Tucker ENERGY SERVICES

PHASED INDUCTION

SHALLOW FOCUS SP LOG

Company LACHENMAYR OIL LLC
Well GOODRICH #L-1
Field GOODRICH
County SEDGWICK
State KANSAS
Country USA
API No. 15-173-21038-0000

File No : TUL-60398
Company : LACHENMAYR OIL LLC
Well : GOODRICH #L-1
Field : GOODRICH
County : SEDGWICK
State : KANSAS
Country : USA
API No : 15-173-21038-0000

Location :
2265' FNL & 995' FWL
SE SW NW

LSD : **Sect :** 16 **Twp :** 25S **Rge :** 1E

Permanent Datum:	GL	**Elevations:**		**Services:**	
Drilling Measured From:	KB	**KB** 1436.00	Ft	CNT	MLT
Log Measured From:	KB	**DF** 1435.00	Ft	LDT	PIT
Above Permanent Datum:	10.00 Ft	**GL** 1426.00	Ft	CST	

Date	05-20-2015			
Run Number	1			
Depth--Driller	3413.0 Ft			
Depth--Logger	3413.0 Ft			
First Reading	3413.0 Ft			
Last Reading	212.0 Ft			
Casing--Driller	212.0 Ft			
Casing--Logger	212.0 Ft			
Bit Size	7.875 In			
Casing Size	8.625 In			
Hole Fluid Type	CHEM-GEL			
Density	9.5			
Fluid Loss	7.2			
PH/Viscosity	10.0	54.0		
Sample Source	MEASURED			
RM@Measured Temp.	2.000 @ 60 F			
RMF@Measured Temp	1.600 @ 60 F			
RMC@Measured Temp.	2.400 @ 60 F			
Source RMF/RMC	CALCULATED	CALCULATED		
RM@BHT	1.140 @ 110 F			
Time Circulation Stopped				
Max Recorded Temp.	110 F			
Equipment/Base	1022	TULSA		
Recorded By	SHELDON TYLER / AMOUR	DJAHO		
Witnessed By	TYLER SANDERS			

Casing Strings

Size (In)	Weight (Lbs)	Bottom (Ft)	Top (Ft)
8.625	32.00	212.00	0.00

Bitsize Intervals

Size (In)	Bottom (Ft)
7.875	3413.00

Run Number	1
Date	05-20-2015
Date/Time On Bottom	
Depth to Fluid	0.0 Ft
Salinity	1900.000
RMF@BHT	0.910 @ 110 F
RMC@BHT	1.370 @ 110 F

Run Number 1

Comments

ALL PRESENTATIONS AS PER CUSTOMER REQUEST
GRT, CNT, LDT, CST, MLT AND PIT RUN IN COMBINATION
CALIPERS ORIENTED ON X-Y AXIS
2.71 G/CC USED TO CALCULATE POROSITY
ANNULAR HOLE VOLUME CALCULATED USING 5.5" PRODUCTION CASING
PHIN IS CALIPER CORRECTED

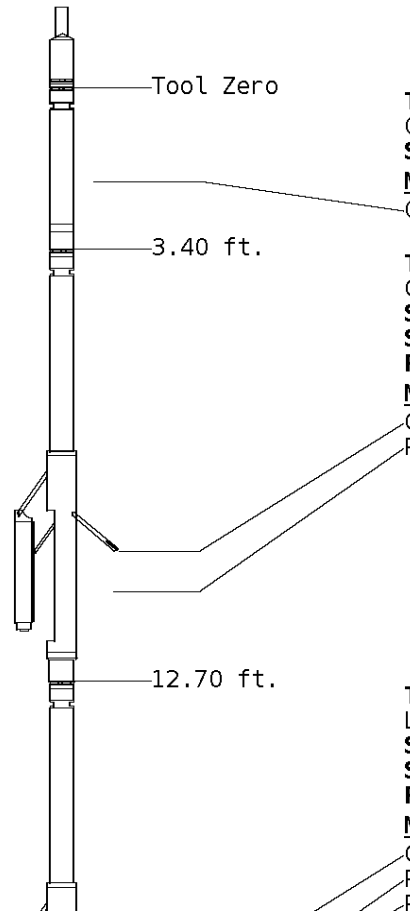
CUSTOMER REQUESTED DETAIL PULLED TO 1900'
2ND RUN TO GET GAMMA RAY CLOSER TO BOTTOM

GRT: GRP, GRX
CST: PORS, CDTF, TTIPF, TT2PF, TT3PF, TT4PF, ITT
CNT: PHIN, CLCNIN, PHXN
LDT: PORL, LCORN, PECLN, LDENN, PORLLS, CLLDIN, PRXL, PECLX, LDENNX, LCORX
MLT: NOR_RF, INV_RF, MSCLPIN
PIT: ILD, ILM, SPU, SFLAEC, CIRD

OPERATORS: +3
B.BROWN
J.OFFEIGHU

Tool String Schematic

Total Tool Length - 66.95 **ft.**
Maximum Outside diameter - 6.00 **in.**
Net Weight in Air - 1171.00 **lbs.**



Tool: GRT-B **Length:** 3.40 **ft.** **O.D.** 3.60 **in.**
Gamma Ray Controller
Sonde ID :GRT-BA-121

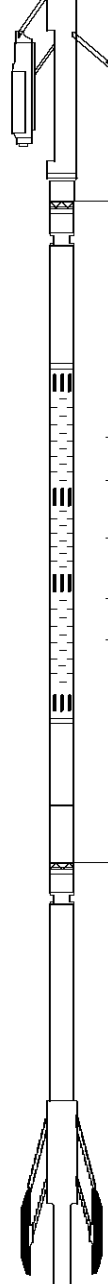
Measure Point	Tool Offset	Stack Offset	Bottom Offset
GRP	2.00	2.00	64.95

Tool: CNT-AA **Length:** 9.30 **ft.** **O.D.** 4.36 **in.**
Compensated Neutron A Pad on NDT-A
Sonde ID :NDT-BB-115
Source ID :N-1044
Pad ID :CNP-AA-101

Measure Point	Tool Offset	Stack Offset	Bottom Offset
CLCN	6.00	9.40	57.55
PHIN	6.80	10.20	56.75

Tool: LDT-DA **Length:** 9.30 **ft.** **O.D.** 4.80 **in.**
Litho Density D Pad on NDT-A
Sonde ID :PDT-GA-426
Source ID :CSV-587
Pad ID :LDP-DA-50

Measure Point	Tool Offset	Stack Offset	Bottom Offset
CLLD	6.00	18.70	48.25
PEL	7.00	19.70	47.25
PES	7.40	20.10	46.85



LDEN	7.20	19.90	47.05
LCOR	7.20	19.90	47.05

22.00 ft.

Tool: CST-AD **Length:** 13.80 **ft.** **O.D.** 3.60 **in.**
Open Hole Sonic
Sonde ID :CST-AB-012

Measure Point	Tool Offset	Stack Offset	Bottom Offset
TT1	4.80	26.80	40.15
TT3	5.80	27.80	39.15
CDT	7.30	29.30	37.65
TT4	8.80	30.80	36.15
TT2	9.80	31.80	35.15

35.80 ft.

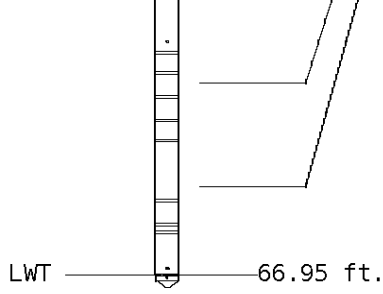
Tool: MST-DA **Length:** 9.66 **ft.** **O.D.** 6.00 **in.**
Micro Spherically Focused (IC)
Sonde ID :MLT-DA-21

Measure Point	Tool Offset	Stack Offset	Bottom Offset
MSFL	7.60	43.40	23.55
MSCLP	7.60	43.40	23.55
INV	7.60	43.40	23.55
NOR	7.60	43.40	23.55

45.46 ft.

Tool: PIT-CA **Length:** 21.49 **ft.** **O.D.** 3.62 **in.**
Phased Dual Induction w/ RM & D
Sonde ID :PIT-CA-075

Measure Point	Tool Offset	Stack Offset	Bottom Offset
ILD	8.92	54.38	12.56
ILM	10.10	55.56	11.39
SFLU	17.49	62.95	4.00
SP	20.60	66.06	0.88



Well File:	LACHENMAYR_GOODRICH_L-1_MAY20_QUINT	**Scale:** 1:600	**Format:** DIL-600
Segment:	V1.D3.S2 DS FINAL MAIN	**Acquired:**	2015-05/20 22:35 3.4.0-13487
Reference:	0	**Processed:**	2015-05/21 00:57 3.4.0-13487

TENSION
LBS
10000 — 0

DEEP INDUCTION
OHMM
0.0 — 500.0
0.0 — 50.0

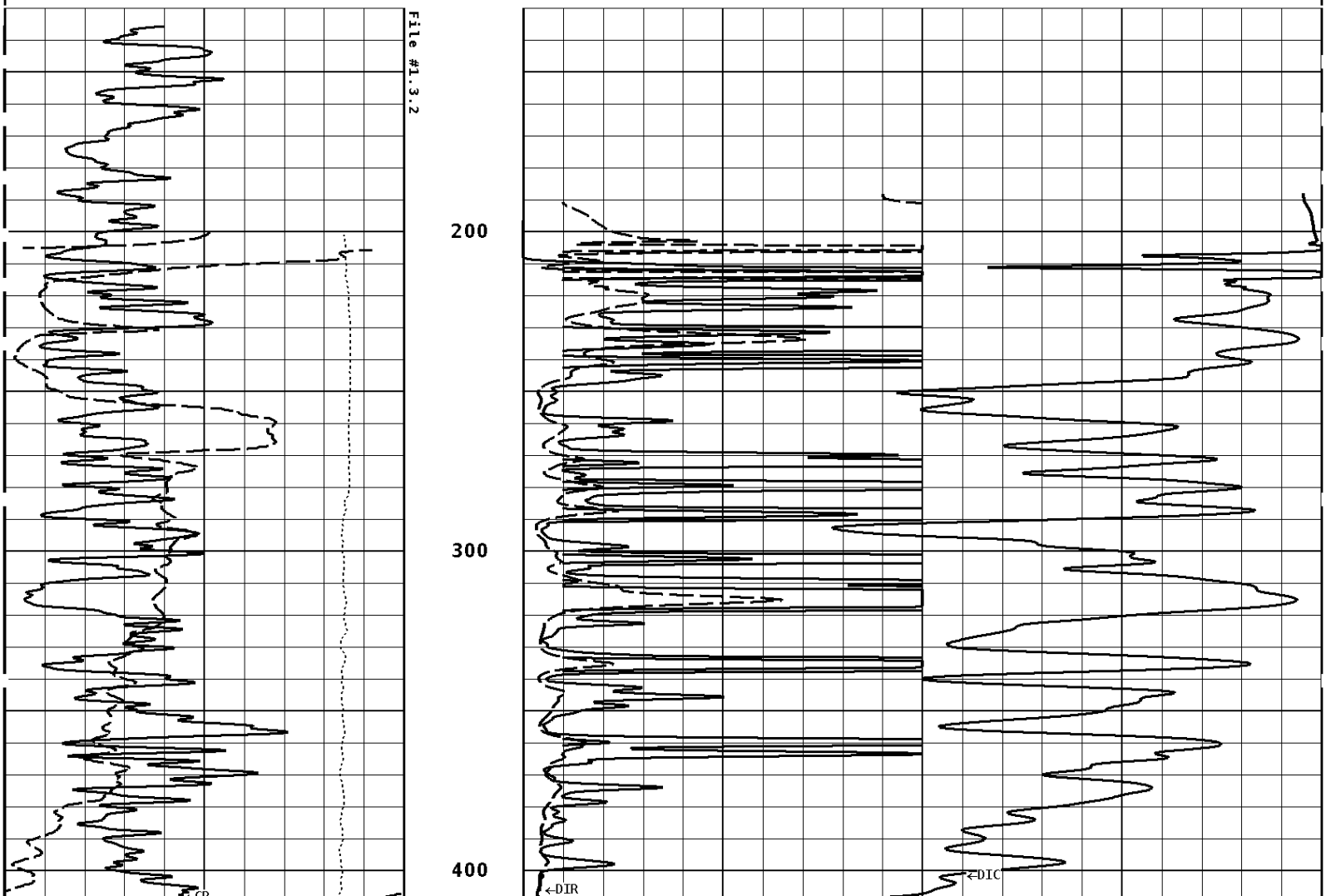
SPONTANEOUS POTENTIAL
mV
→ | ←20

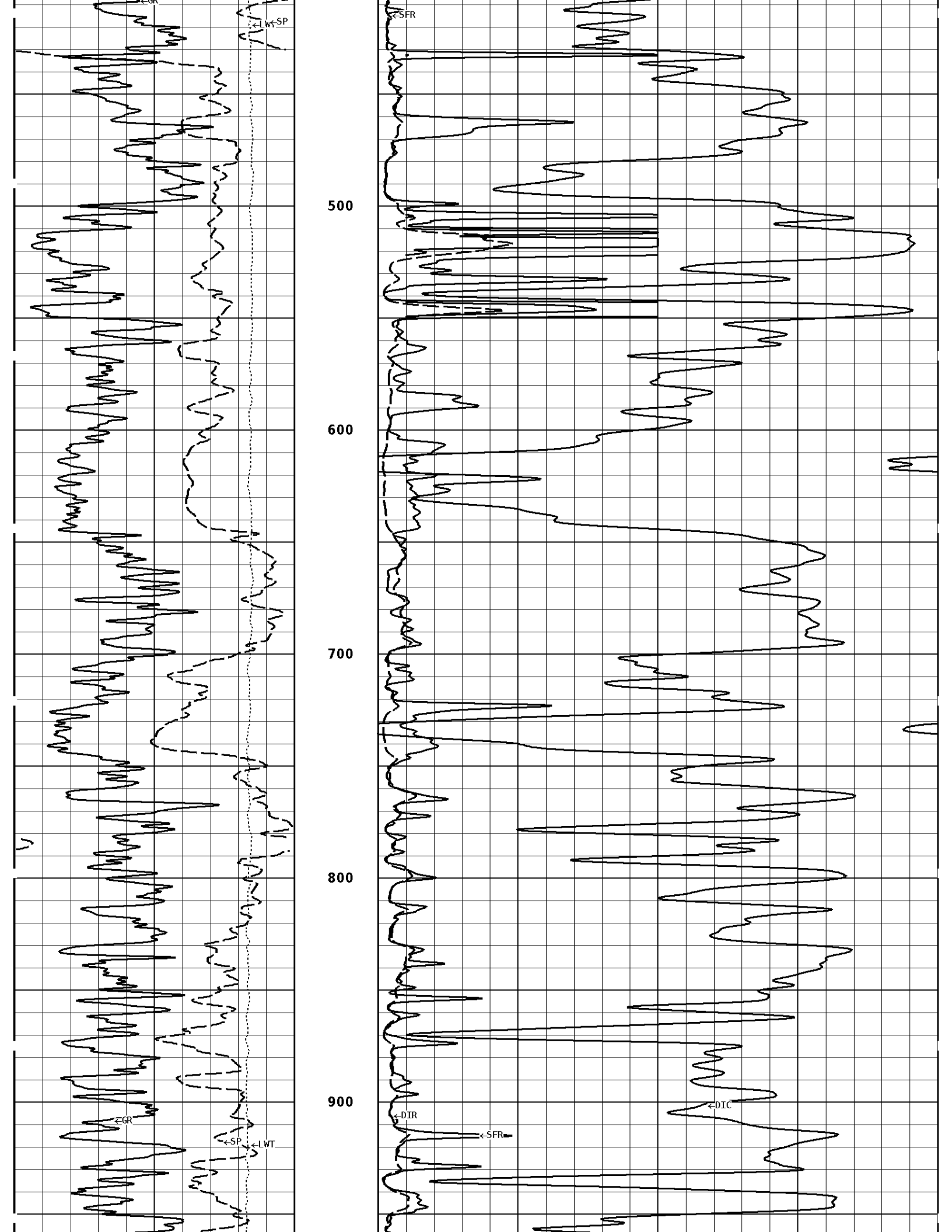
SHALLOW FOCUSED RESISTIVITY
OHMM
0.0 — 500.0
0.0 — 50.0

GAMMA RAY
API UNITS
150 — 300
0 — 150

DEEP CONDUCTIVITY
MMHO
2000 — 1000
1000 — 0

1:600 MAIN SECTION

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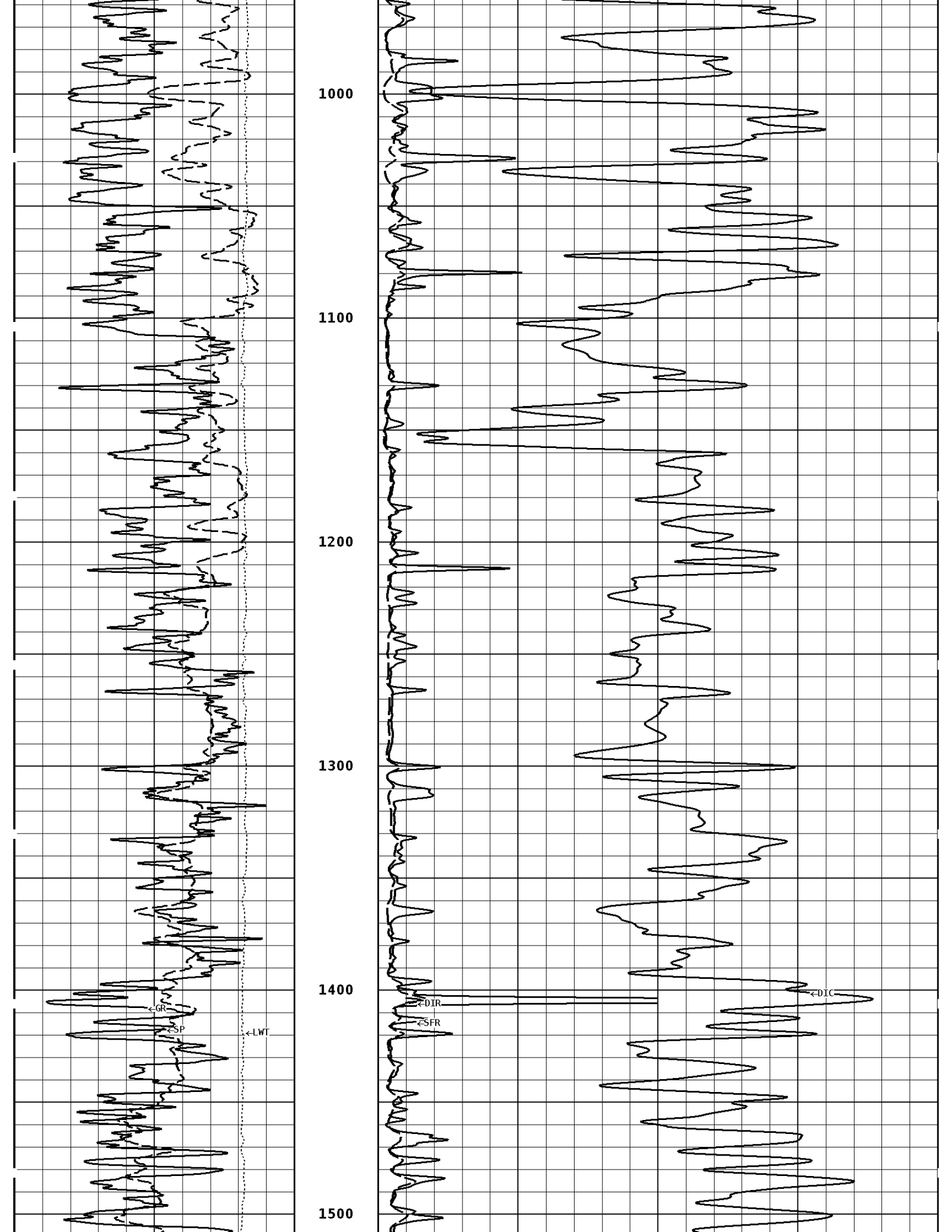
SP
LWT
SFR
500
600
700
800
900
GR
SP
LWT
DIR
SFR
DIC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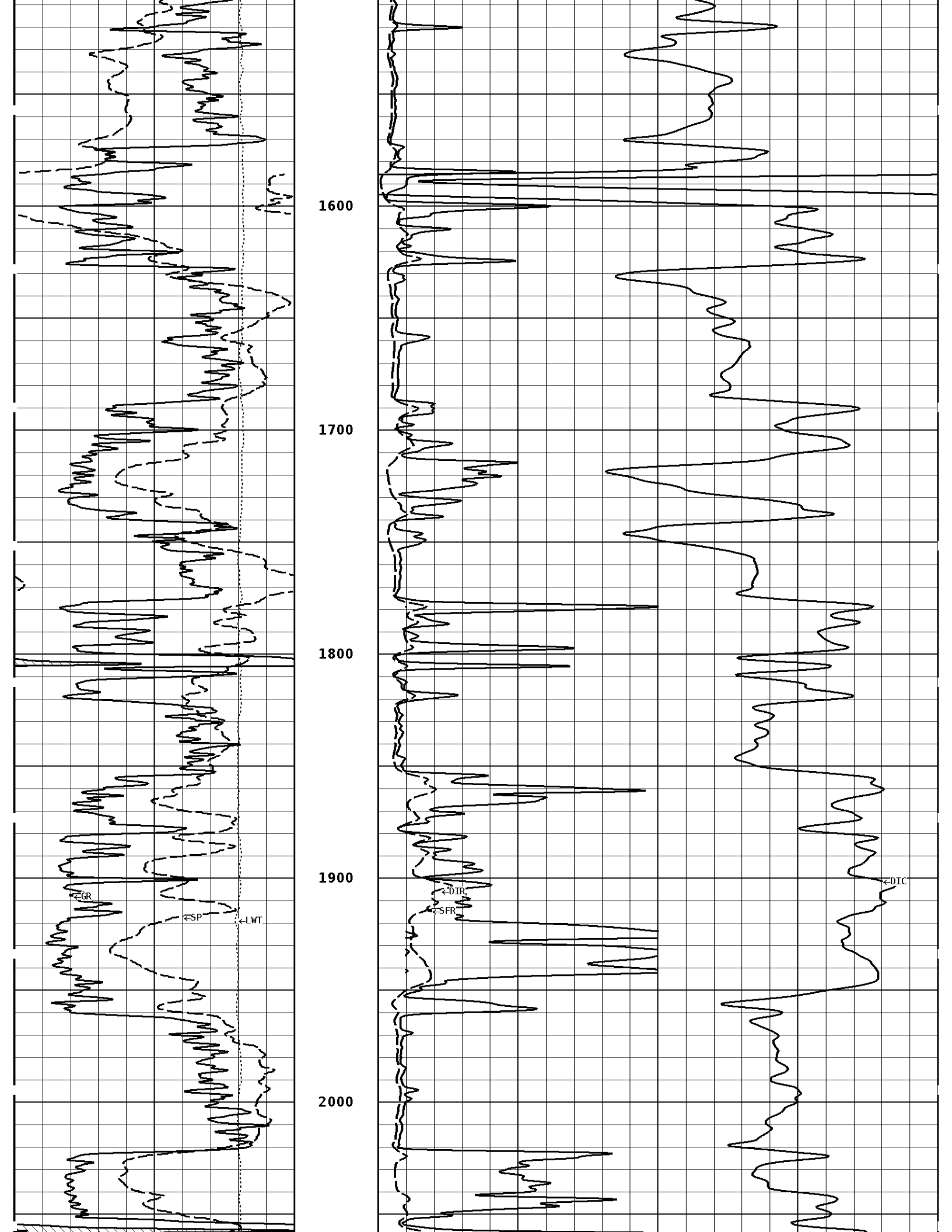
1100
1200
1300
1400
1500
GR
SP
LWT
DIR
SFR
DIC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GR
SP
LWT
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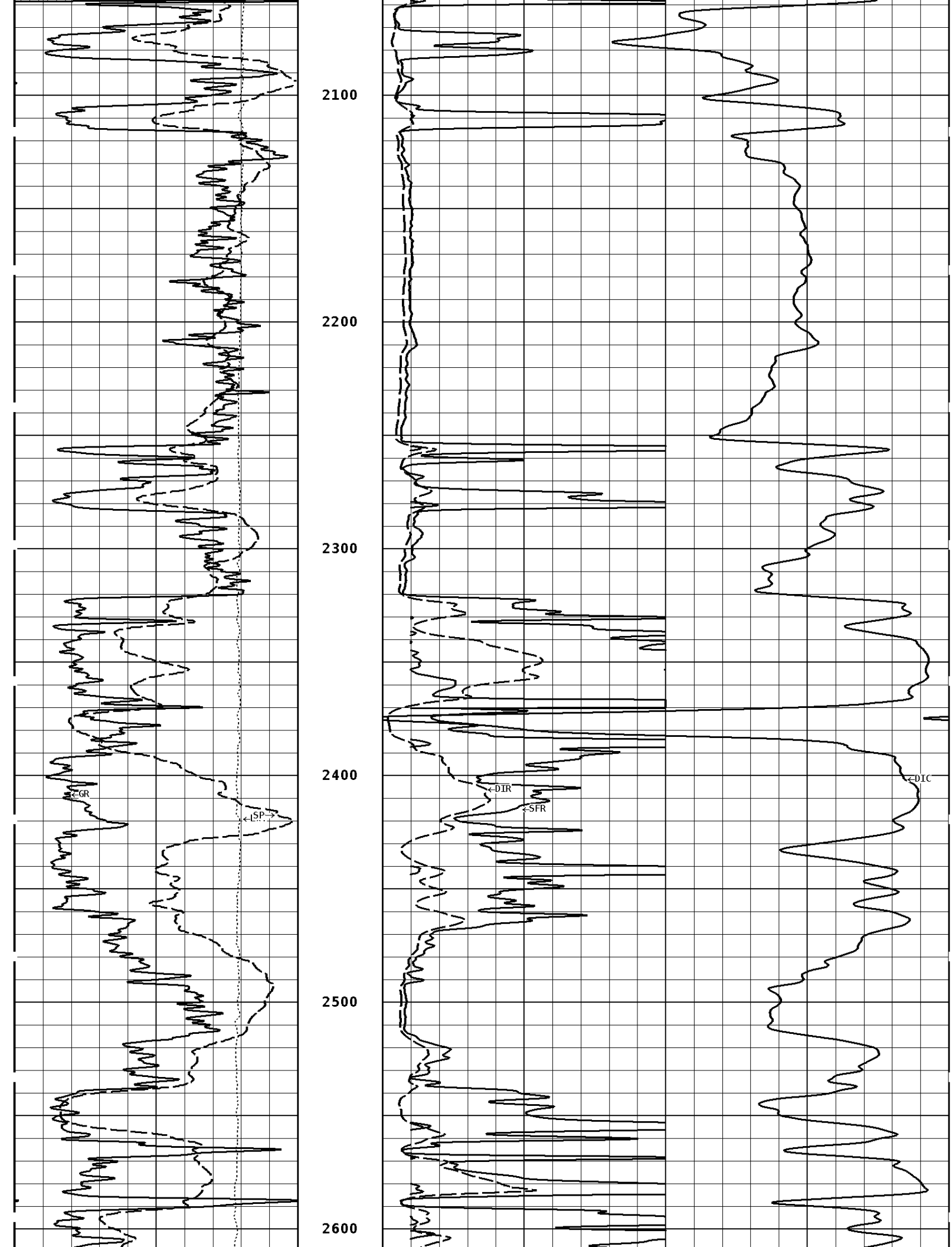
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2200
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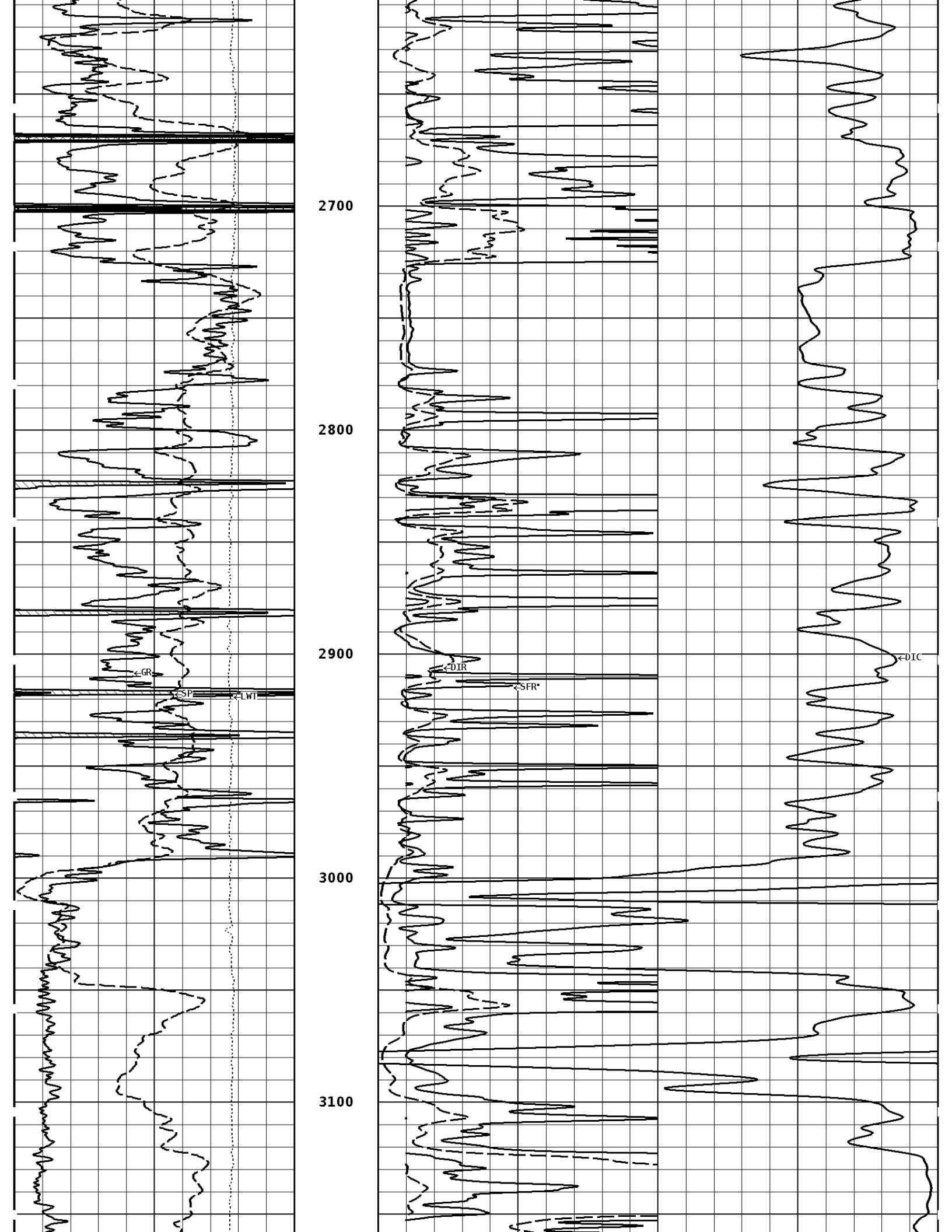
2500
2600
GR
SP
DIR
SFR
DIC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2900
3000
3100
GR
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DIR
SFR
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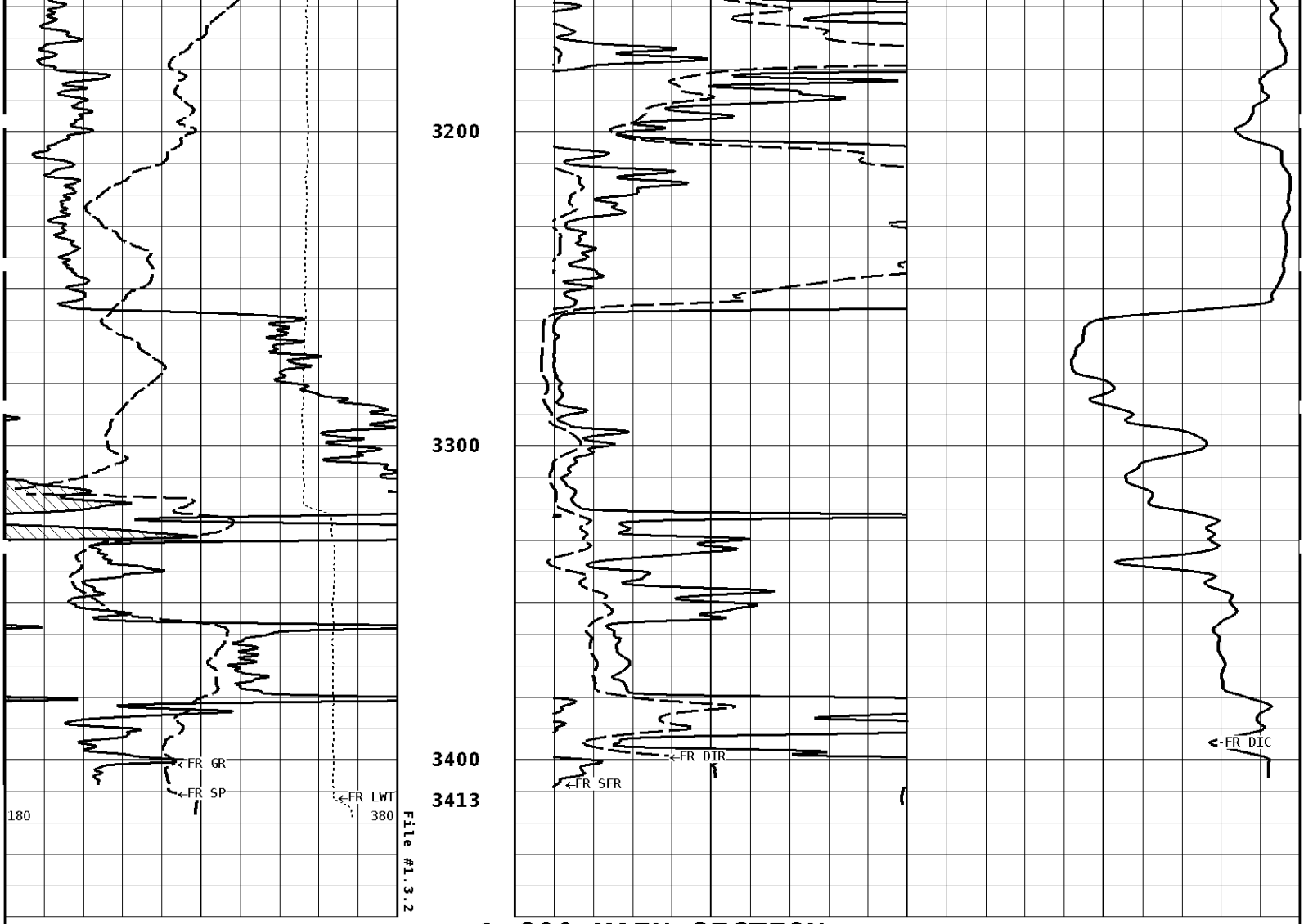


1:600 MAIN SECTION

GAMMA RAY
API UNITS
150 — 300
0 — 150

DEEP CONDUCTIVITY
MMHO
2000 — 1000
1000 — 0

SPONTANEOUS POTENTIAL
mV
→| |←20

SHALLOW FOCUSED RESISTIVITY
OHMM
0.0 — 500.0
0.0 — 50.0

TENSION
LBS
10000 — 0

DEEP INDUCTION
OHMM
0.0 — 500.0
0.0 — 50.0

Well File: LACHENMAYR_GOODRICH_L-1_MAY20_QUINT **Scale:** 1:240 **Format:** DIL-240
Segment: V1.D3.S2 DS FINAL MAIN **Acquired:** 2015-05-20 22:35 3.4.0-13487
Reference: 0 **Processed:** 2015-05-21 00:57 3.4.0-13487

SPONTANEOUS POTENTIAL
mV
→| |←20

DEEP INDUCTION
OHMM
0.2 — 2000.0

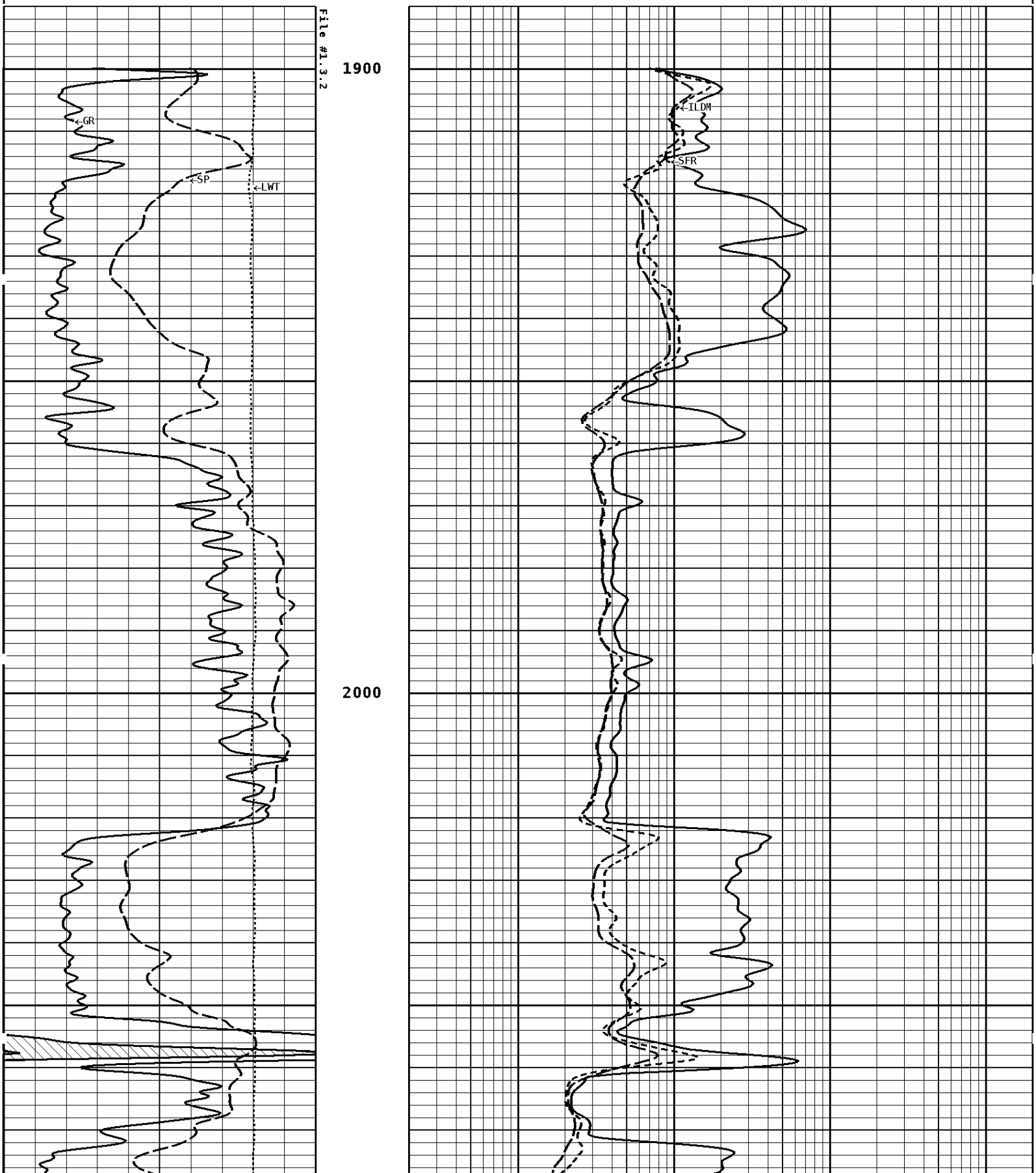
TENSION
LBS
10000 — 0

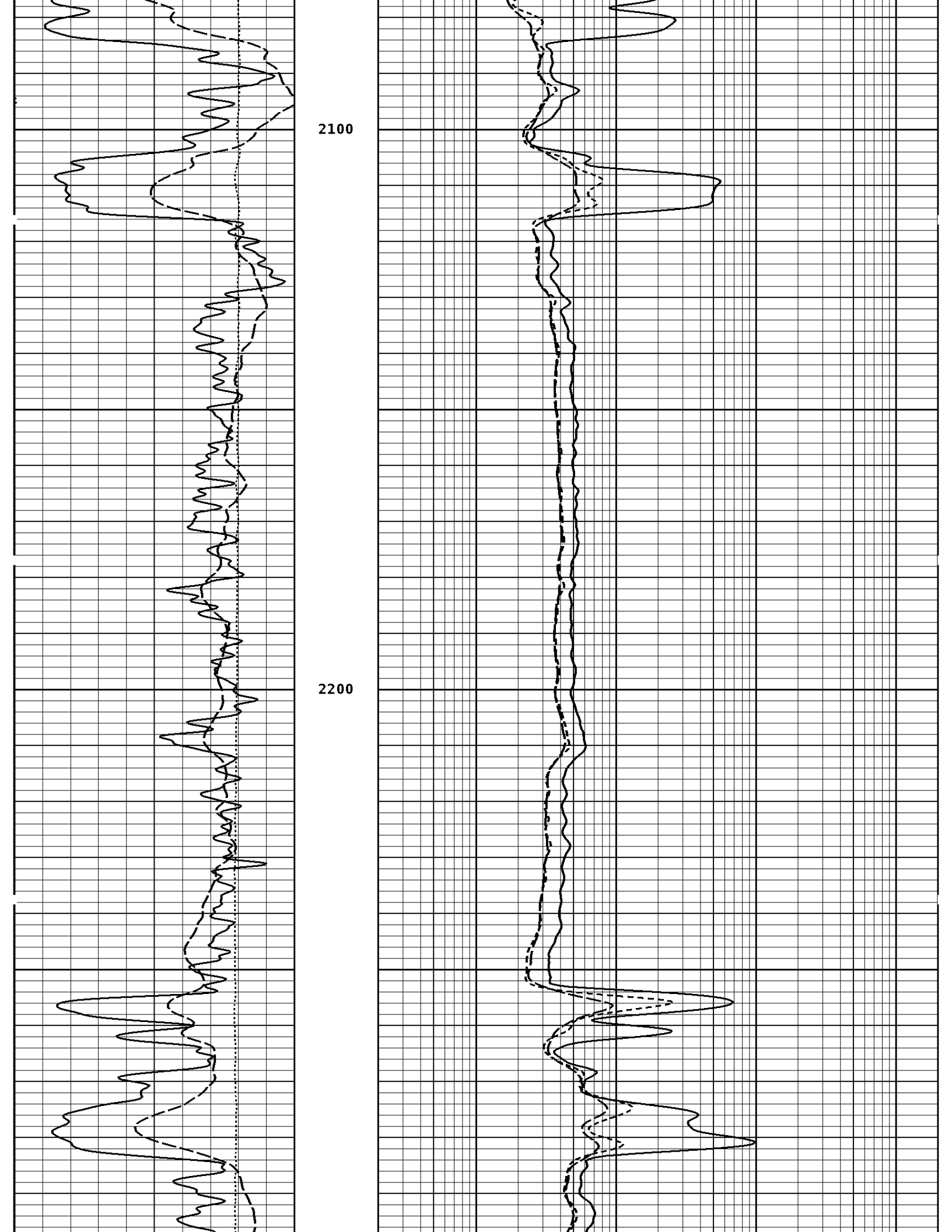
MEDIUM INDUCTION
OHMM
0.2 — 2000.0

GAMMA RAY
API UNITS
150 300
0 150

SHALLOW FOCUSED RESISTIVITY
OHMM
0.2 2000.0

1:240 MAIN SECTION

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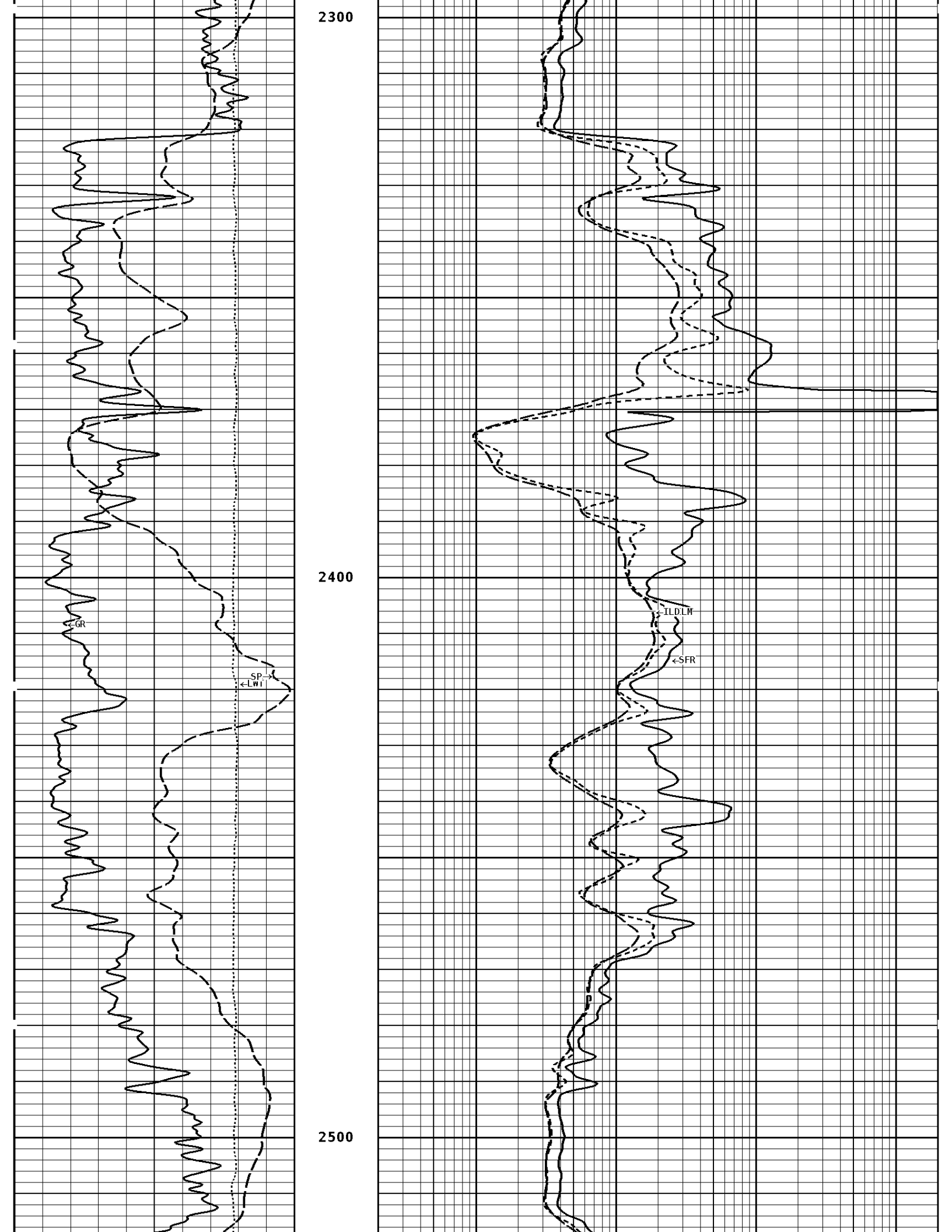
2200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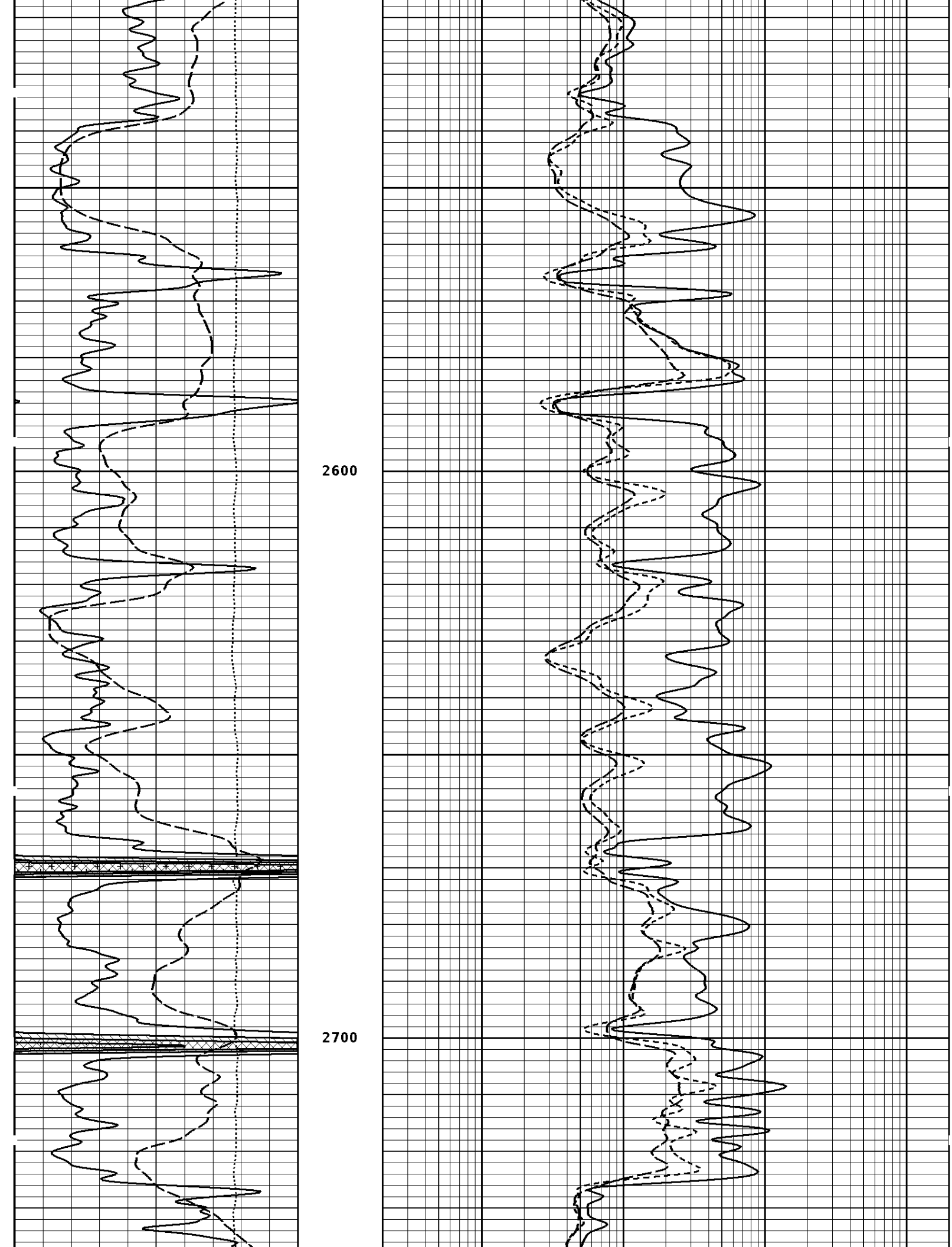
2400
2500
GR
SP
LWI
ILDLM
SFR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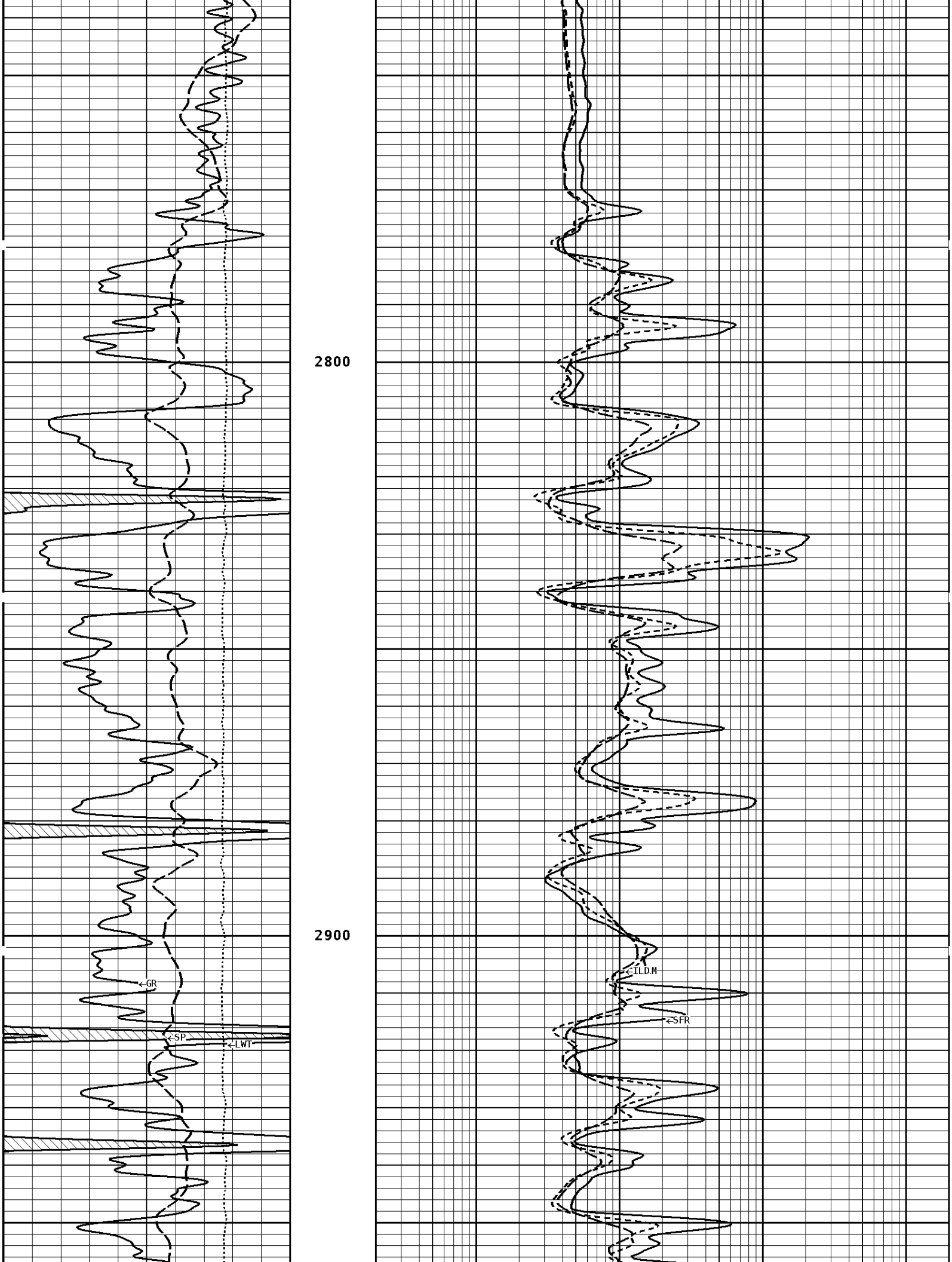
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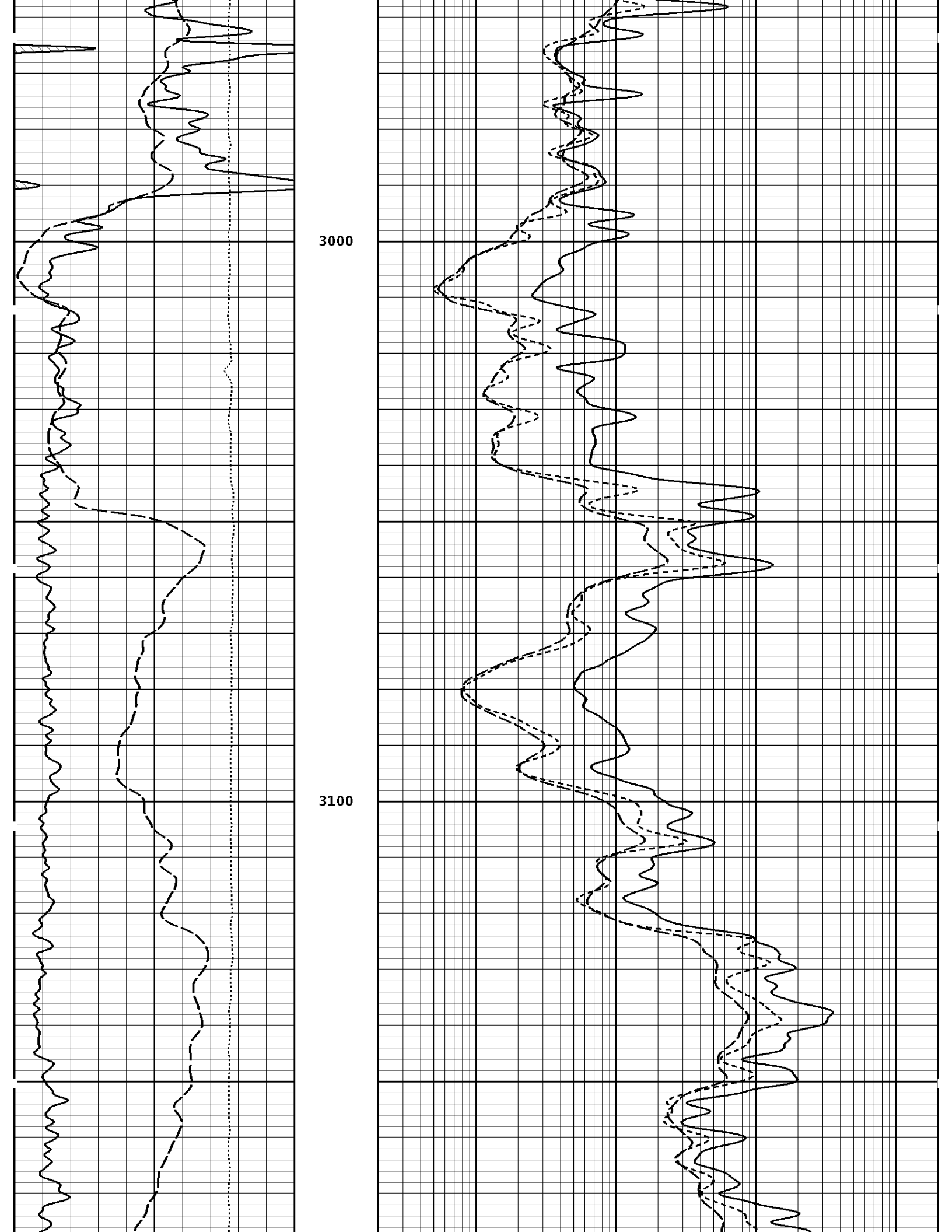
2900
GR
SP
LWT
ILD.M
SFR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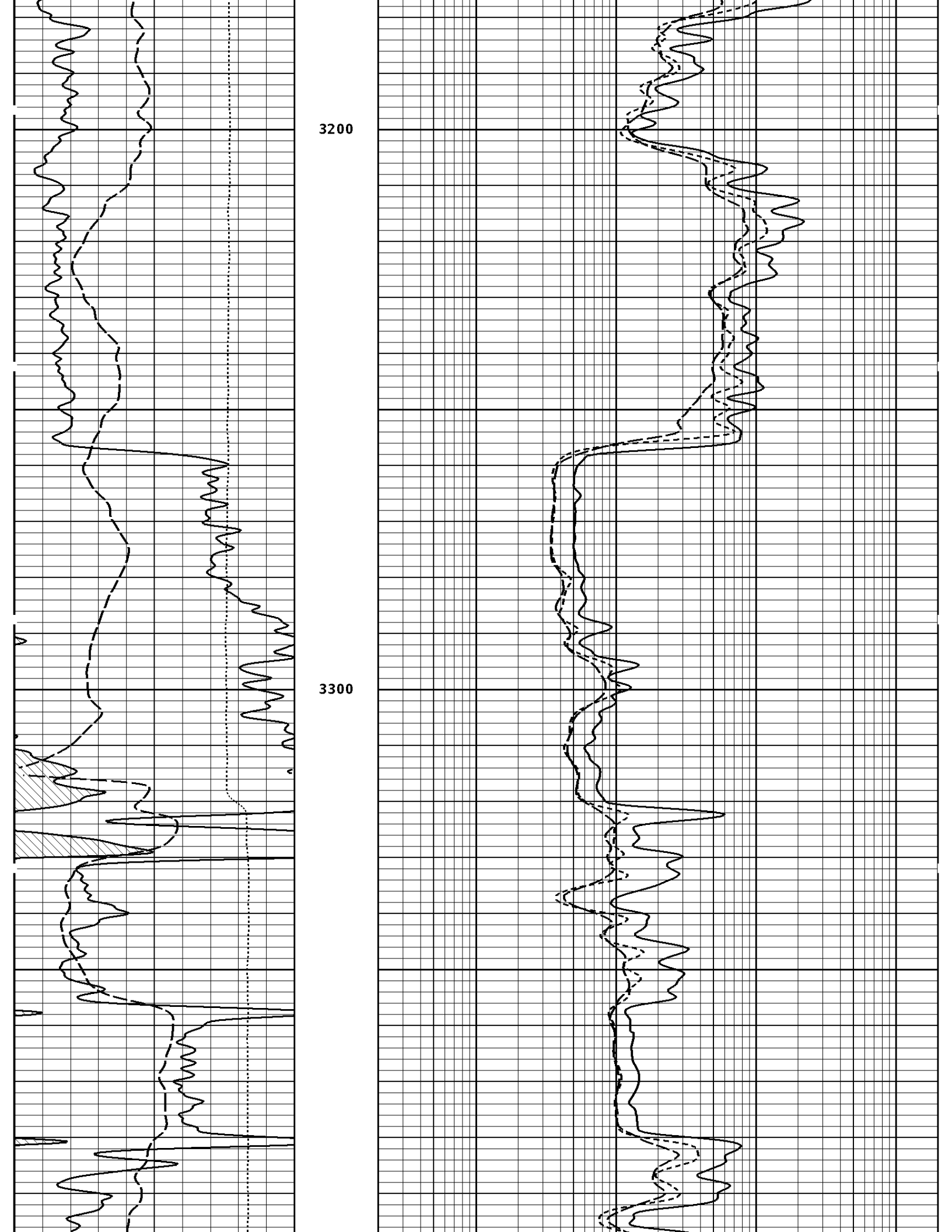
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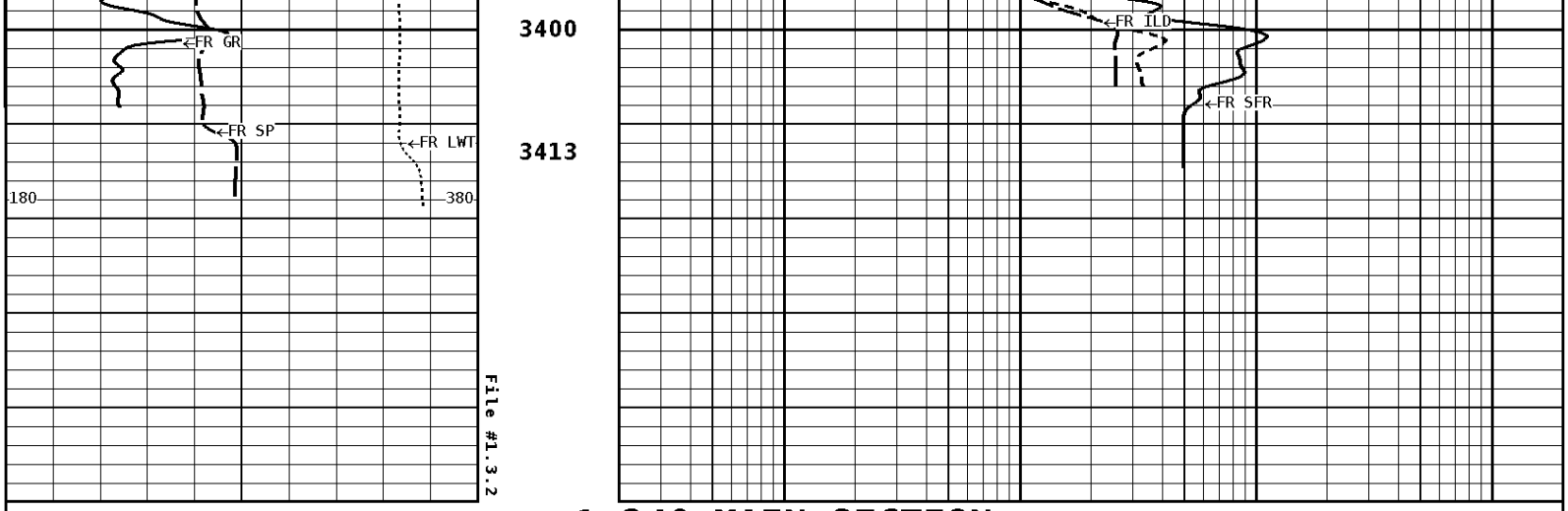


1:240 MAIN SECTION

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

*** Borehole Zone Factors ***

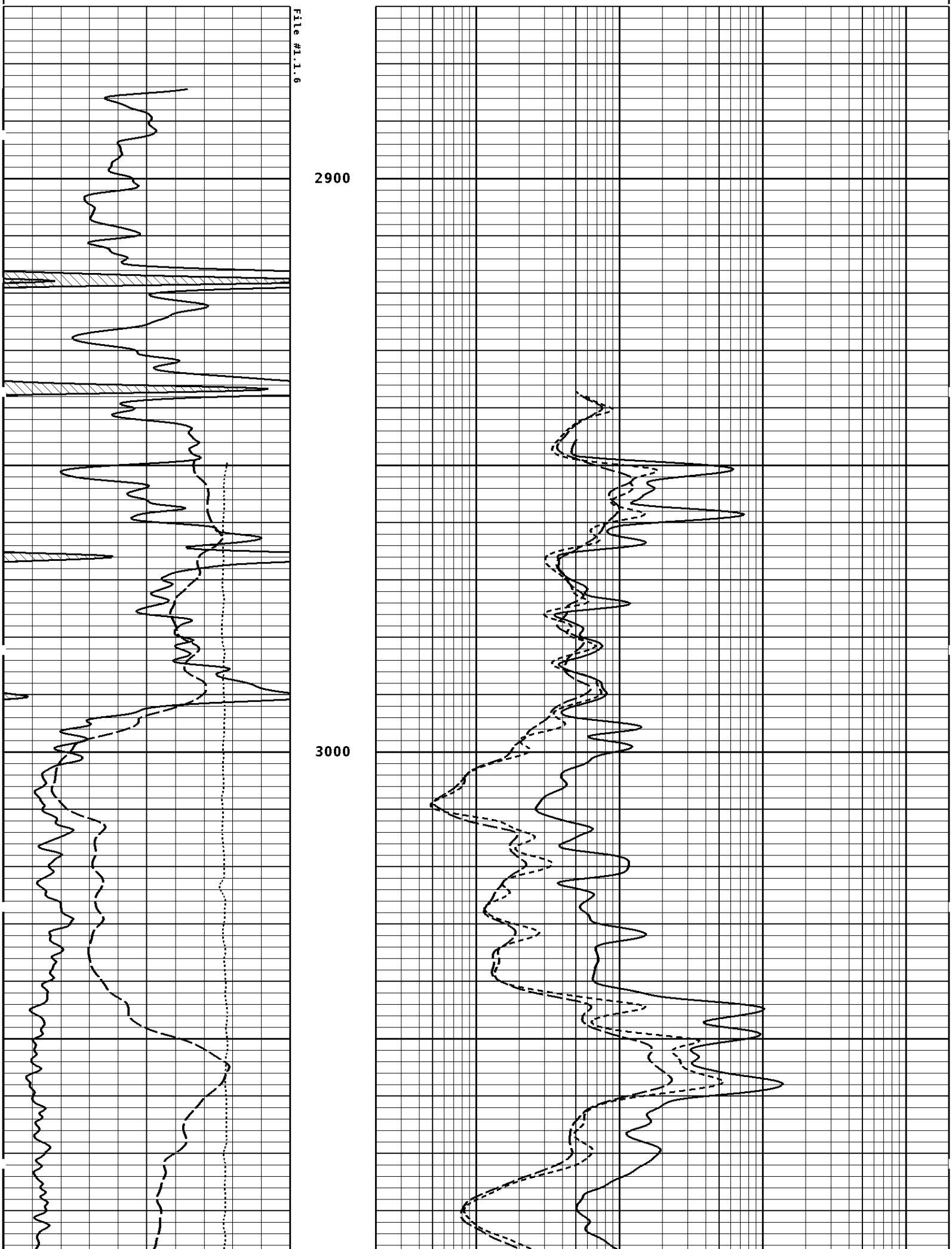
Zone 1 99999.0 to 0.0 Feet

Drill Bit Size	7.875	in
Casing Diameter	5.500	in
BHT Depth	3413.000	ft
Borehole Temperature	110.0	degF
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	2.000	ohm/m
Resistivity Of Mud Temperature	60.00	degF

Well File: LACHENMAYR_GOODRICH_L-1_MAY20_QUINT **Scale:** 1:240 **Format:** DIL-240
Segment: V1.D1.S6 DS FINAL REPEAT **Acquired:** 2015-05-20 22:13 3.4.0-13487
Reference: 0 **Processed:** 2015-05-20 22:13 3.4.0-13487

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

1:240 REPEAT SECTION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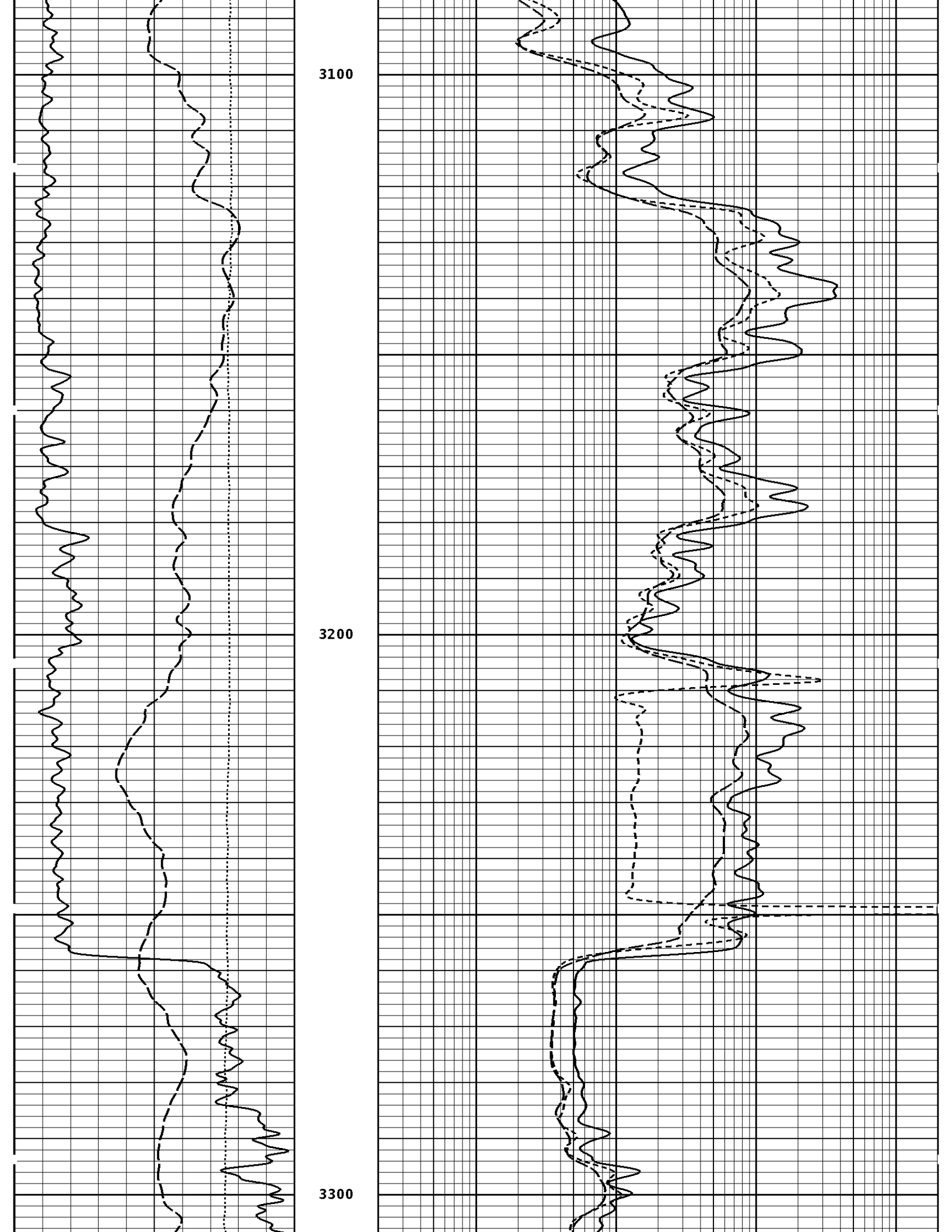
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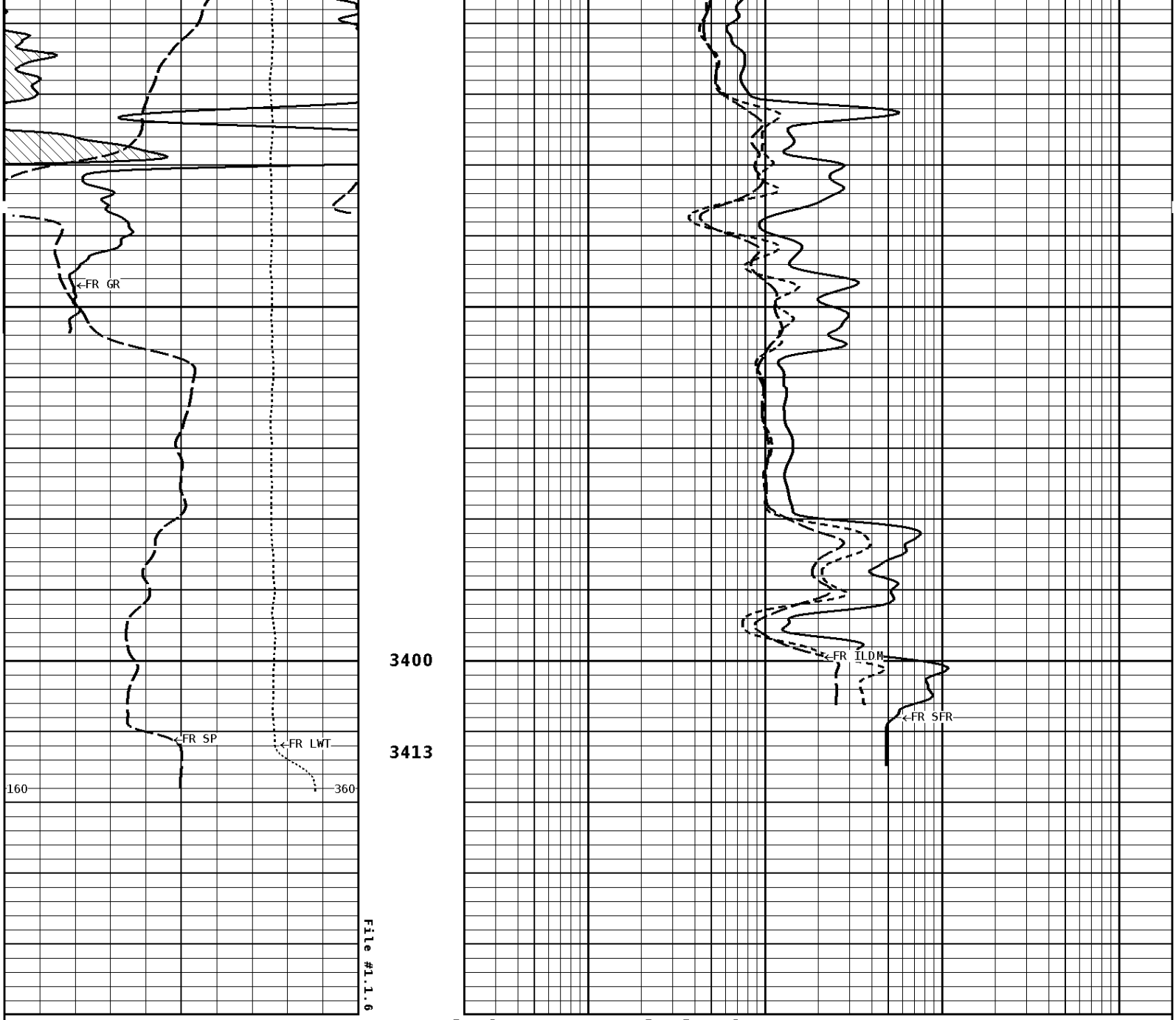


1:240 REPEAT SECTION

GAMMA RAY
API UNITS
150 — 300
0 — 150

TENSION
LBS
10000 — 0

SPONTANEOUS POTENTIAL
mV
→| |←20

SHALLOW FOCUSED RESISTIVITY
OHMM
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

Drill Bit Size	7.875	in
Casing Diameter	5.500	in
BHT Depth	3413.000	ft
Borehole Temperature	110.0	degF
Temperature Gradient	1.00	DFHF
Resistivity Of Mud	2.000	ohm/m
Resistivity Of Mud Temperature	60.00	degF

* Calibration Summary *

Shop Calibration GRT-B

Performed : 19-May-2015 Time : 11:16
Sensor Suite : GR-GR5 ID : GRT-BA-121

	Measured Background	Measured Jig	Units	Calibrated Jig	Units
GR	43	343	CPS	175	GRAPI

Shop Calibration PIT-CA

Performed : 24-Mar-2015 Time : 15:07
Sensor Suite : P-IND-T ID : PIT-CA-075

Medium

	Measured R	Measured X	Calibrated R	Calibrated X	Units
Air	131411	129941	0.7	0.1	MMHOS
Zero	131070	131065	-10.5	45.2	MMHOS
Reference	250996	249179	4989.5	5045.2	MMHOS
Loop	130557	216346	3622.8	3693.4	MMHOS
Sonde Error			0.6	-6.3	MMHOS
Cond			4989.5	5045.2	MMHOS

Deep

	Measured R	Measured X	Calibrated R	Calibrated X	Units
Air	128160	131891	0.1	-0.6	MMHOS
Zero	131065	131057	51.6	-18.6	MMHOS
Reference	238795	236664	2051.6	1981.4	MMHOS
Loop	127663	223540	1726.6	1744.3	MMHOS
Sonde Error			-5.4	0.1	MMHOS
Cond			2051.6	1981.4	MMHOS

Temperature

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

Performed : 24-Mar-2015 Time : 14:55
Sensor Suite : SFL ID : PIT-CA-075

Internal

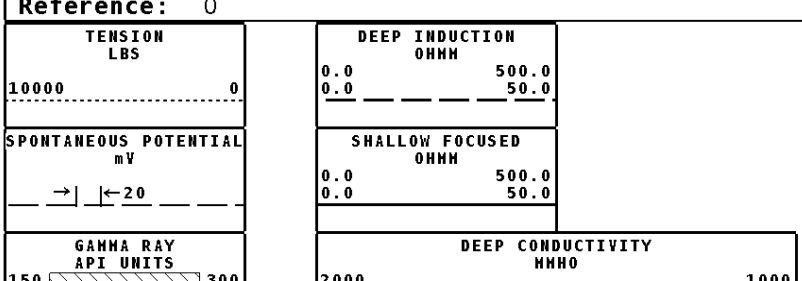
	Measured Zero	Measured Reference	Calibrated Zero	Calibrated Reference	Units
Im	32734.8	46427.9	0.0	7028.0	uA
Ib	32765.9	49037.6	0.0	1750.0	mA
MOM1	32796.9	56595.9	0.0	175.0	mV
Equivalent SFL				43.97	OHMM

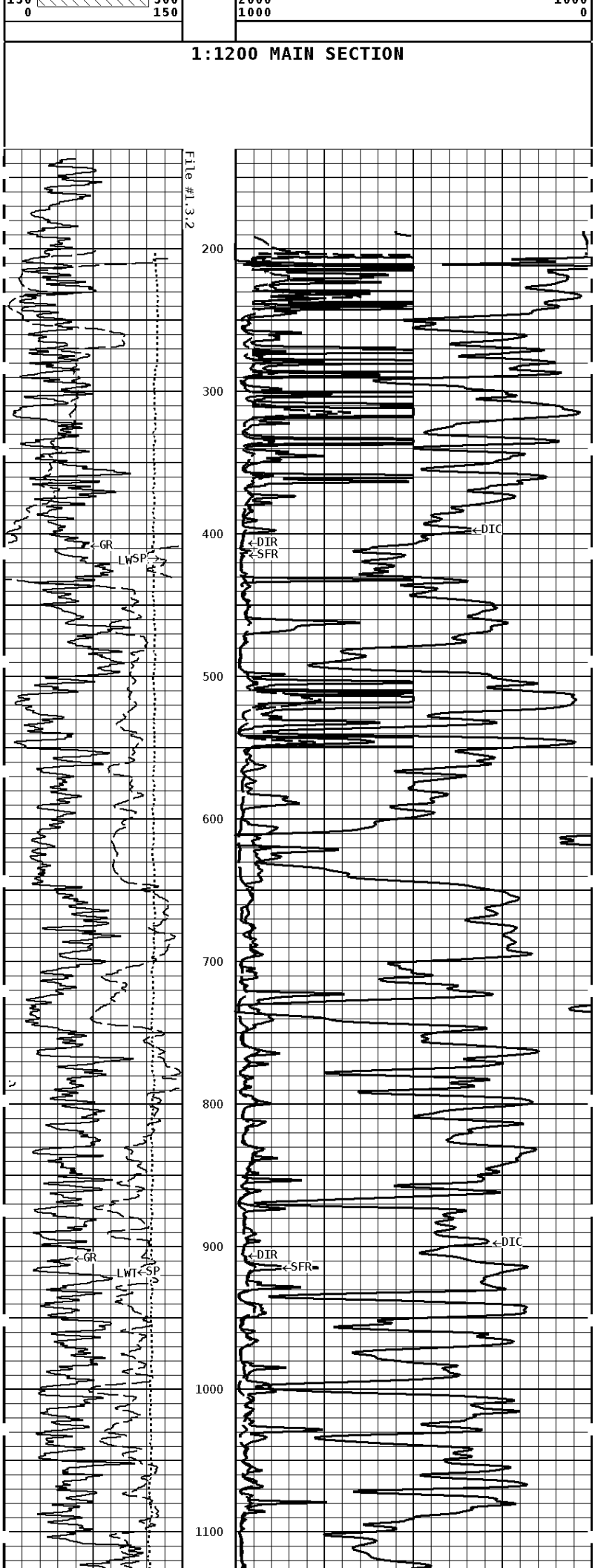
Performed : 24-Mar-2015 Time : 14:52
Sensor Suite : P-SP ID : PIT-CA-075

Internal

Measured Zero	Measured Reference	Calibrated Zero	Calibrated Reference	Units
32767.2	58946.4	0.0	1000.0	mV

Well File: LACHENMAYR_GOODRICH_L-1_MAY20_QUINT **Scale:** 1:1200 **Format:** DIL1200
Segment: V1.D3.S2 DS FINAL MAIN **Acquired:** 2015-05/20 22:35 3.4.0-13487
Reference: 0 **Processed:** 2015-05/21 00:57 3.4.0-13487




150
0
150
2000
1000
0
1:1200 MAIN SECTION
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300
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900
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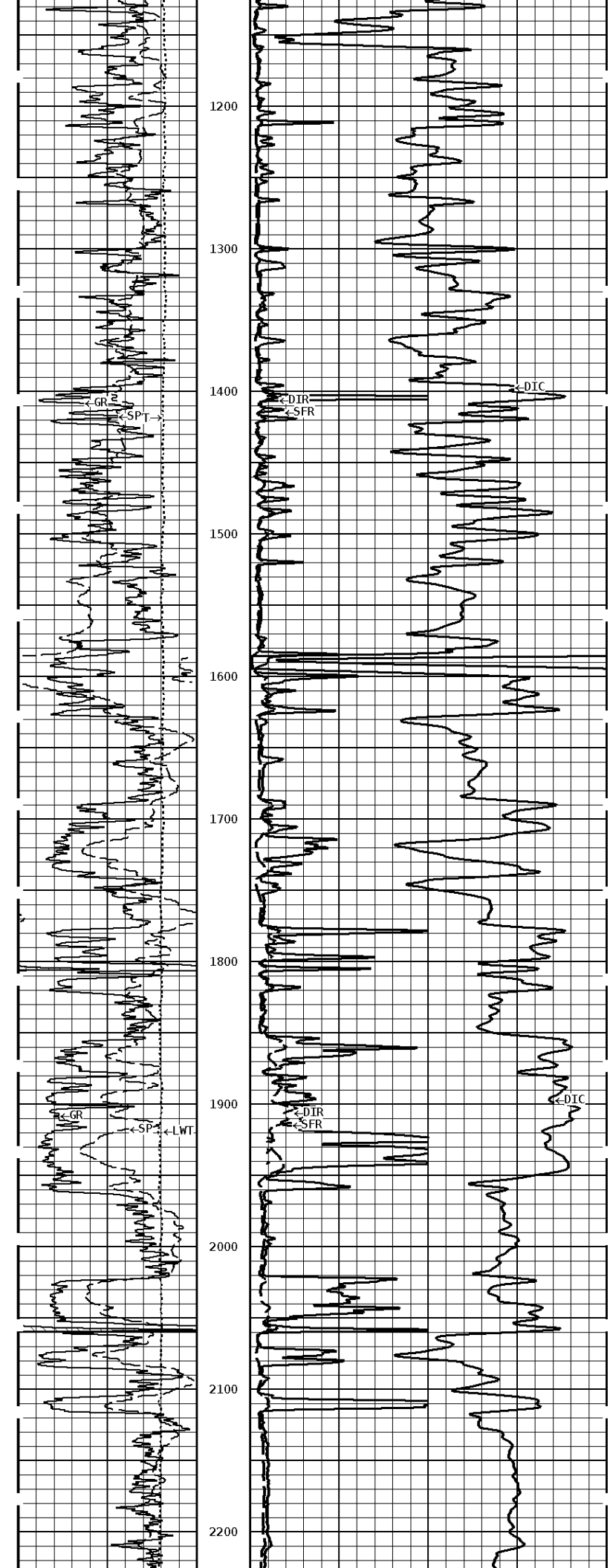
LWSP
DIR
SFR
DIC
GR
LWT
SP
DIR
SFR
DIC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SP
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DIR
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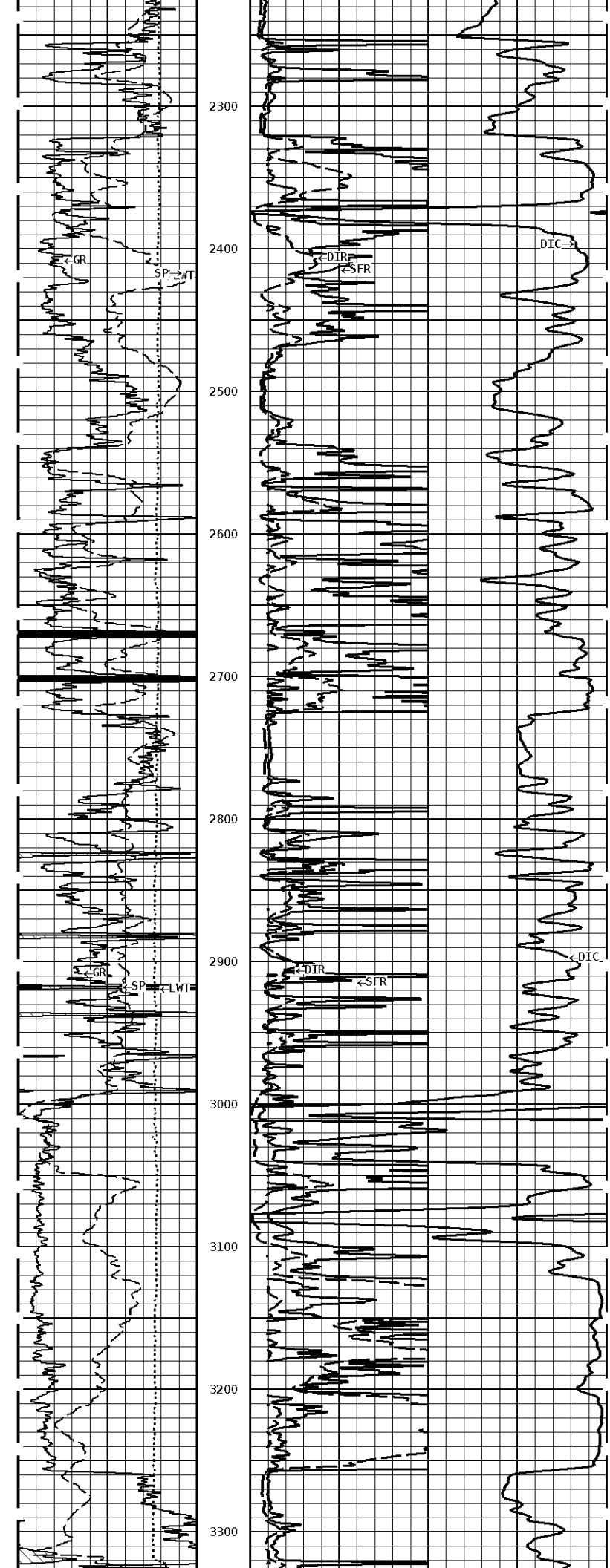
DIC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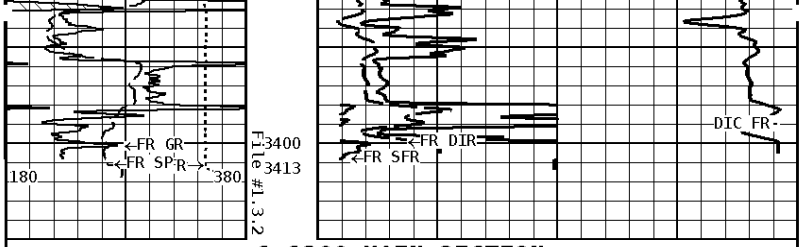

1:1200 MAIN SECTION

GAMMA RAY API UNITS		DEEP CONDUCTIVITY MMHO	
150	300	2000	1000
0	150	1000	0

SPONTANEOUS POTENTIAL mV		SHALLOW FOCUSED OHMM	
→| |←	20	0.0	500.0
		0.0	50.0

TENSION LBS		DEEP INDUCTION OHMM	
10000	0	0.0	500.0
		0.0	50.0

Tucker ENERGY SERVICES

Company:	LACHENMAYR OIL LLC
Well:	GOODRICH #L-1
Location:	2265' FNL & 995' FWL
Logged:	05-20-2015
K.B. Elev:	1436.0 Ft