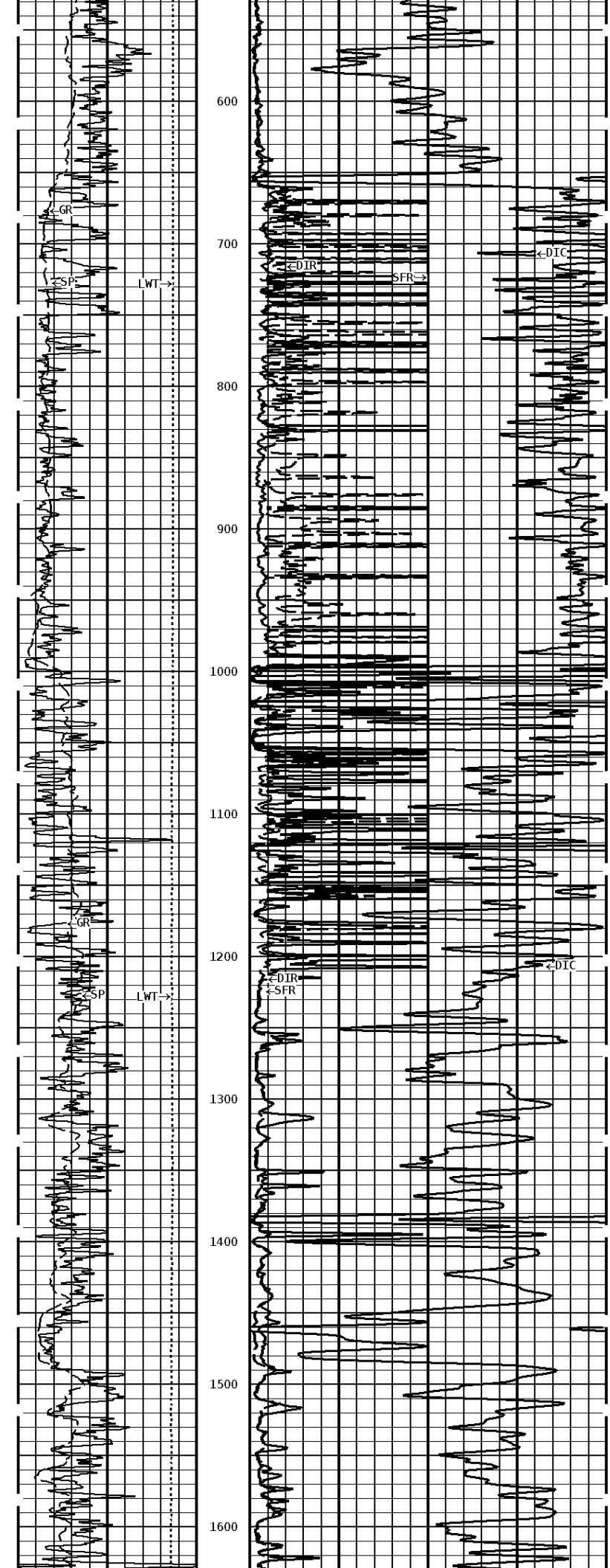
Performed : 21-NOV-2012 Time : 14:40
Sensor Suite : P-SP ID : PIT-AB-005

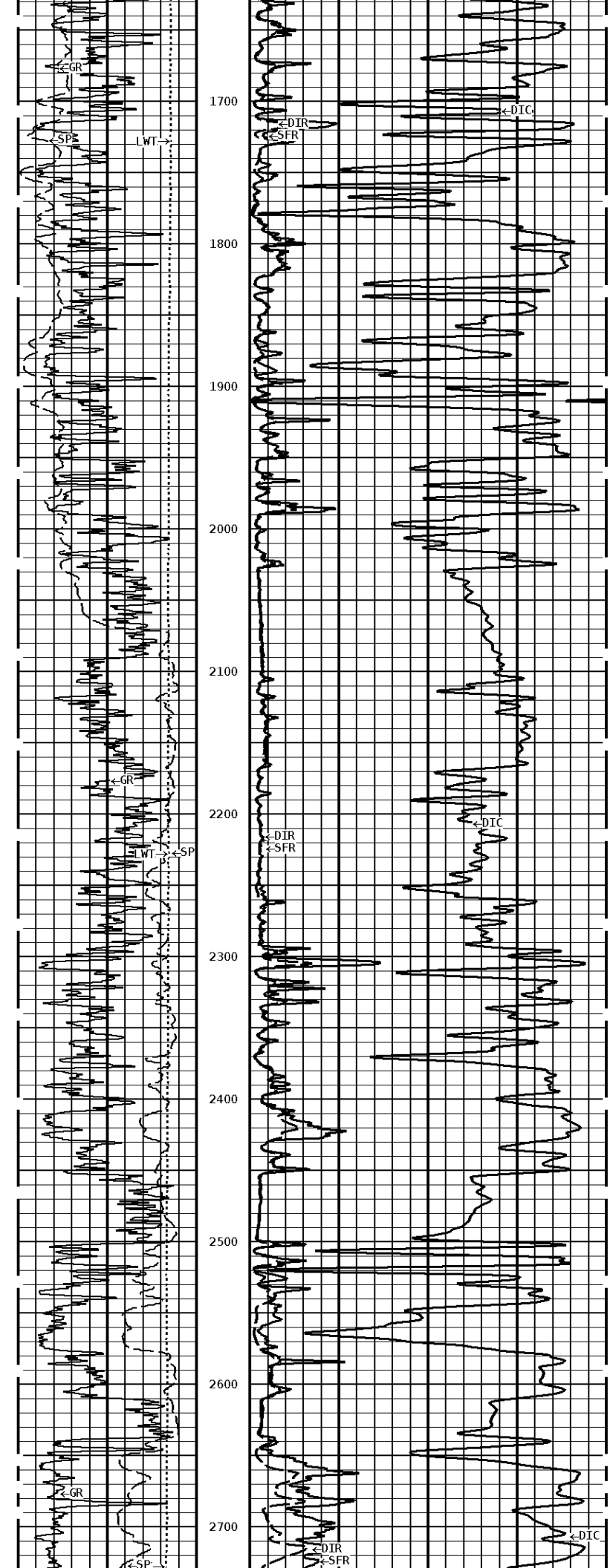
Internal

Measured Zero	Measured Reference	Calibrated Zero	Calibrated Reference	Units
32768.6	58921.2	0.0	1000.0	mV

Well File: pic_mat_3_feb_13_mstk **Scale:** 1:1200
Segment: V1.D1.S12 MAIN **Acquired:** Not Available
Reference: 0 **Processed:** 2013-02/14 03:33 3.2.0-11401




600
700
800
900
1000
1100
1200
1300
1400
1500
1600
GR
SP
LWT→
DIR
SFR→
DIC
GR
SP
LWT→
DIR
SFR
DIC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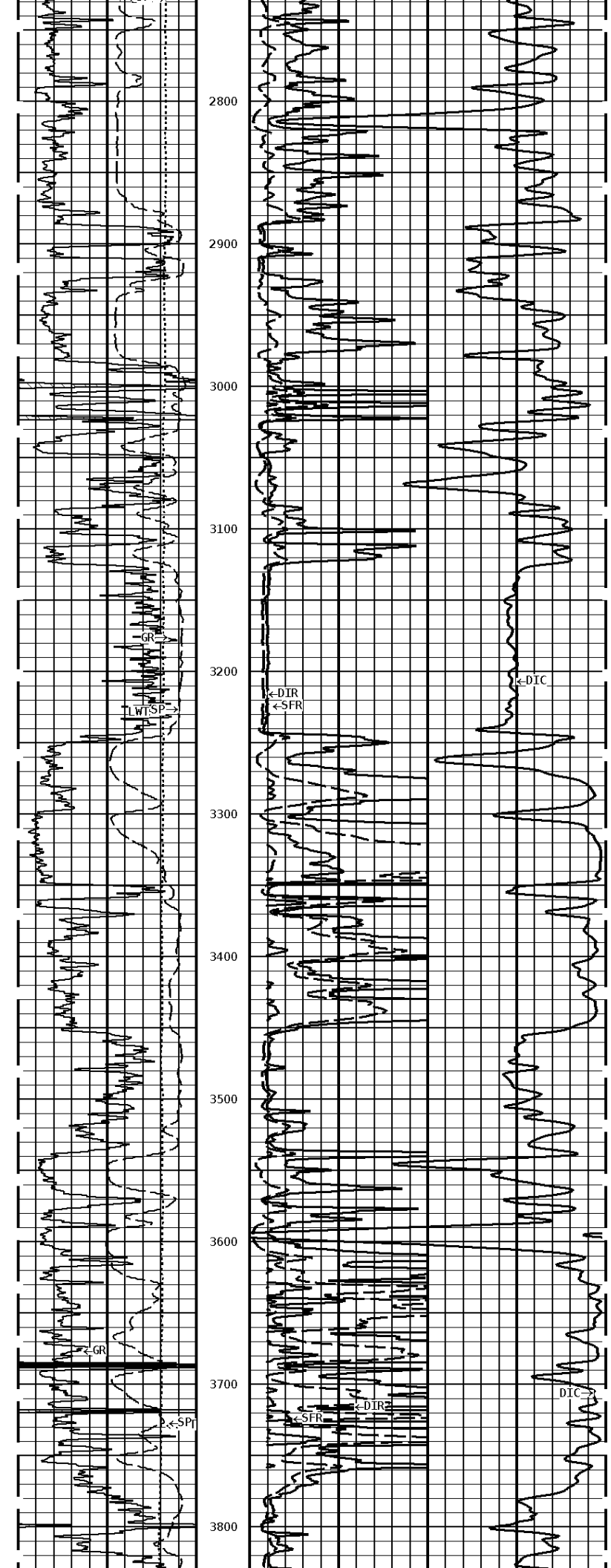
2500
2600
2700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3000
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3200
3300
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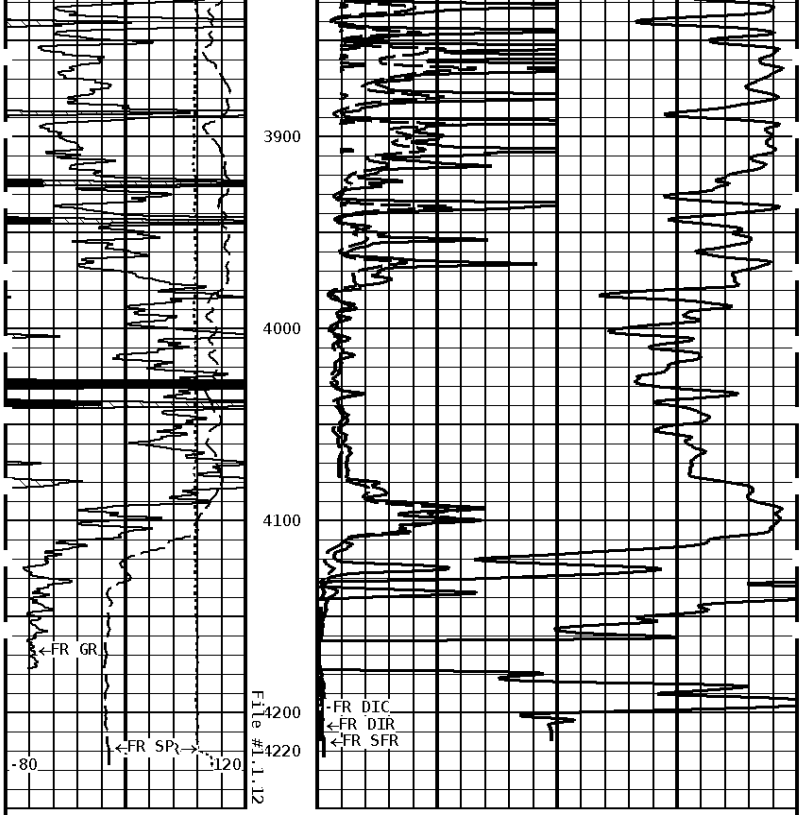
3800
GR
LWT
SP
DIR
SFR
DIC
GR
SP
DIR
SFR
DIC



1:1200 MAIN SECTION

GAMMA RAY API UNITS 150 300 0 150	DEEP CONDUCTIVITY MMHO 2000 1000 1000 0
SPONTANEOUS POTENTIAL mV →||←20	SHALLOW FOCUSED OHMM 0.0 500.0 0.0 50.0
TENSION LBS 10000 0	DEEP INDUCTION OHMM 0.0 500.0 0.0 50.0

Tucker ENERGY SERVICES

Company:	PICKRELL DRILLING CO., INC.
Well:	MATSON ESTATE #3
Location:	660' FSL & 1980' FWL
Logged:	2013-02-13
K.B. Elev:	1453.0 Ft