Schlumberger

Company: **Beach Petroleum Ltd**

Well: **Fermat−1**
Field: **Fermat**
Rig: **West Triton** State: **Victoria**

Rig: West Triton
Field: Fermat
Location: Bass Strait
Well: Fermat−1
Company: Beach Petroleum Ltd

VISION Resistivity
1:200 Measured Depth
Recorded Mode Log

Location

		Elevation		
Total depth:	3585.0 m		K.B.	Top Drive
Spud date:	13−Dec−2008		G.L.	−38.0 m
Runs:	2 To 4		D.F.	42.85 m

Permanent datum:	Mean Sea Level	Elev.:	0.0 m
Log measured from:	Drill Floor	42.85 m	above Perm. datum
Depth reference:	Driller's Depth		

Job No.	X = E 504713.143 m	Longitude	Latitude
08ASQ0034	Y = N 5772392.606 m	141° 03' 14.14'' E	38° 11' 46.92'' S

Depth logged:	987.0 m To 3555.65 m	Mag decl:	9.87 deg.	Other services:	
Date logged:	20−Dec−08 07−Jan−09	Mag dip:	−69.0 deg.		See Remarks

Bore hole record

Hole size	from	to
36.0 in.	0.0 m	119.0 m
17.5 in.	119.0 m	999.0 m
12.25 in.	987.0 m	2800.0 m
8.5 in.	2800.0 m	3585.0 m

Casing record

Size	Density	from	to
30.0 in.	310 lb/m	Wellhead	116.0 m
13.375 in.	223 lbm/m	116.0 m	987.0 m
9.625 in.	175.5 lb/m	987.0 m	2800.0 m

Mud record

Type	from	to
WBM	119.0 m	999.0 m
WBM	999.0 m	2800.0 m
WBM	2800.0 m	3585.0 m

Borehole deviation record

Min	Max	from	to
0.09 deg.	2.77 deg.	999.0 m	2800.0 m
0.09 deg.	2.77 deg.	999.0 m	2800.0 m
0.6 deg.	3.51 deg.	128.24 m	227.37 m

Surface equipment

Unit	OLU−−KC−0702
Depth system	DWE/DWC

Software record

IDEAL	13_0C_14		
HSPM	13_1C_04		
LWD	See Remark		
MWD	PUP 9.2		

OTHER SERVICES FOR RUN2
Directional Surveys
Annulus Pressure & Temperature

OTHER SERVICES FOR RUN3
Directional Surveys
Annulus Pressure & Temperature

OTHER SERVICES FOR RUN4
Directional Surveys
Annulus Pressure & Temperature
Ultrasonic Caliper

REMARKS: RUN NUMBER 2
Depth is referenced to Driller's Depth

ARC Gamma Ray is corrected for mud weight, bit size, tool collar size, and KCL% .

ARC Resistivity is borehole compensated and environmentally corrected for bit size, mud resistivity and temperature.

ADN Thermal Neutron Porosity (TNPH) is corrected for the effects of bit size, temperature, mud salinity, and mud hydrogen index (a factor of mud weight, mud temperature, and pressure).

Neutron Porosity is calculated using a limestone matrix with a matrix density of 2.71 g/cm3.

REMARKS: RUN NUMBER 3
Depth is referenced to Driller's Depth

ARC Gamma Ray is corrected for mud weight, bit size, tool collar size, and KCL% .

ARC Resistivity is borehole compensated and environmentally corrected for bit size, mud resistivity and temperature.

ADN Thermal Neutron Porosity (TNPH) is corrected for the effects of bit size, temperature, mud salinity, and mud hydrogen index (a factor of mud weight, mud temperature, and pressure).

Neutron Porosity is calculated using a limestone matrix with a matrix density of 2.71 g/cm3.

REMARKS: RUN NUMBER 4
Depth is referenced to Driller's Depth

ARC Gamma Ray is corrected for mud weight, bit size, tool collar size,and KCL%.

ARC Resistivity is borehole compensated and environmentally corrected for bit size, mud resistivity and temperature.

ADN Thermal Neutron Porosity (TNPH) is corrected for the effects of bit size, temperature, mud salinity, and mud hydrogen index (a factor of mud weight, mud temperature, and pressure).

Neutron Porosity is calculated using a limestone matrix with a matrix density of 2.71 g/cm3.

SonicVISION Delta−T is borehole compensated

Run objective: Drill 12.25in hole section

POOH: To correct inclination

SonicVISION Delta−T is borehole compensated.

Run objective: Drill 12.25in hole section.

POOH: Section TD

sonicVISION Delta−T is borehole compensated.

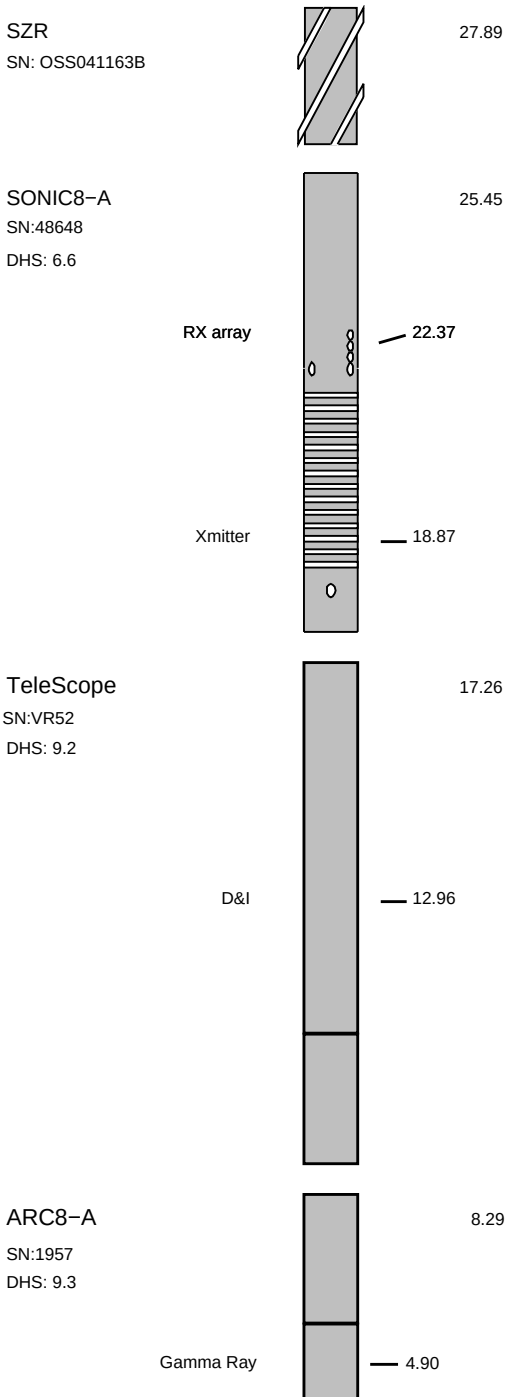
Run objective: Drill 8.5in hole section.

POOH: Final TD

EQUIPMENT DESCRIPTION

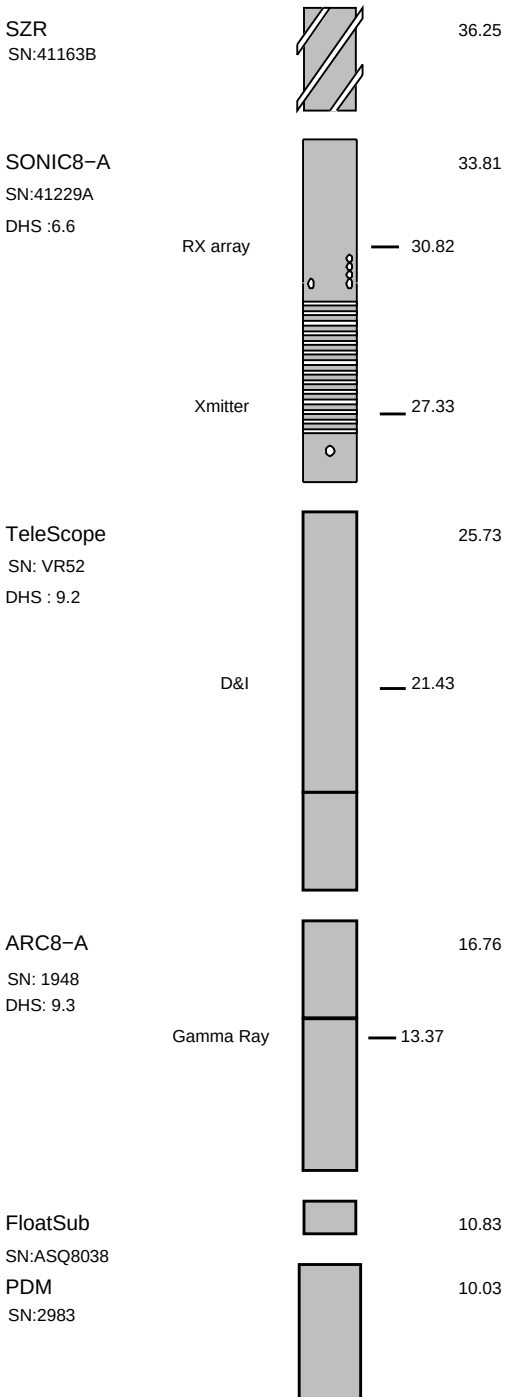
RUN 2

DOWNHOLE EQUIPMENT



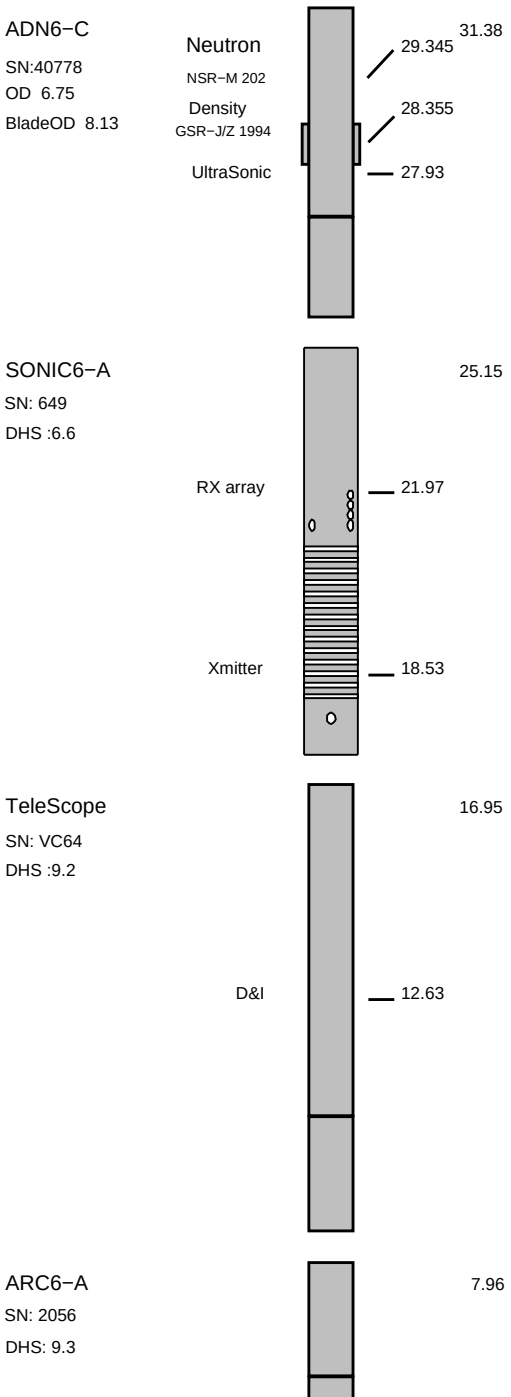
RUN 3

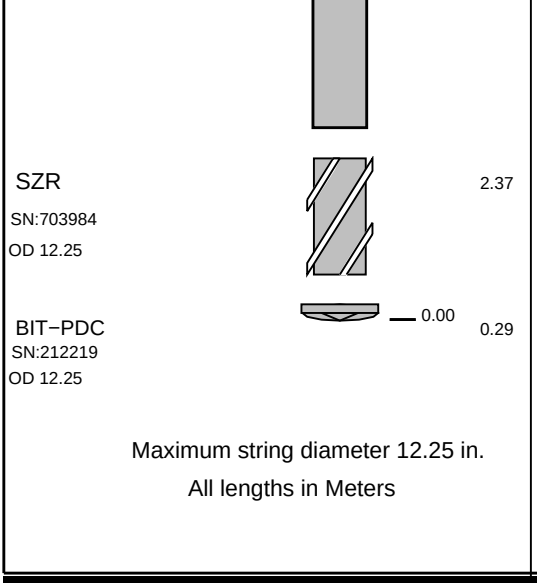
DOWNHOLE EQUIPMENT



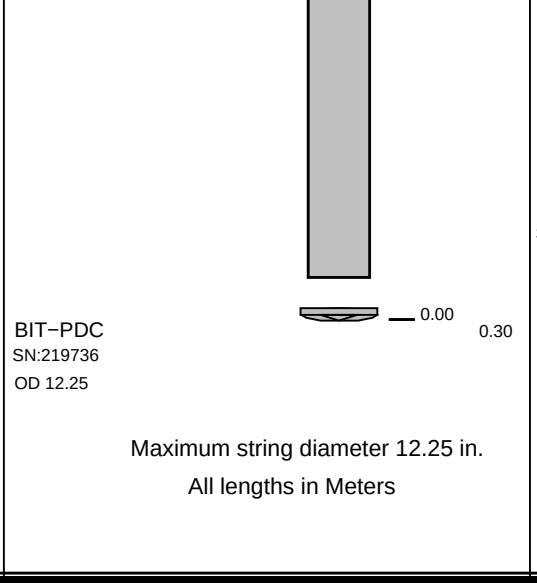
RUN 4

DOWNHOLE EQUIPMENT

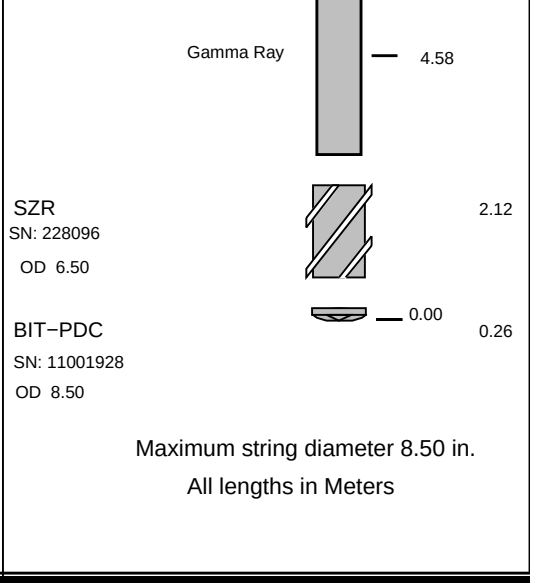




Maximum string diameter 12.25 in.
All lengths in Meters



Maximum string diameter 12.25 in.
All lengths in Meters



Maximum string diameter 8.50 in.
All lengths in Meters

Bit Run Summary

Run number		2	3	4							
Bit size	in.	12.25	12.25	8.5							
Bit start depth	m	980.0 m	2396.0 m	2800.0 m							
Bit end depth	m	**2396.0 m**	**2800.0 m**	**3585.0 m**							
Top interval logged	m	**987.0 m**	**2383.04 m**	**2800.0 m**							
Bottom interval logged	m	2383.04 m	2786.68 m	3580.42 m							
Begin log: time		09:00	15:50	19:30							
Begin log: date		20−Dec−08	26−Dec−08	03−Jan−09							
End log: time		13:10	00:10	20:00							
End log: date		26−Dec−08	29−Dec−08	07−Jan−09							
Mud data											
Depth	m	1530.0	2600.0	2800.0							
Type		WBM	WBM	WBM							
Mud weight	lb/gal	9.7	9.7	10.6							
Solids	%	5.2	6.4	8.2							
Chlorides	mg/l	47,500	46,000	41,000							
Rm	ohm−m@degC	0.08@22.2	0.09@24.9	0.11@23.7							
Rmf	ohm−m@degC	0.07@22.2	0.08@22.3	0.08@23.4							
Rmc	ohm−m@degC	0.18@22.2	0.13@22.3	0.13@23.7							
Potassium	%	3.6	3.5	3.5							
Environmental data											
GR											
Mud weight	lb/gal	9.7	9.7	10.6							
Bit size	in.	17.5	12.25	8.5							
Resistivity											
Neutron porosity											
Hole Size	in.	17.5	12.25	8.5							
Mud weight	lb/gal	9.7	9.7	10.6							
Temperature	deg C	22.2	24.9	23.7							
Mud salinity	ppk	n/a	n/a	n/a							
Formation salinity	ppm	n/a	n/a	n/a							
Recording rate 1	SEC	6	6	5							
Recording rate 2	SEC	6	6	5							
Filtering GR		3 pt	3 pt	3 pt							
Filtering density		n/a	n/a	3 pt							
Filtering Neutron		n/a	n/a	3 pt							
Company representative		Rocco.R	Peter.S								
Anadrill personnel		Josh S.	STD. Aung	D. Gibson	Rika K.	C. Skiba					

Variable Name	Variable Description	Run Name & Value			
	Run Number		2	3	4
	General Information				
BHT_RM	Bottom Hole Temperature (RM)	DEGC	62.000	60.000	78.000
BSAL_RM	Mud Salinity (RM)	PPK	n/a	n/a	n/a
BS_RM	Bit Size (RM)	IN	12.250	12.250	8.500
COEF_M	User Defined FEXP in Clean Sand	----	1.650	1.650	1.650
C_WS	Overpressure correction to Sw and M	----	1.000	1.000	1.000
FEXP	Formation Factor Exponent(RM)	----	2.000	2.000	2.000
FNUM	Formation Factor Enumerator(RM)	----	1.000	1.000	1.000
FPHI_RM	Formation Factor Porosity Source (RM)	----	XPLOT	XPLOT	XPLOT
MST_RM	Mud Sample temperature (RM)	DEGC	22.20	24.90	23.70
MW_RM	Mud Weight (RM)	LB/G	9.600	9.700	10.600
OBMF_RM	Oil Based Mud (RM)	----	NO	NO	NO
RHOF_RM	Mud Filtrate Density (RM)	G/C3	1.000	1.000	1.000
RHOM_RM	Matrix density (RM)	G/C3	2.710	2.710	2.710
RMS_RM	Resistivity of Mud Sample (RM)	OHMM	0.086	0.087	0.114
RWA_COMP_M	Rwa computation model				
RWA_DEN_AD	Rwa Density Input ADN				
RWA_DEN_CD	Rwa Density Input CDN				
RWA_DEN_IN	Rwa Density Input				
RWA_FORM_M	Rwa computation formation model				
RWA_RES_IN	Rwa computation resistivity input				
RWS_RM	Resistivity of Connate Water (RM)	OHMM	1.000	1.000	1.000
SHT_RM	Ground Level Temperature (Mud-Line When Offshore) (RM)	DEGC	10.000	10.000	10.000
TD_RM	Total Measured Depth (RM)	M	2396.000	2807.000	3585.000
TWS_RM	Temperature of Connate Water (RM)	DEGC	23.889	23.889	23.889
VF_ILLI	Fraction of illite in shales	----	0.500	0.500	0.500
VF_KAOL	Fraction of kaolinite in shales	----	0.500	0.500	0.500
VF_MONT	Fraction of montmorillonite in shales	----	0.000	0.000	0.000
XPDM_RM	Cross plot density porosity multiplier	----	0.675	0.675	0.675
XPNM_RM	Cross plot neutron porosity multiplier	----	0.325	0.325	0.325
	ARC				
A12A	ARC Air Cal Attenuation From T1 at 2 MHz	DB	7.601	8.789	9.556
A14A	ARC Air Cal Attenuation From T1 at 400 KHz	DB	7.717	8.691	9.527
A22A	ARC Air Cal Attenuation From T2 at 2 MHz	DB	7.041	5.842	5.411
A24A	ARC Air Cal Attenuation From T2 at 400 KHz	DB	6.932	5.948	5.448
A32A	ARC Air Cal Attenuation From T3 at 2 MHz	DB	4.332	5.517	6.173
A34A	ARC Air Cal Attenuation From T3 at 400 KHz	DB	4.440	5.413	6.134
A42A	ARC Air Cal Attenuation From T4 at 2 MHz	DB	4.995	3.803	3.310
A44A	**ARC Air Cal Attenuation From T4 at 400 KHz**	**DB**	**4.889**	**3.912**	**3.337**
A52A	**ARC Air Cal Attenuation From T5 at 2 MHz**	**DB**	**2.920**	**4.111**	**4.722**
A54A	ARC Air Cal Attenuation From T5 at 400 KHz	DB	3.031	4.018	4.697
ABNT	Abnormal Transmitter Indicator	----	No_Tx_Failed	No_Tx_Failed	No_Tx_Failed
ADHS	ARC Down Hole Software Version	----	9.3 B13	9.3B13	9.3B13
AM2A	ARC Air Cal Amplitude Offset at 2 MHz	----	-50000.000	-50000.000	-50000.000
ANISO_COMPUTE	Anisotropy Computation Option	----	YES	YES	YES
APICG	ARC5 Gamma Ray Gain Factor	----	1.062	1.089	1.096
APIG	ARC Gamma Ray API Gain Factor	----	-1.000	-1.000	-1.000
ARC_DATA_FIX	ARC: Create A Corrected ARC Time Data File	----	NO	NO	NO
ARC_DATA_LTB	ARC: Create An ARC LTB Data File	----	NO	NO	NO
ATMP_ARC	ARC Select Temperature Channel	----	Annulus_Temp	Annulus_Temp	Annulus_Temp
ATRN	ARC Tool Run Number	----	2	3	4
ATSN	ARC Tool Serial Number	----	1957	1948	2056
AZMF	Formation DIP Azimuth	DEG	0.000	0.000	0.000
BH_COMPUTE	Borehole Inversion Computation Option	----	YES	YES	YES
CALG	ARC Gamma Ray Cal Gain Factor	----	1.062	1.089	1.096
CALI_SLCT_ARC	ARC Caliper Selection	----	BITSIZE	BITSIZE	BITSIZE
CDPTH_ARC	Process Start Depth	M	30.480	30.480	30.480
DIELEC_COMPUTE	Dielectric Computation Option	----	YES	YES	YES
DIPF	Formation DIP Angle	DEG	0.000	0.000	0.000
ERRCT	Percentage Error Cutoff	----	4.500	4.500	4.500
GRSH	GR Shale (Invasion Computation Cutoff)	GAPI	1000.000	1000.000	1000.000
HIGH_BLEND	High Resistivity Threshold for Blending	OHMM	2.000	2.000	2.000
INCLIN_B0	ARC Bias Constant (mg)	----	0.000	0.000	0.000
INCLIN_B1	ARC Bias First-order Coefficient (mg/degC)	----	0.000	0.000	0.000
INCLIN_B2	ARC Bias Secod-order Coeeficient (mg/degC)	----	0.000	0.000	0.000
INCLIN_B3	ARC Bias Third-order Coeeficient (mg/degC)	----	0.000	0.000	0.000
INCLIN_C0	ARC Current Scale Factor Constant (mA/g)	----	1.000	1.000	1.000
INCLIN_C1	ARC Scale First-order Coeeficient (mA/g/degC)	----	0.000	0.000	0.000
INCLIN_C2	ARC Scale Second-order Coeeficient (mA/g/degC)	----	0.000	0.000	0.000
INCLIN_C3	ARC Scale Third-order Coeeficient (mA/g/degC)	----	0.000	0.000	0.000
INVAS_COMPUTE	Invasion Computation Option	----	YES	YES	YES
JSD_ARC	ARC Acquisition start date	----	20-Jan-09	26-Jan-09	2-Jan-09
KPER	Potassium Concentration (RM)	----	3.670	3.588	3.568
LOW_BLEND	Low Resistivity Threshold for Blending	OHMM	1.000	1.000	1.000
MSWS	ARC Wizard Model Switch Window	M	1.524	1.524	1.524
MULTIEFFECT_COM	Multi Effect Option	----	YES	YES	YES
P11AC_RM	ARC: Air Calibration For Phase T1 to R1	DEG	-999.250	-999.250	-999.250
P12A	ARC Air Cal Phase-Shift From T1 at 2 MHz	DEG	1.539	-1.049	0.855
P14A	ARC Air Cal Phase-Shift From T1 at 400 KHz	DEG	1.056	1.041	-0.196
P22A	ARC Air Cal Phase-Shift From T2 at 2 MHz	DEG	-1.495	1.120	-0.801
P24A	ARC Air Cal Phase-Shift From T2 at 400 KHz	DEG	-1.083	-1.091	0.135
P32A	ARC Air Cal Phase-Shift From T3 at 2 MHz	DEG	1.481	-1.128	0.777
P34A	ARC Air Cal Phase-Shift From T3 at 400 KHz	DEG	1.067	1.056	-0.170
P42A	ARC Air Cal Phase-Shift From T4 at 2 MHz	DEG	-1.545	1.094	-0.839
P44A	ARC Air Cal Phase-Shift From T4 at 400 KHz	DEG	-1.130	-1.128	0.106
P52A	ARC Air Cal Phase-Shift From T5 at 2 MHz	DEG	1.469	-1.156	0.752
P54A	ARC Air Cal Phase-Shift From T5 at 400 KHz	DEG	1.059	1.032	-0.212

POFFSET_ARC	ARC: Pressure Offset	PSI	0.000	0.000	0.000
PRTD	Preferred Resistivity Log for Rt Display while Multi-Effects	----	P34B	P34B	P34B
PSOF_ADJ_T1	ARC: User Input Phase offset	DEG	0.000	0.000	0.000
RESTIK	ARC resistivity tick source	----	Phase	Phase	Phase
RSD	LWD run start date dd-mmm-yy	OHMM	0.086	0.087	0.114
RWA_COMP_MOD	Rwa computation model	----	BASIC	BASIC	BASIC
RWA_DEN_ADN	Rwa Density Input	----	RHOB	RHOB	RHOB
RWA_DEN_CDN	Rwa Density Input	----	RHOB	RHOB	RHOB
RWA_DEN_INPUT	Rwa Density Input	----	RHOB	RHOB	RHOB
RWA_FORM_MOD	Rwa computation formation model	----	CLASTIC	CLASTIC	CLASTIC
RWA_RES_INPUT	Rwa computation resistivity input	----	RT	RT	RT
SHIG	ARC High Shock Risk Level	CPS	0.500	0.500	0.500
SMED	ARC Medium Shock Risk Level	CPS	0.330	0.330	0.330
SMIN	ARC Minimum Shock Risk Level	CPS	0.160	0.160	0.160
SUPD	ARC Real Time Shock Update Rate	S	30.000	30.000	30.000
TCODE_ARC	ARC Tool File Code	S	30.000	30.000	30.000
TSIZ_ARC	ARC Tool Size	IN	8.250	8.250	6.750
UNIFORM_COMPUTE	Uniform Rock Option	----	YES	YES	YES
VERS_ARC	ARC Down hole software version Number	----	9.300	9.300	9.300
WRK	Way to Report Potassium Concentration (RM)	----	KCl_by_Wgt_%	KCl_by_Wgt_%	KCl_by_Wgt_%

	ADN		
ADN_CHASSIS_STR	Type String	Chassis	ADN
ADN_COLLAR_STR	Type String	Collar	ADN
ADN_DATA_FIX	ADN: Create A Corrected ADN Time Data File	----	NO
ADN_DATA_LTB	ADN: Create An ADN LTB Data File	----	NO
ADN_STAB_STR	ADN Stabilizer Type String	----	NO
ALPHA_COMPUTE_D	Perform Density Enhanced Vertical Resolution process ?	----	YES
ALPHA_COMPUTE_N	Perform Neutron Enhanced Vertical Resolution process ?	----	YES
AVE_ADN	ADN/Array Channels: perform averaging(RM) :	----	YES
A_DHS	ADN Down Hole Software Version String	----	8.3A
CHI_RM	Caliper High limit from BS (RM)	IN	3.000
CLO_RM	Caliper Low limit from BS (RM)	IN	0.000
DEVI	Well Section Deviation	DEG	2.910
DTIK_SEL	ADN: Density Tick Channel Name	----	LSAZ
DTMUD	Delta-T for Mud	US/F	183.495
DYN_IMG_COMPUTE	Generate Dynamic Normalized Image?	----	NO
ECC_CORR_ADN	Perform Eccentering Correction for TNPH?	----	YES
ENVCOR	Neutron Processing: Environmental Correction?	----	YES
EVRL	EVR Process averaging number of samples (RM)	----	49
FCD	Future Casing (Outer) Diameter	IN	0.000
GCSE	Generalized Caliper Selection	----	BS
HPS	ADSE-EB (High Pressure Inconel Chassis)?	----	NO
IBS	Intergal Blade Stabilizer Collar?	----	YES
IDQT	Image Derived Quality Threshold	----	2.000
IHVS	Integrated Hole Volume Start Value(RM)	F3	0.000
IMAGE_MAX_SOA	Image SOA (Quadrant) Right Scale	IN	2.500
IMAGE_MAX_SPEF	**Image PEF(Segment) Right Scale**	**----**	**6.000**
IMAGE_MAX_SRHOB	**Image RHOB(Segment) Right Scale**	**G/C3**	**2.650**
IMAGE_MIN_SOA	Image SOA (Quadrant) Left Scale	IN	0.000
IMAGE_MIN_SPEF	Image PEF(Segment) Left Scale	----	2.000
IMAGE_MIN_SRHOB	Image RHOB(Segment) Left Scale	G/C3	2.050
JSD_ADN	ADN Acquisition start date	----	2-Jan-09
LITHO_TYPE_ADN	Lithology (RM)	----	LIME
N1FTU_6_RM	ADN: Neutron Bank 1 Far Tubes used :	----	1-2-3
N2FTU_6_RM	ADN: Neutron Bank 2 Far Tubes used :	----	1-2-3
NNTU_RM	ADN Neutron Near Banks Used	----	1-2
NTIK_SEL	ADN: Neutron Tick Channel Name	----	FR11
SOCNL	Standoff Distance of the CNL Tool	----	1.000
SSIZ_ADN	ADN Stabilizer Size	IN	8.125
STOH	ADN Density Top of Hole Sector (Left Boundary):	----	SECTOR_0
TRPM_RM	Average Tool Rotational Speed	RPM	20.000
USMIN_RM	ADN:Minimum Ultrasonic standoff (RM)	IN	0.180
USWF_RM	ADN:Process Ultrasonic Waveform?	----	YES
VERS_ADN	ADN Downhole Software Version	----	8.300
WSDI	Window Size of Dynamic Normalization Image	M	4.572

Fermat−1 RM 200MD Log

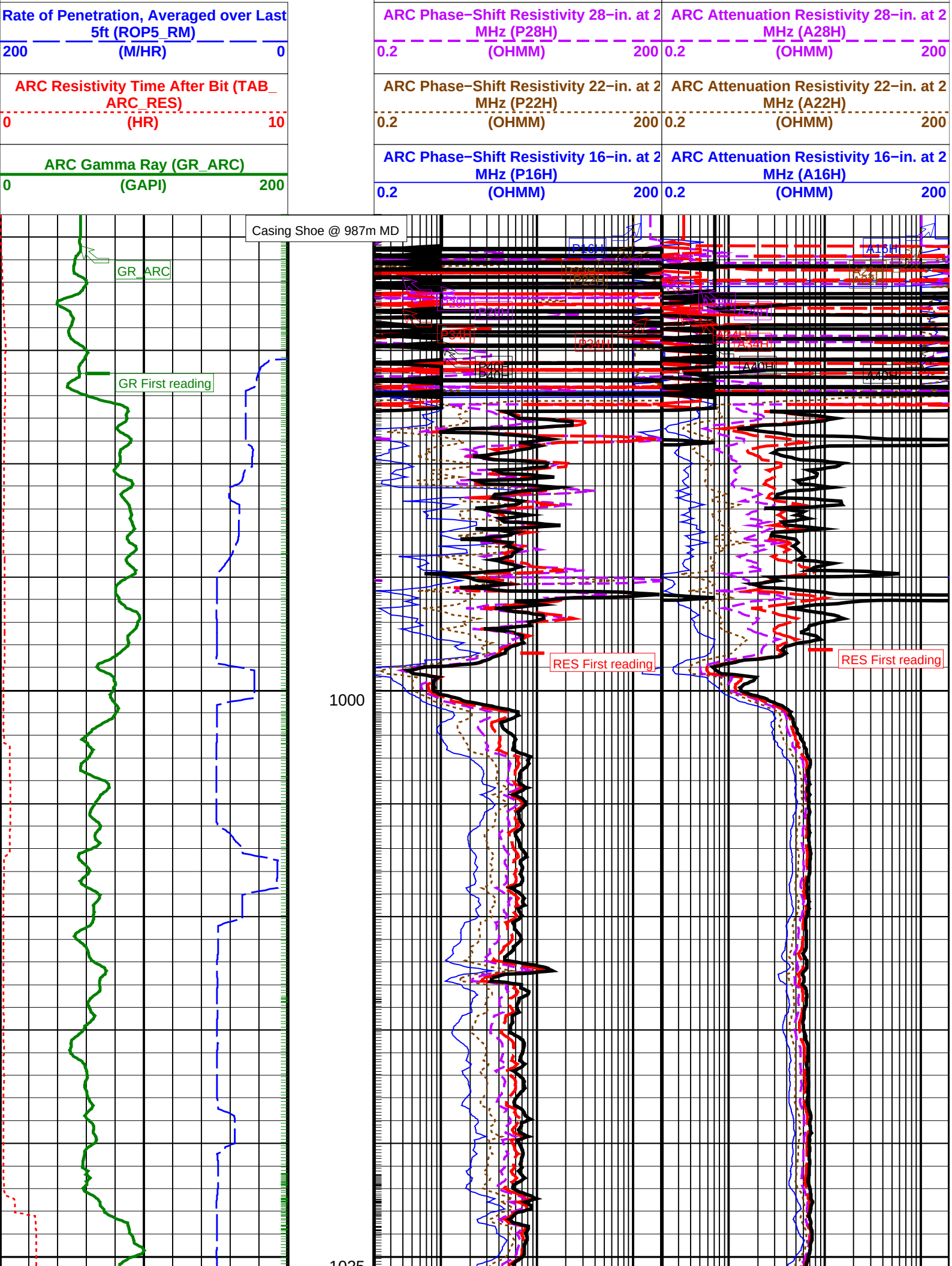
Format: Fermat−1 RM Resistivity Log **Vertical Scale: 1:200** **Graphics File Created: 12−Jan−2009 18:27**

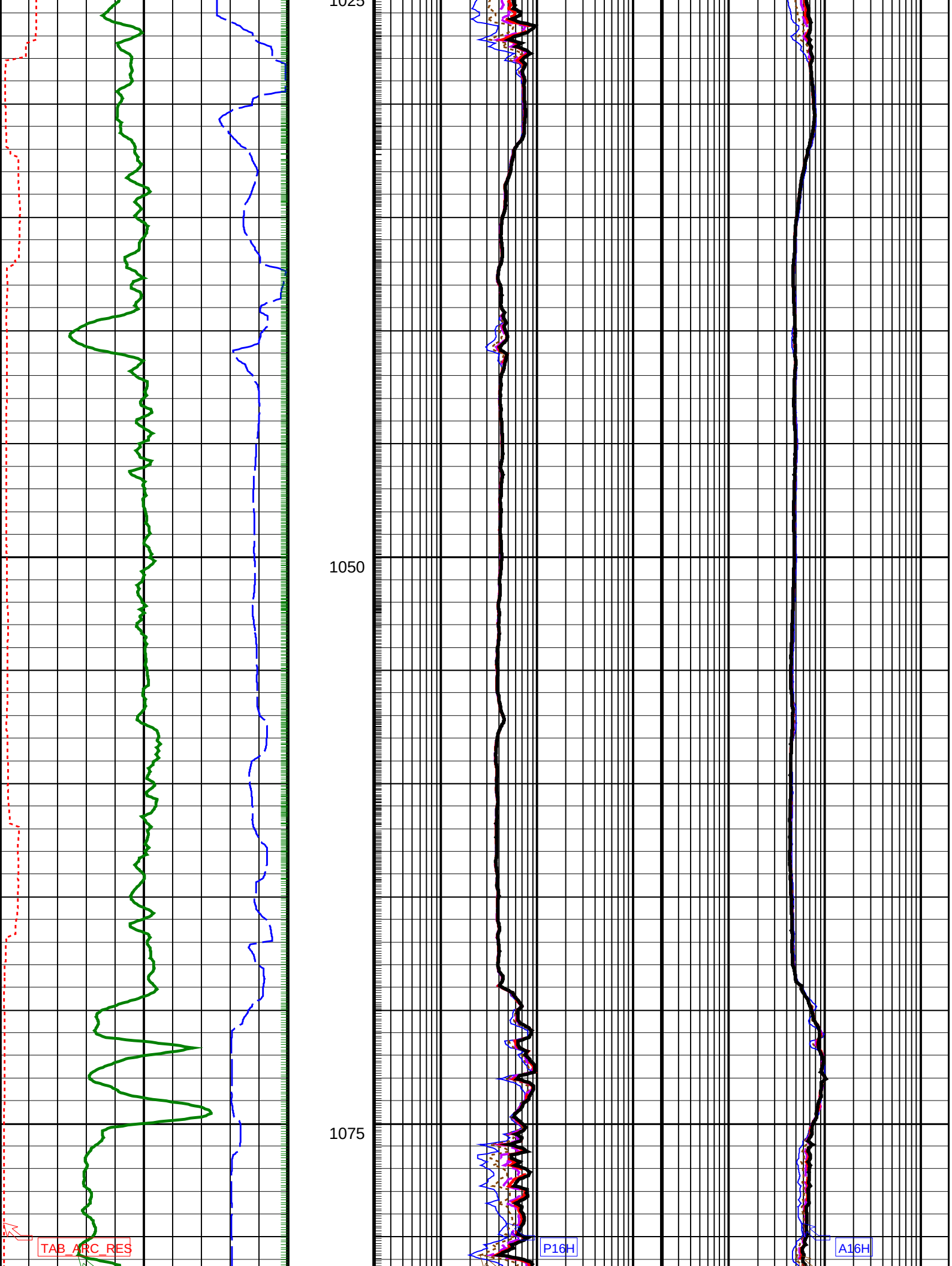
PIP SUMMARY

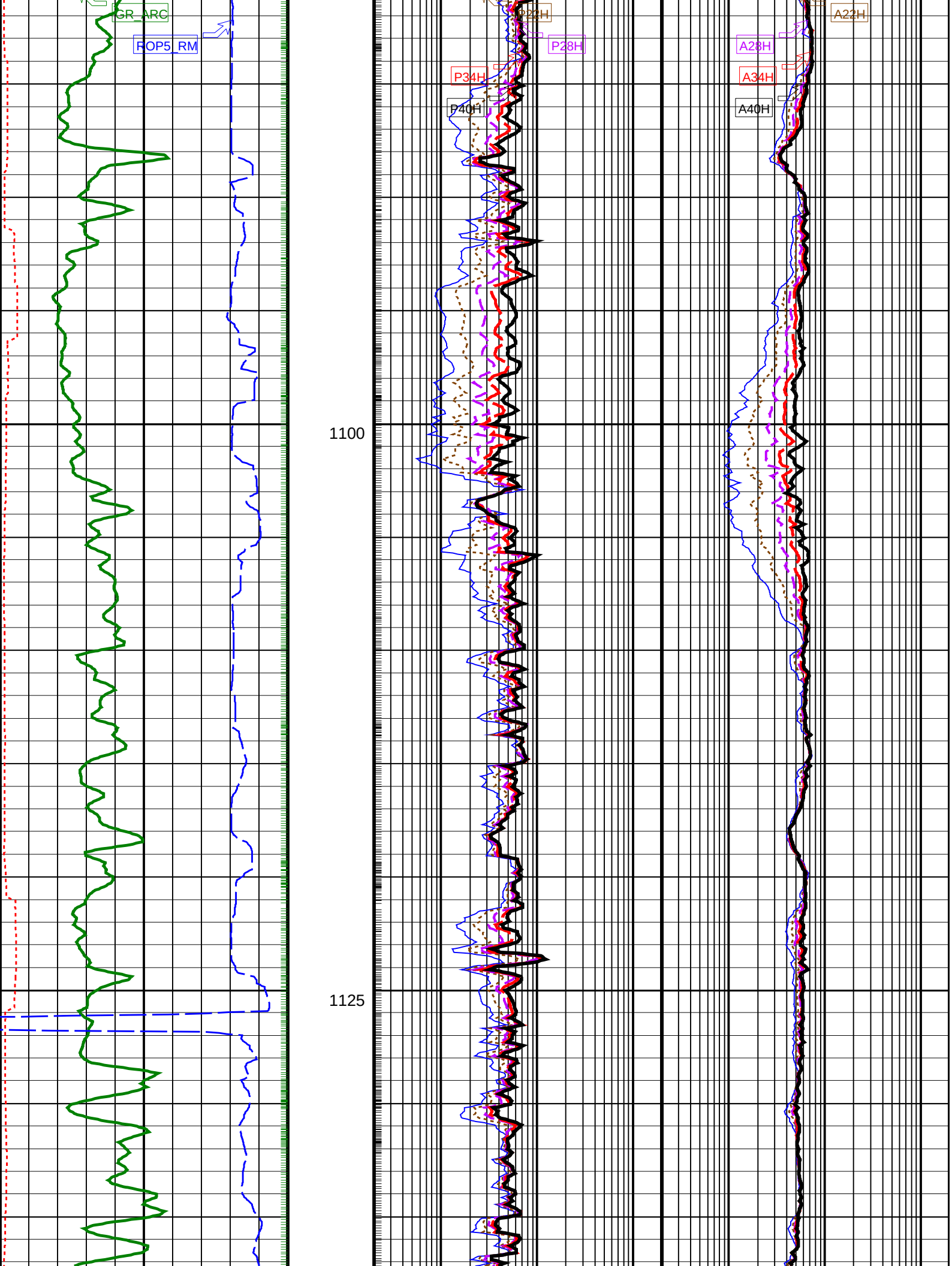
ARC Gamma Ray Samples

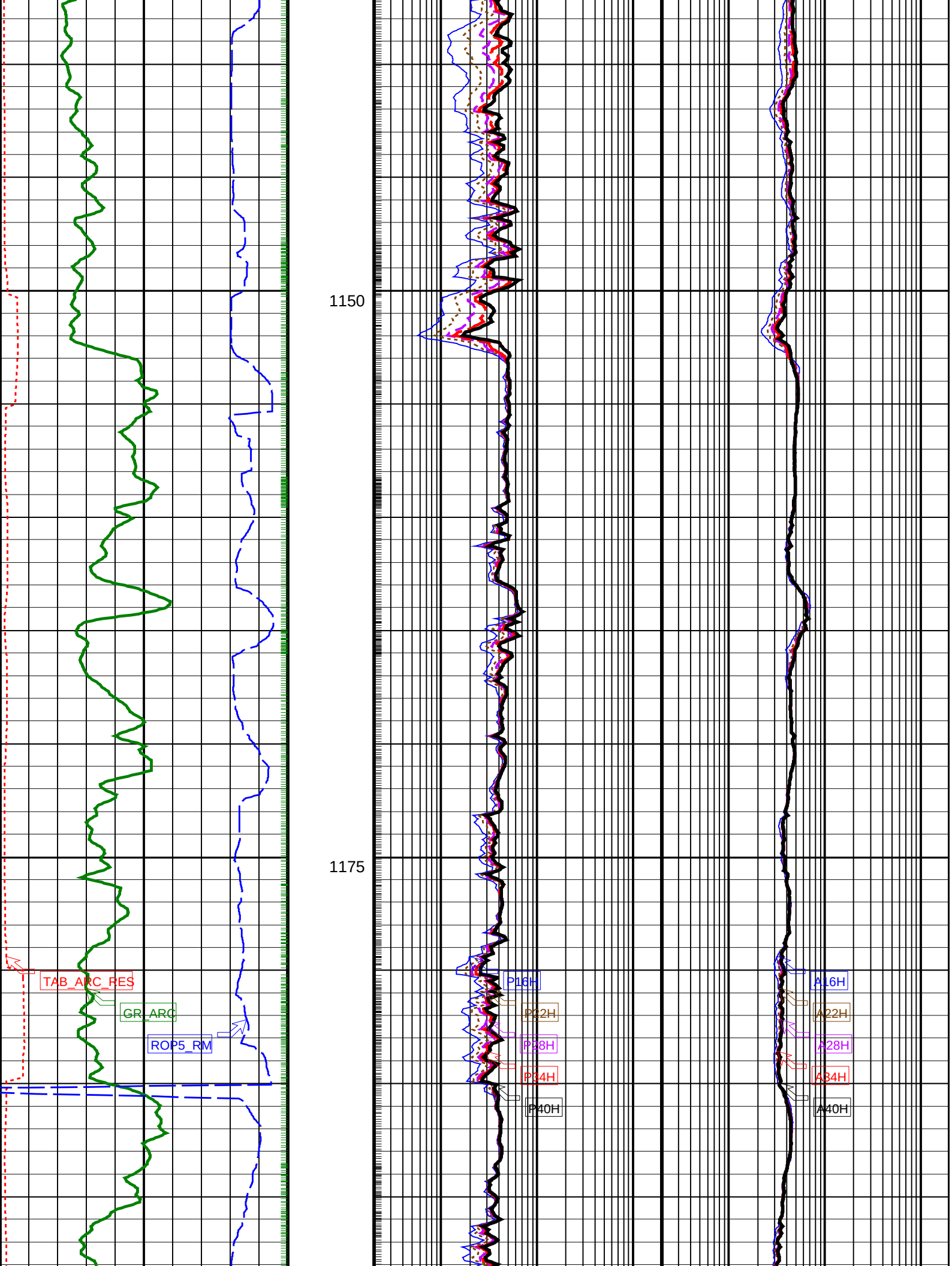
ARC Resistivity Samples

ARC Phase−Shift Resistivity 40−in. at 2 MHz (P40H)			ARC Attenuation Resistivity 40−in. at 2 MHz (A40H)		
0.2	(OHMM)	200	0.2	(OHMM)	200
ARC Phase−Shift Resistivity 34−in. at 2 MHz (P34H)			**ARC Attenuation Resistivity 34−in. at 2 MHz (A34H)**		
0.2	(OHMM)	200	0.2	(OHMM)	200


Rate of Penetration, Averaged over Last 5ft (ROP5_RM)
200 (M/HR) 0
ARC Resistivity Time After Bit (TAB_ARC_RES)
0 (HR) 10
ARC Gamma Ray (GR_ARC)
0 (GAPI) 200
ARC Phase−Shift Resistivity 28−in. at 2 MHz (P28H)
0.2 (OHMM) 200
ARC Attenuation Resistivity 28−in. at 2 MHz (A28H)
0.2 (OHMM) 200
ARC Phase−Shift Resistivity 22−in. at 2 MHz (P22H)
0.2 (OHMM) 200
ARC Attenuation Resistivity 22−in. at 2 MHz (A22H)
0.2 (OHMM) 200
ARC Phase−Shift Resistivity 16−in. at 2 MHz (P16H)
0.2 (OHMM) 200
ARC Attenuation Resistivity 16−in. at 2 MHz (A16H)
0.2 (OHMM) 200
Casing Shoe @ 987m MD
GR_ARC
GR First reading
RES First reading
RES First reading
1000
1025


1025
1050
1075
TAB_ARC_RES
P16H
A16H


GR_ARC
ROP5_RM
P22H
P28H
P34H
P40H
A22H
A28H
A34H
A40H
1100
1125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P22H
P28H
P34H
P40H
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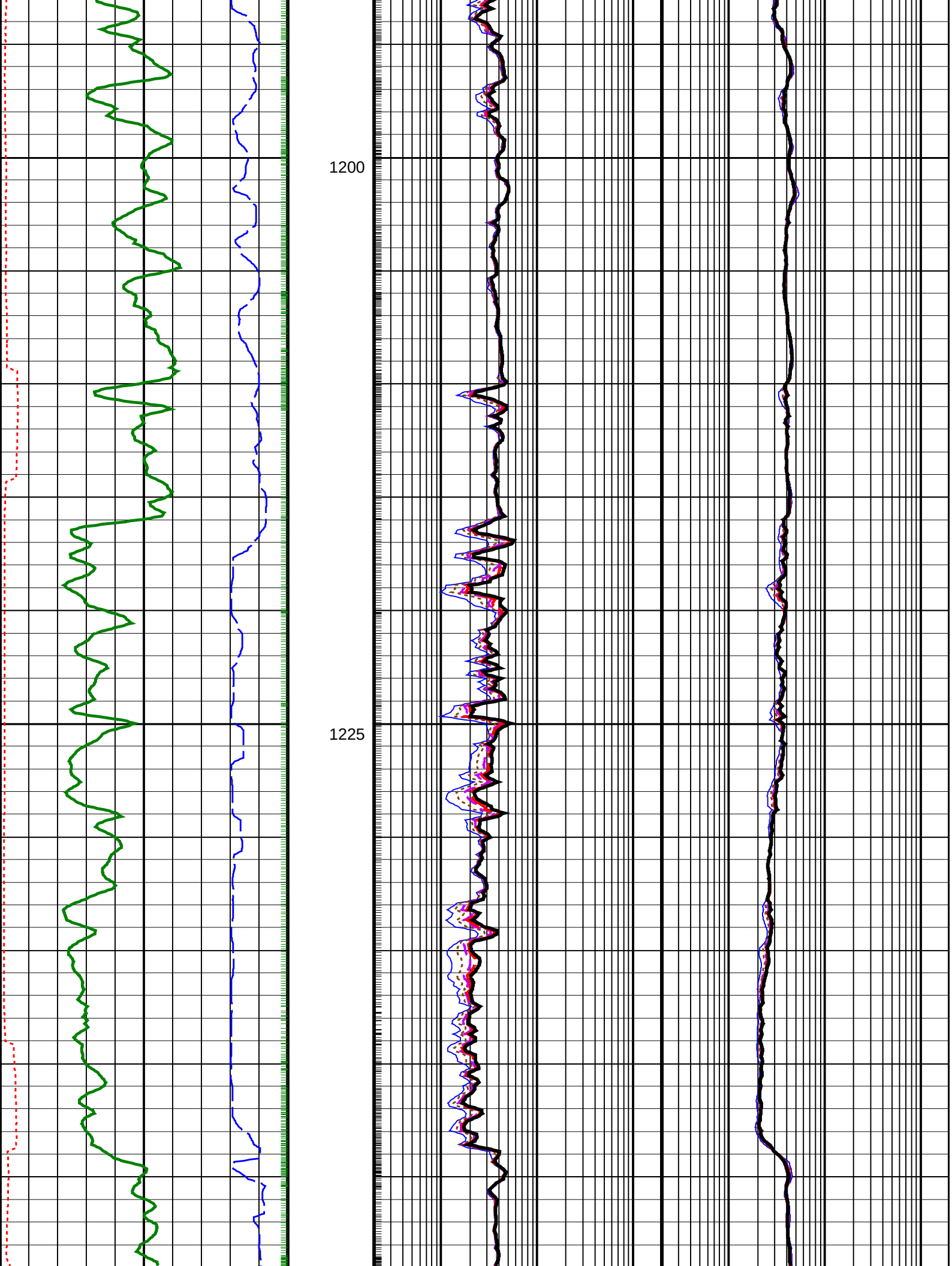
A22H
A28H
A34H
A40H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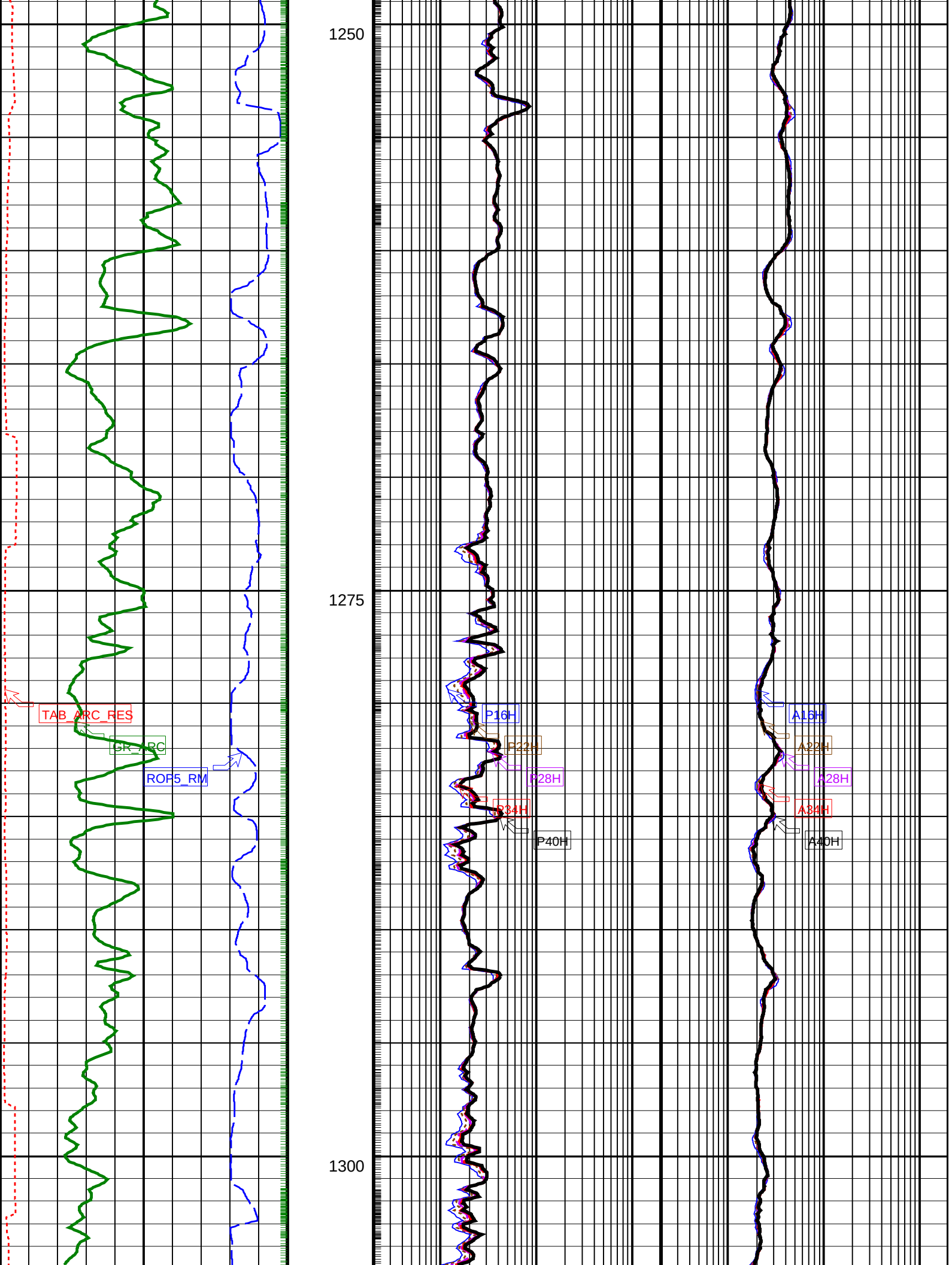
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P22H
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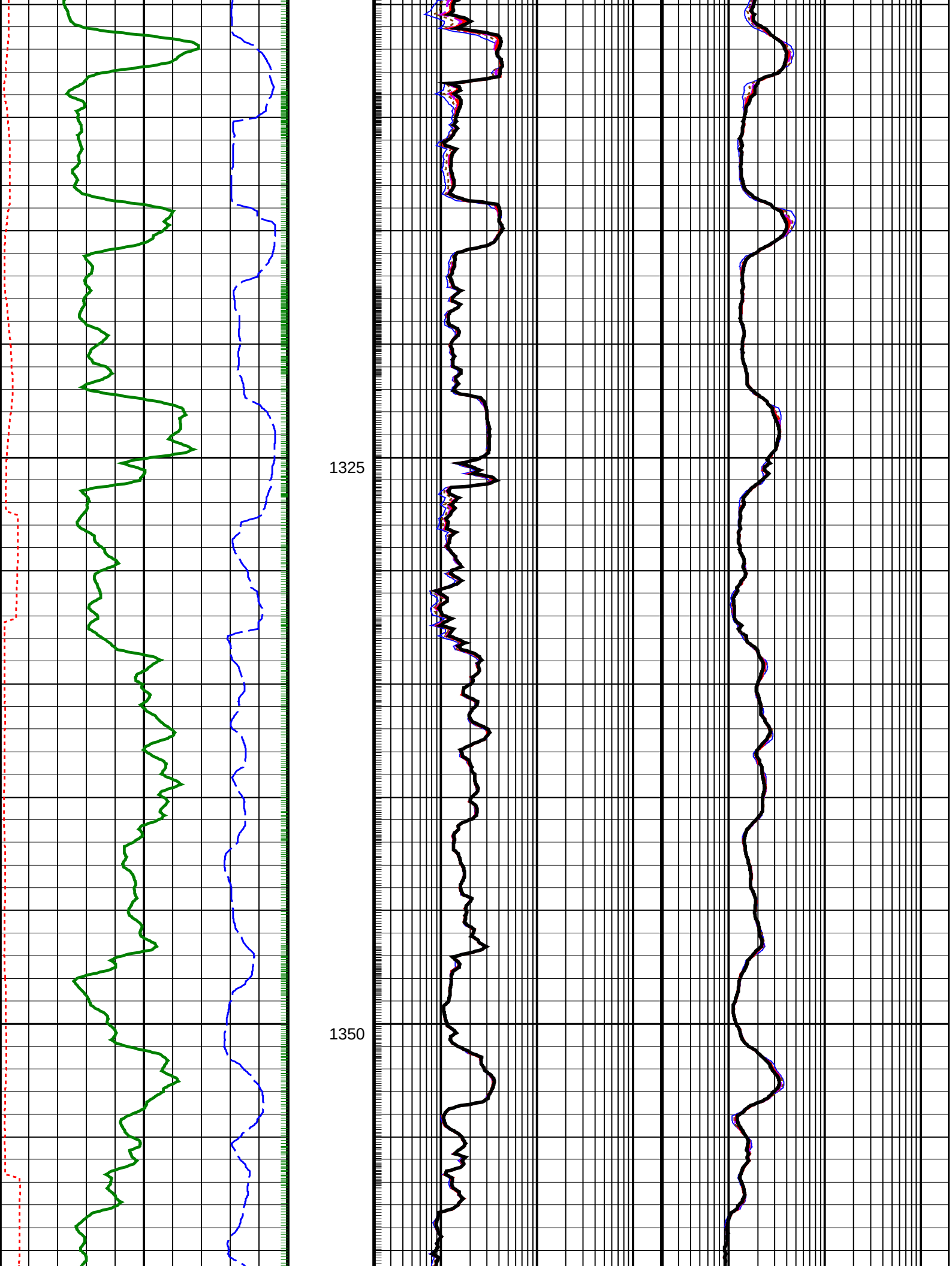
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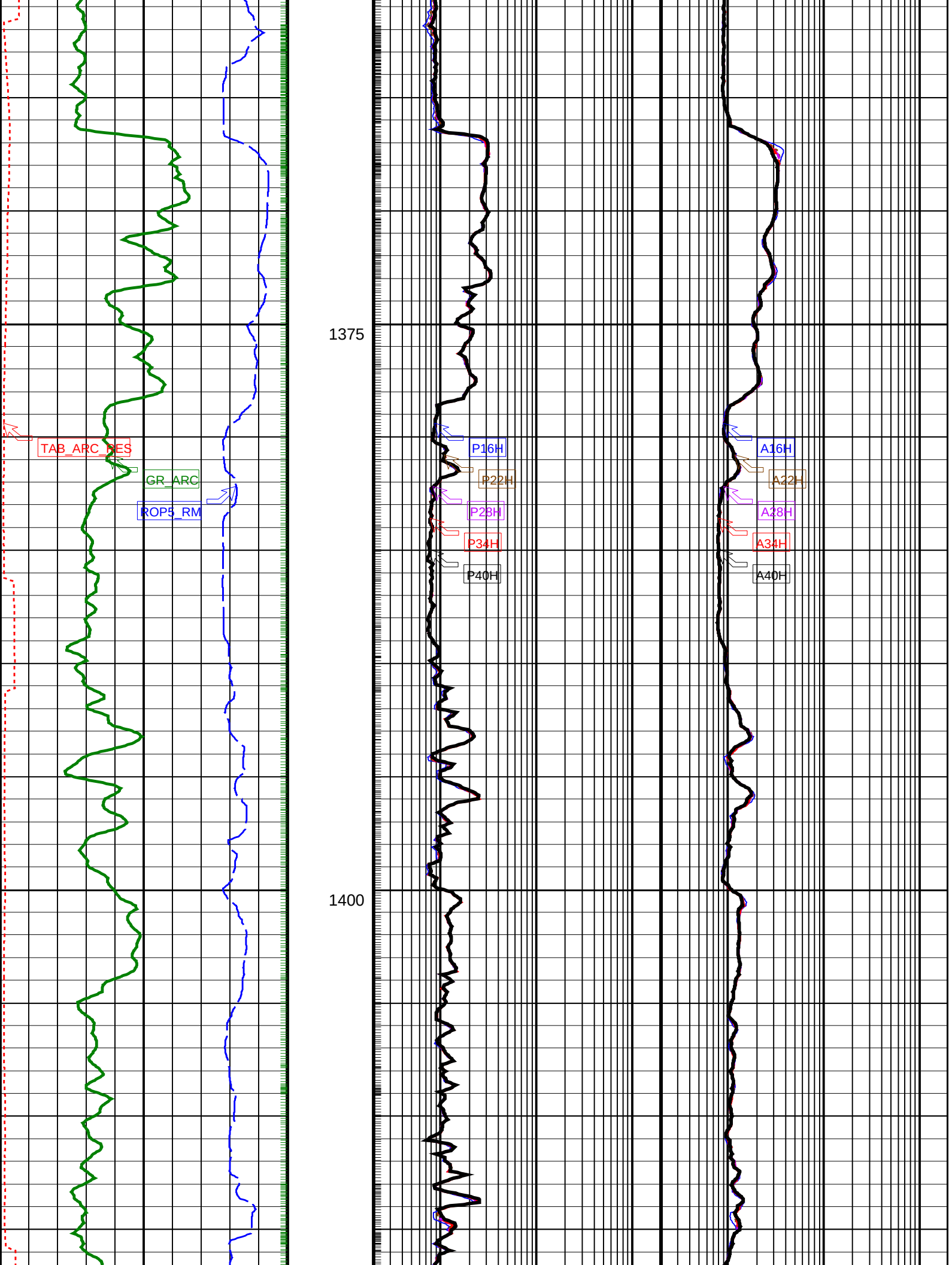
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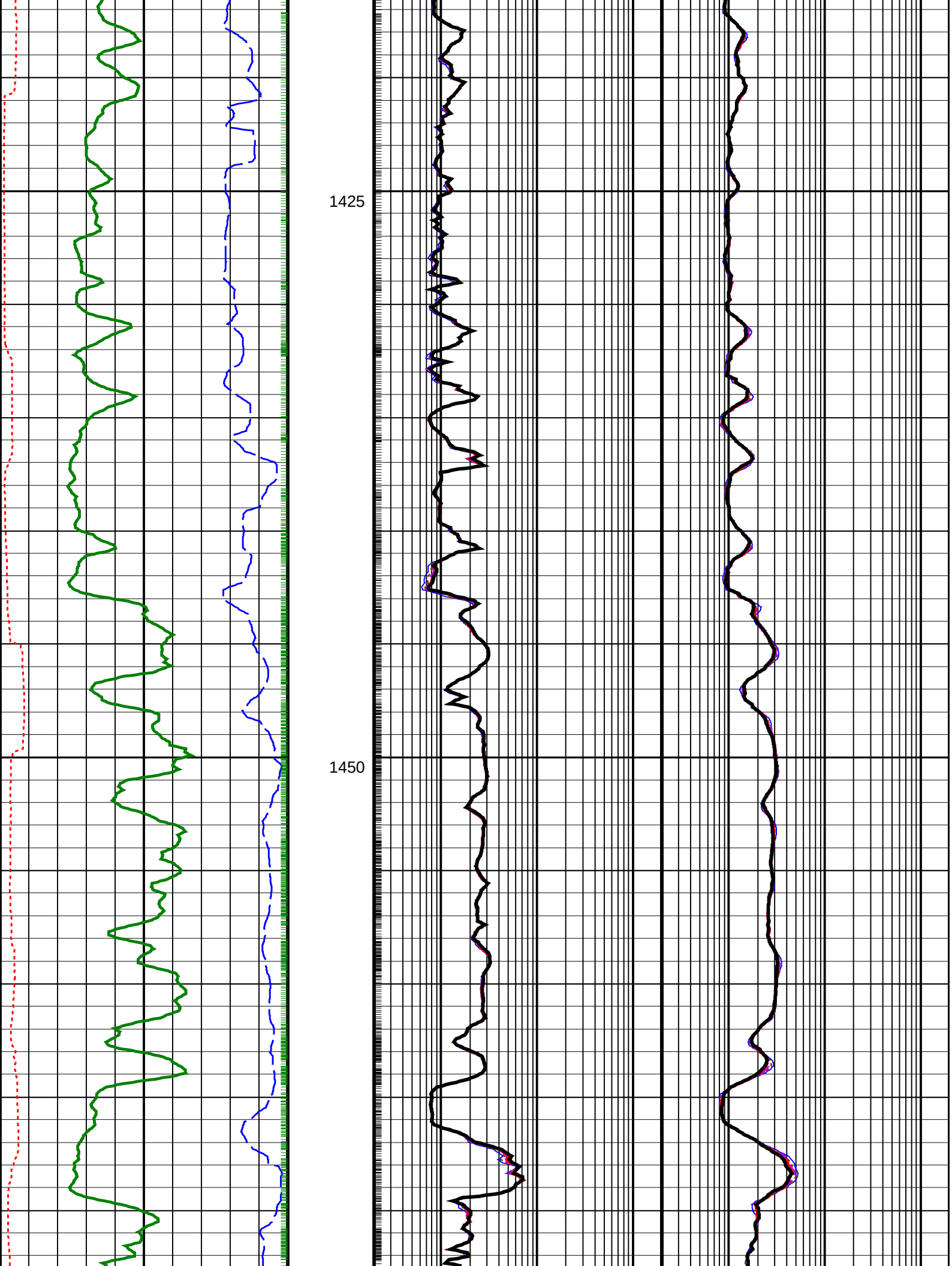
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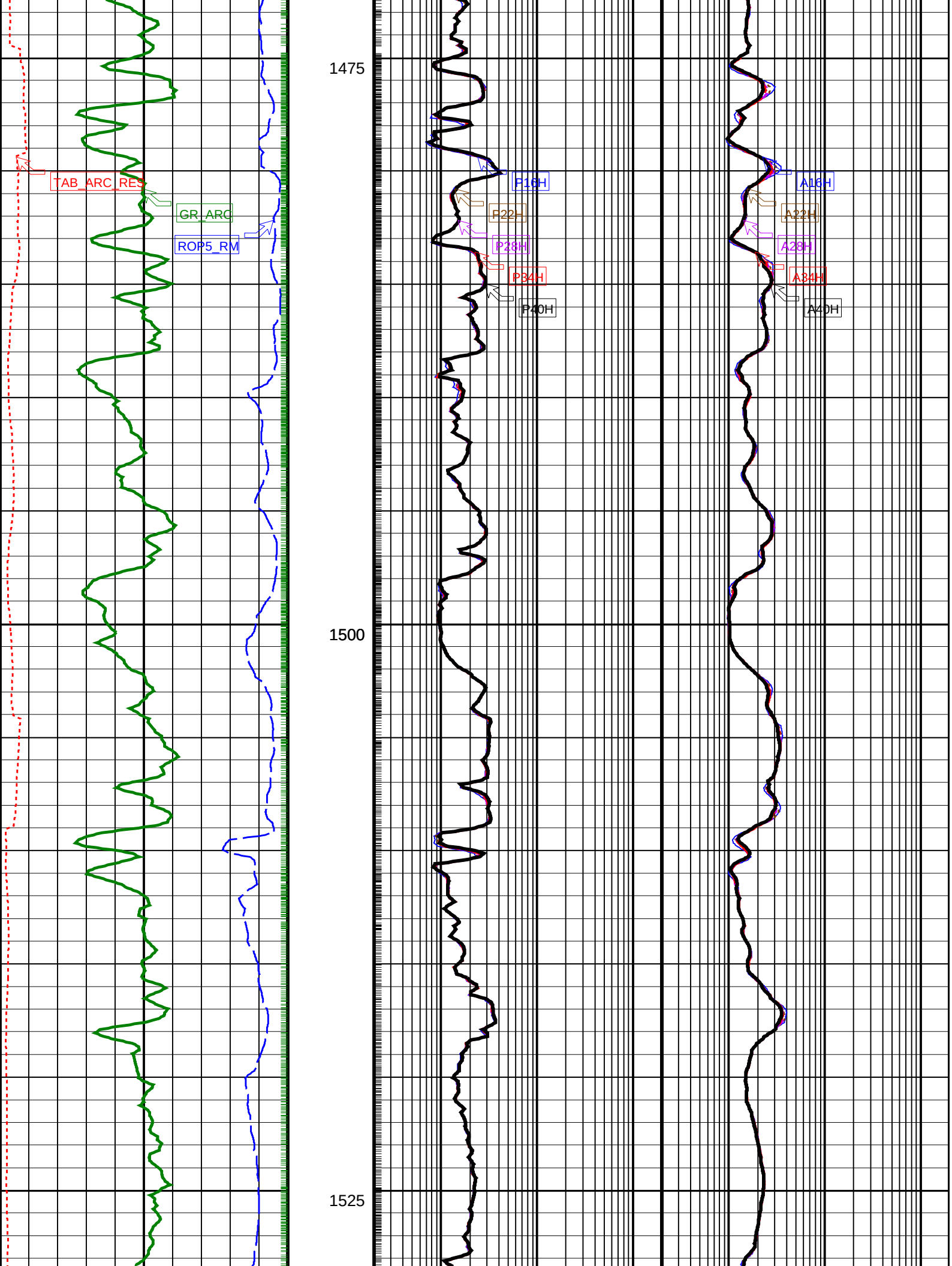
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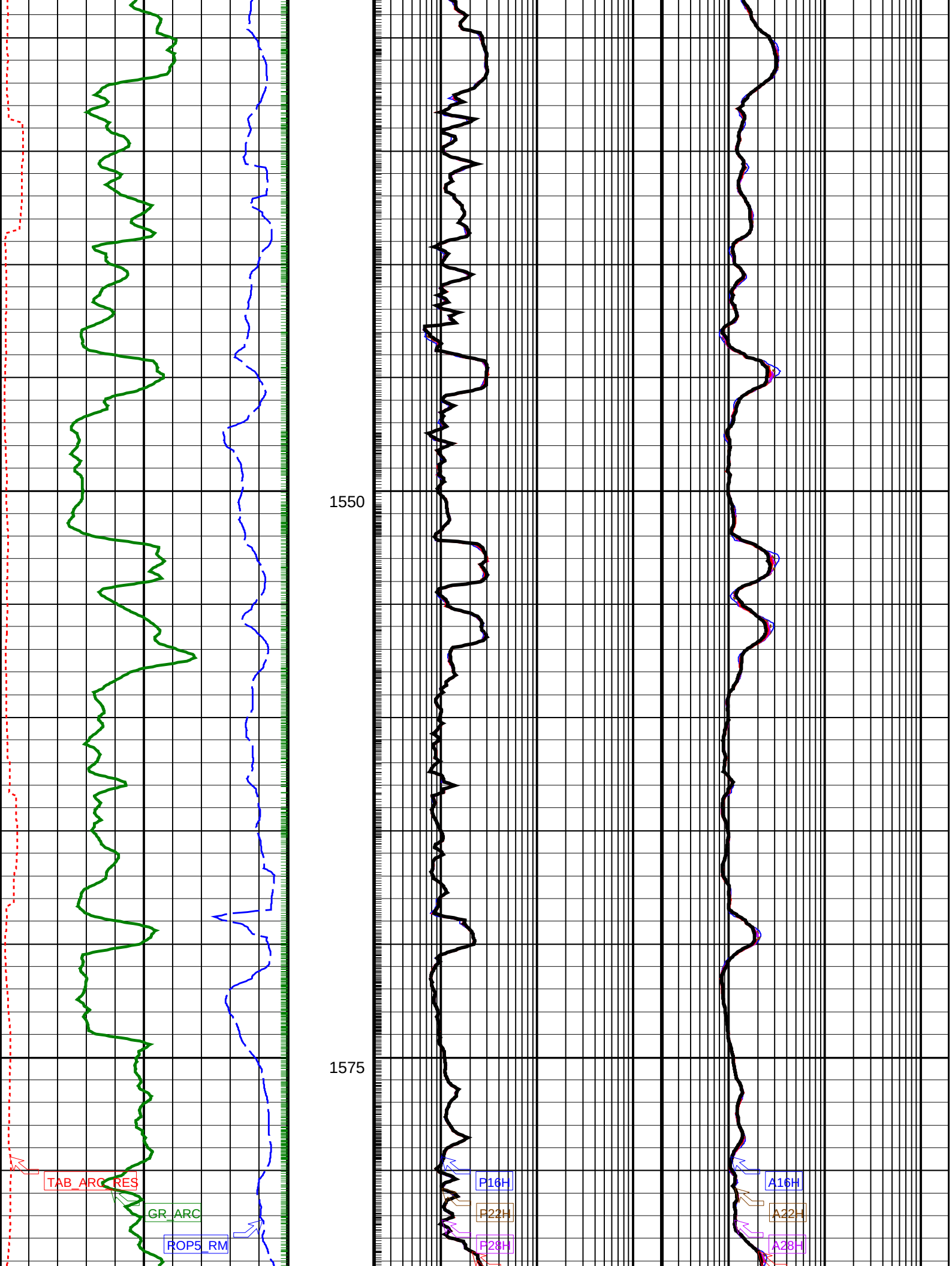
A34H
A40H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P22H
P28H
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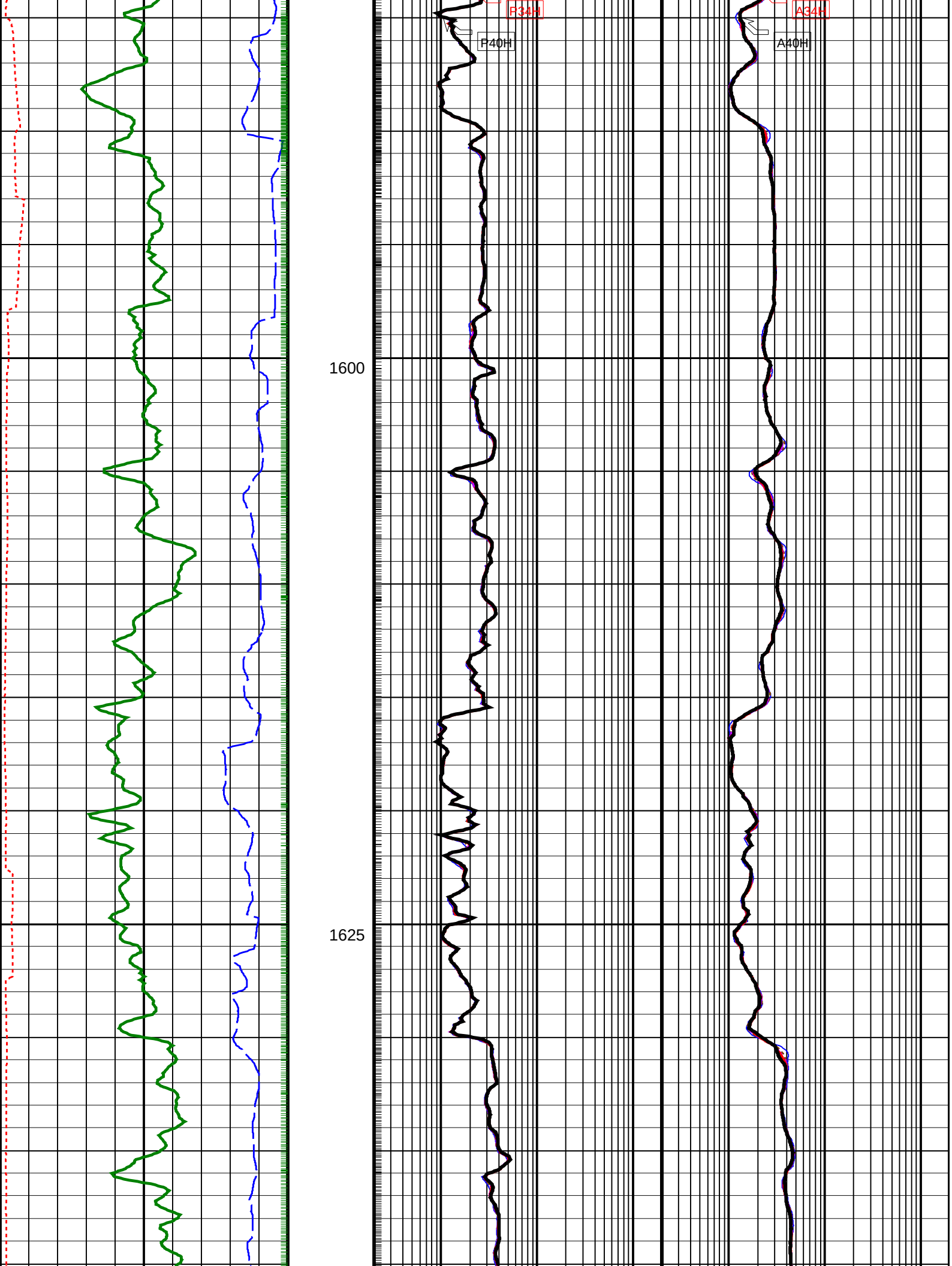
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P40H
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A40H
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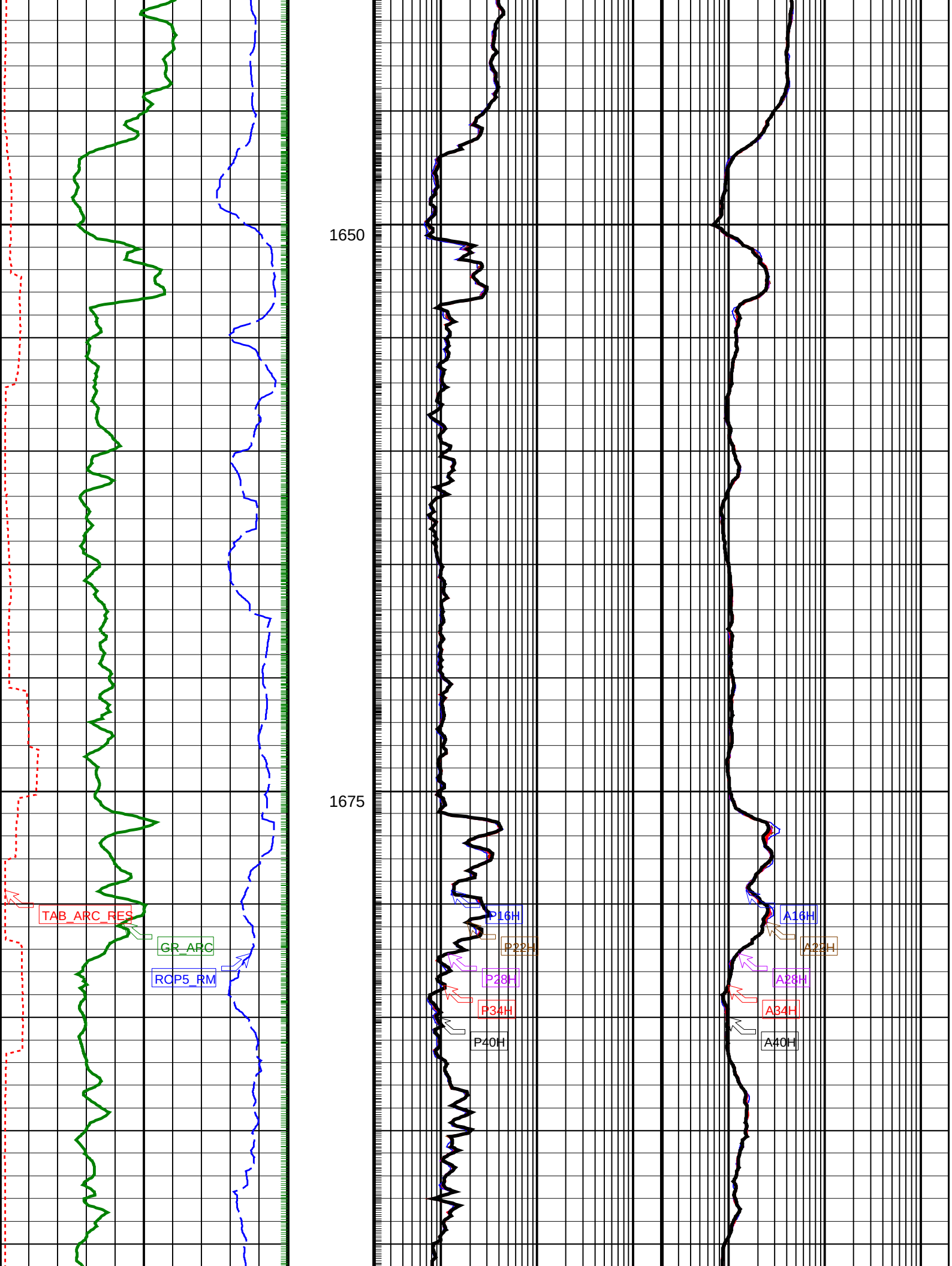
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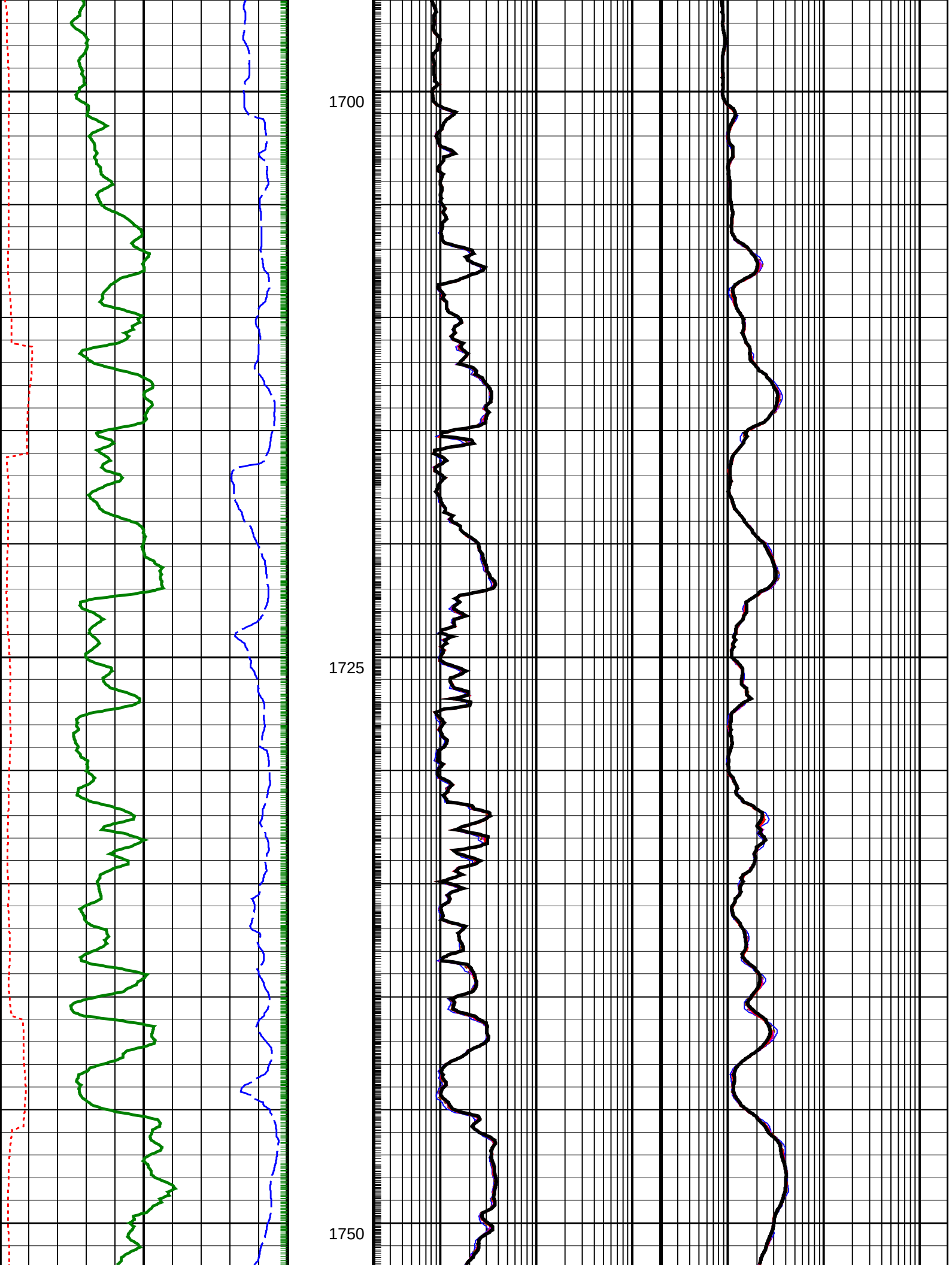
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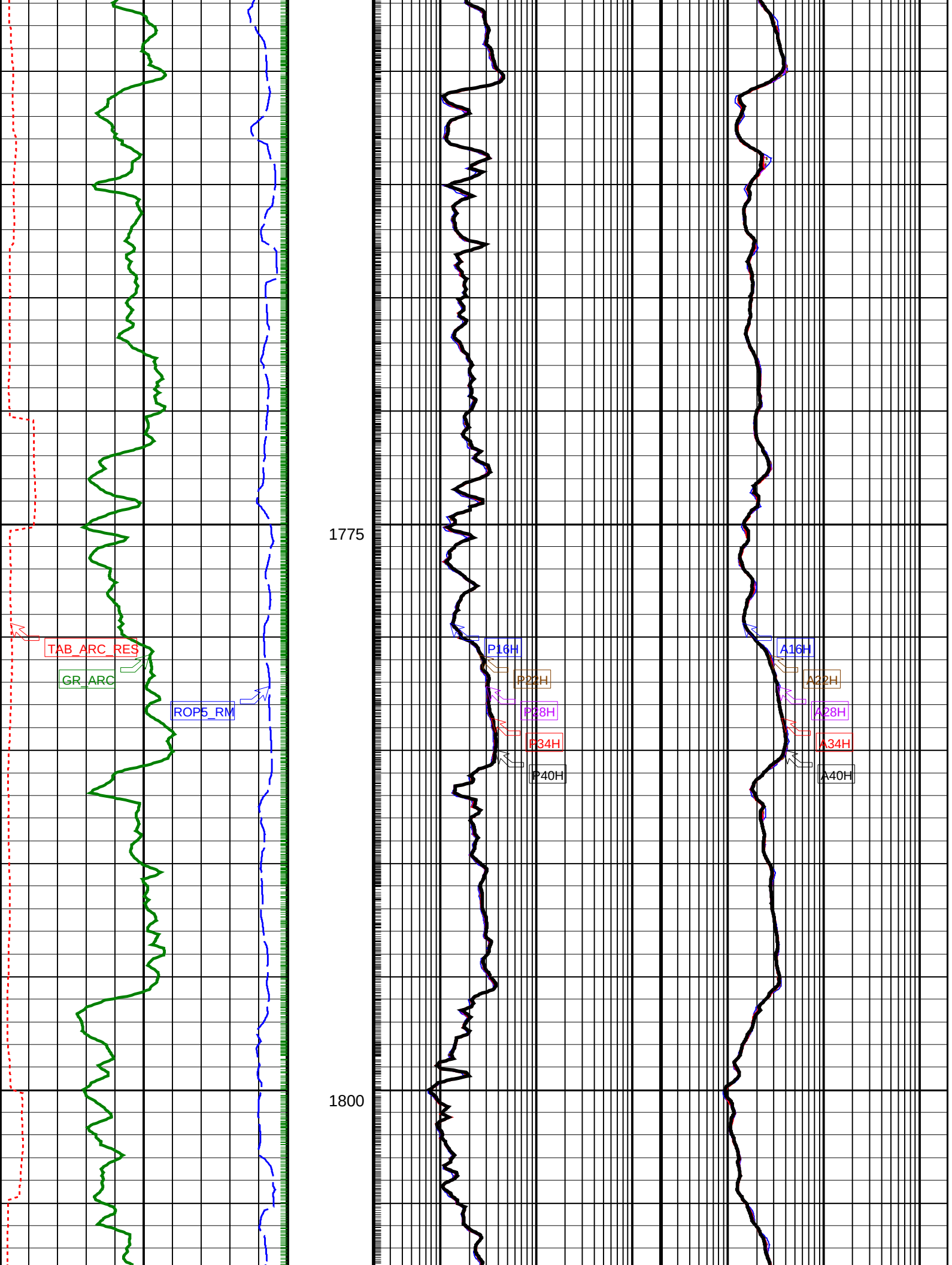
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P28H
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A28H
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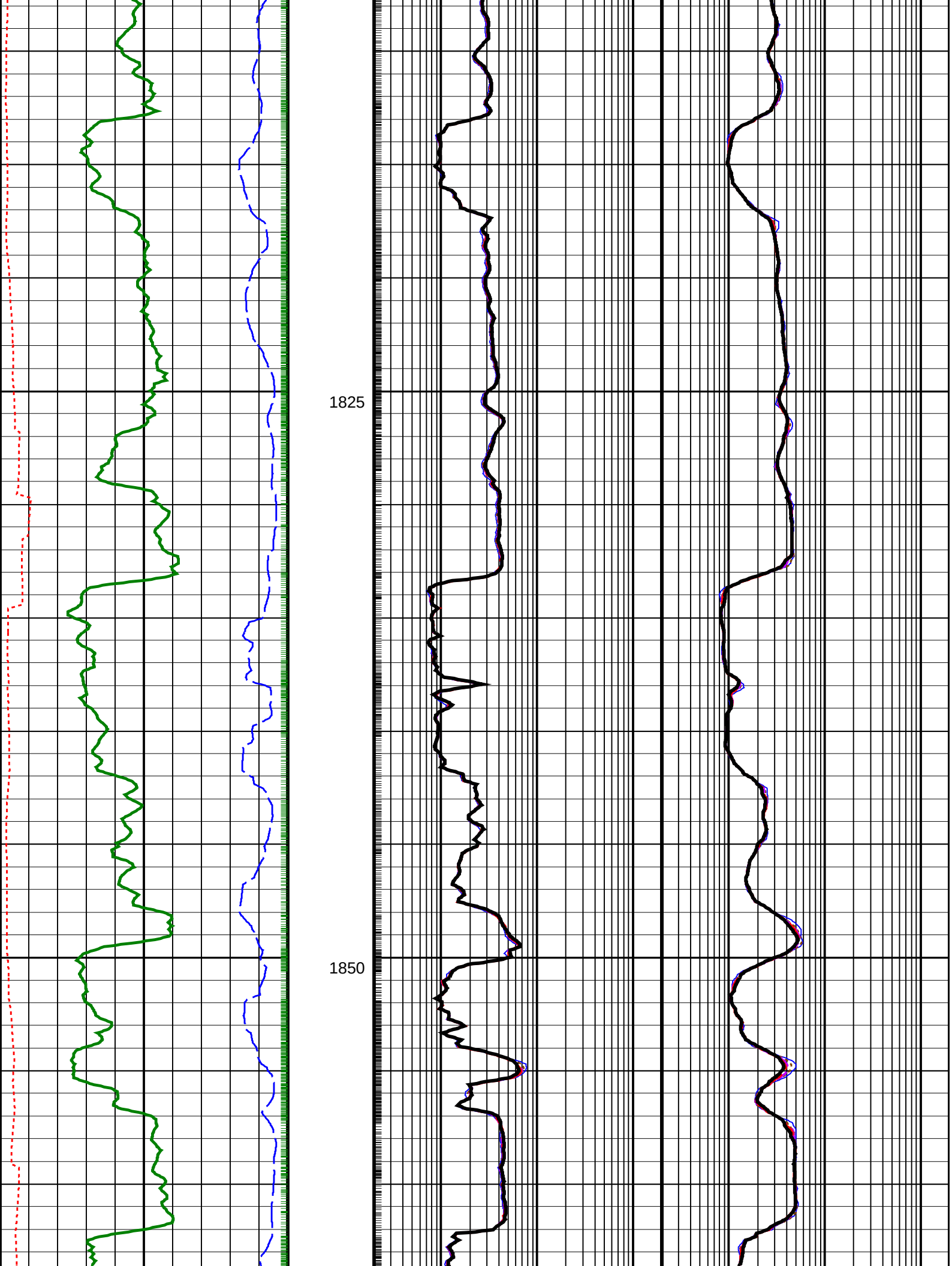
A40H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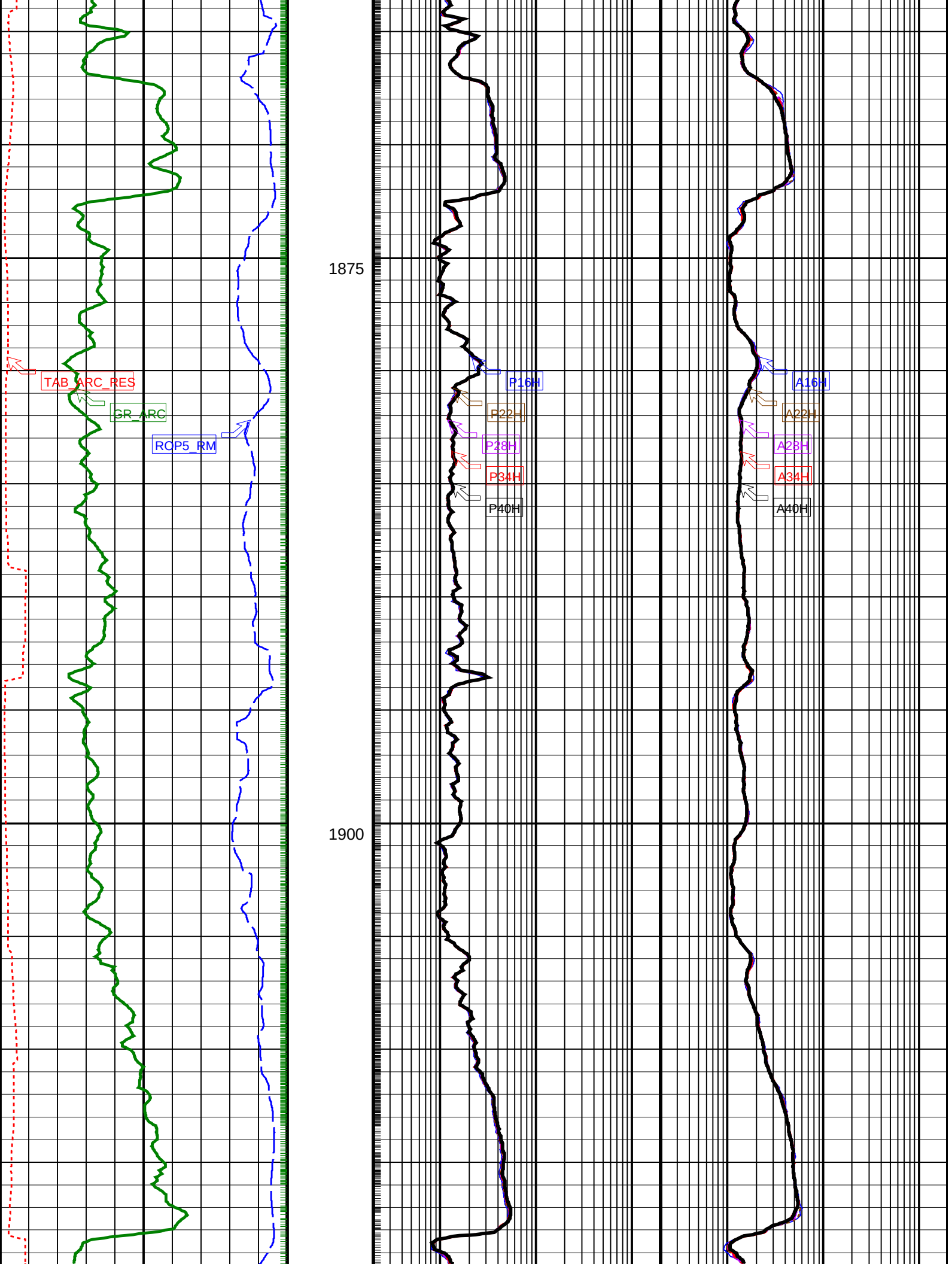
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1900
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GR_ARC
ROP5_RM
P16H
P22H
P28H
P34H
P40H
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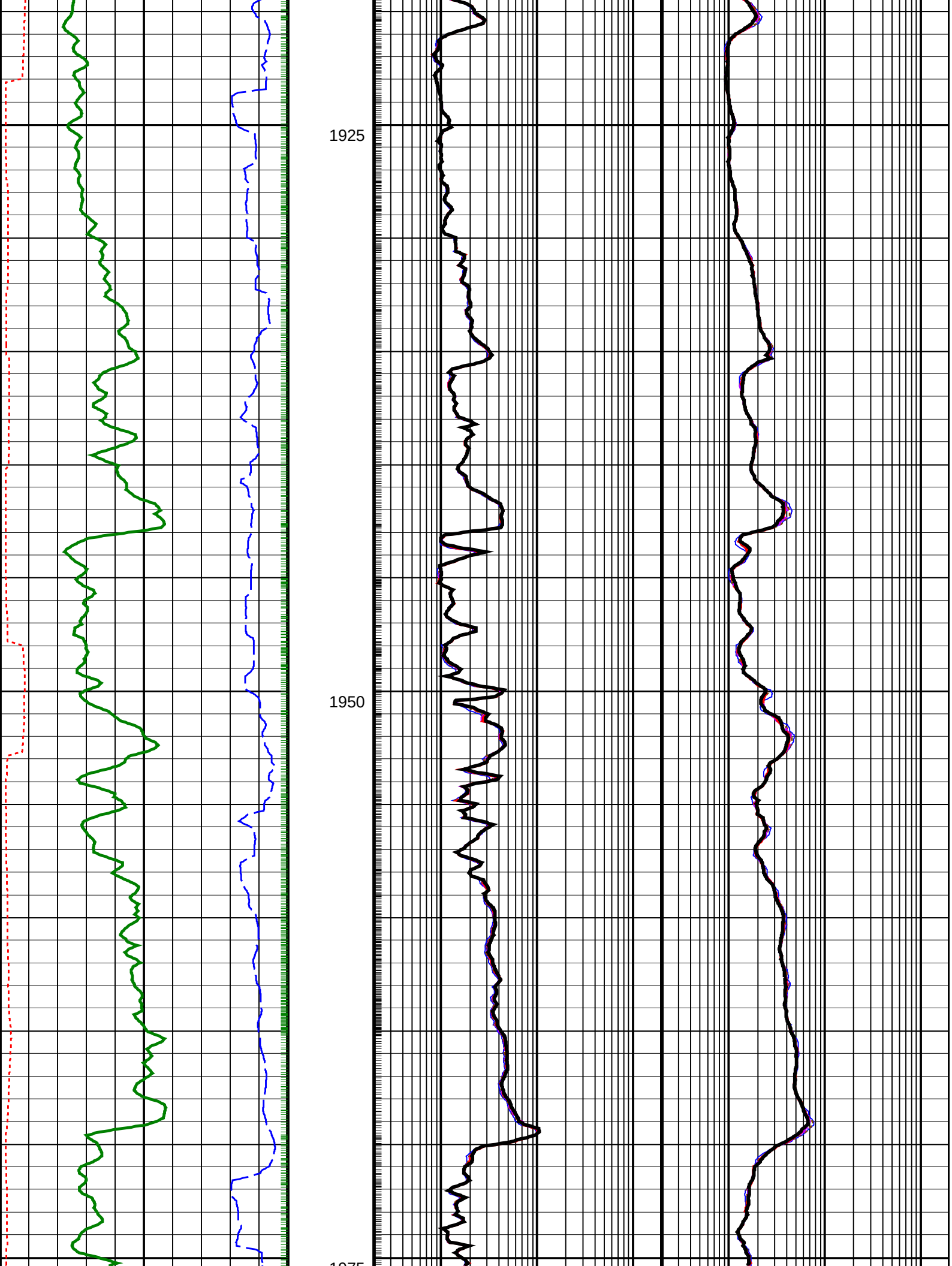
A22H
A28H
A34H
A40H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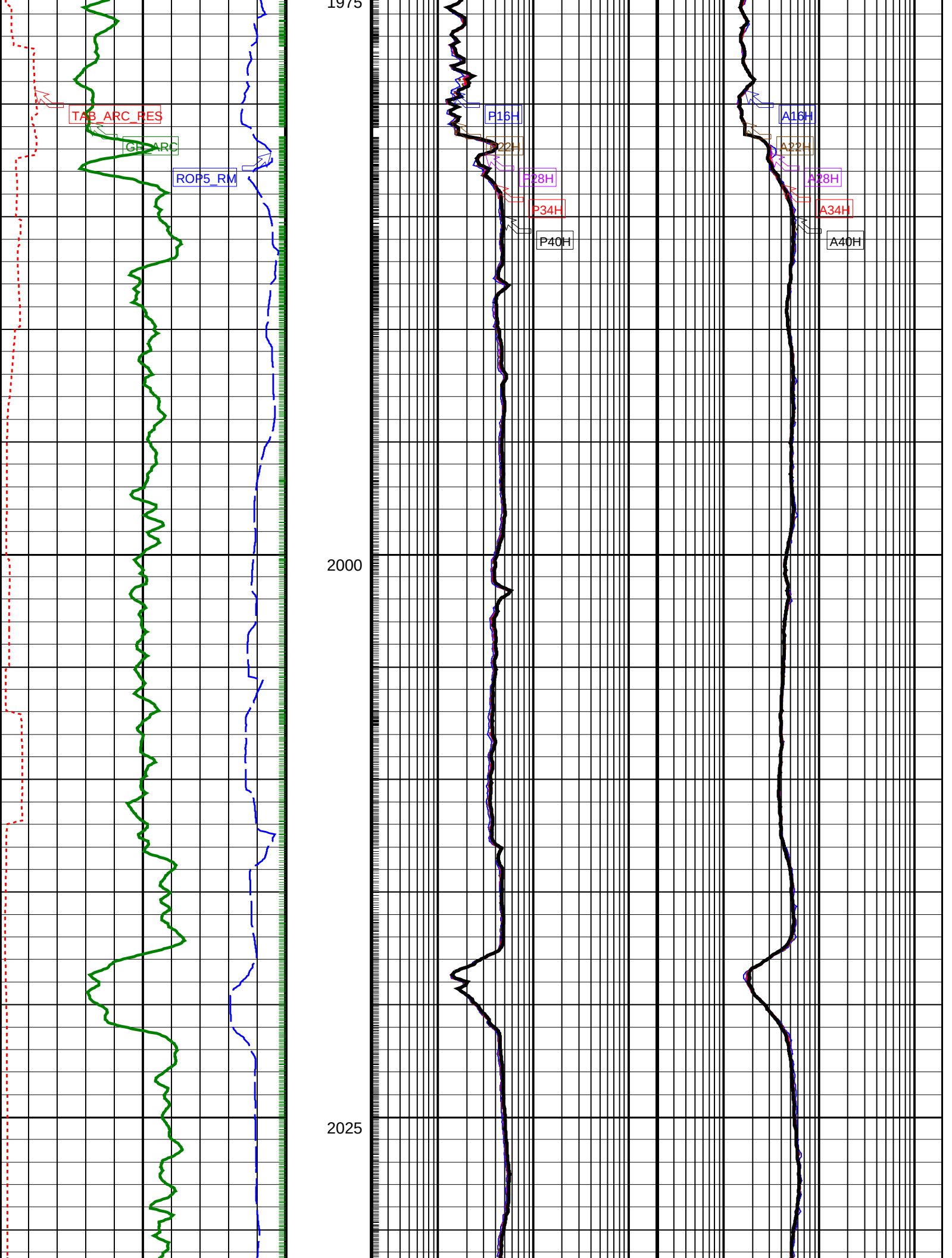
1950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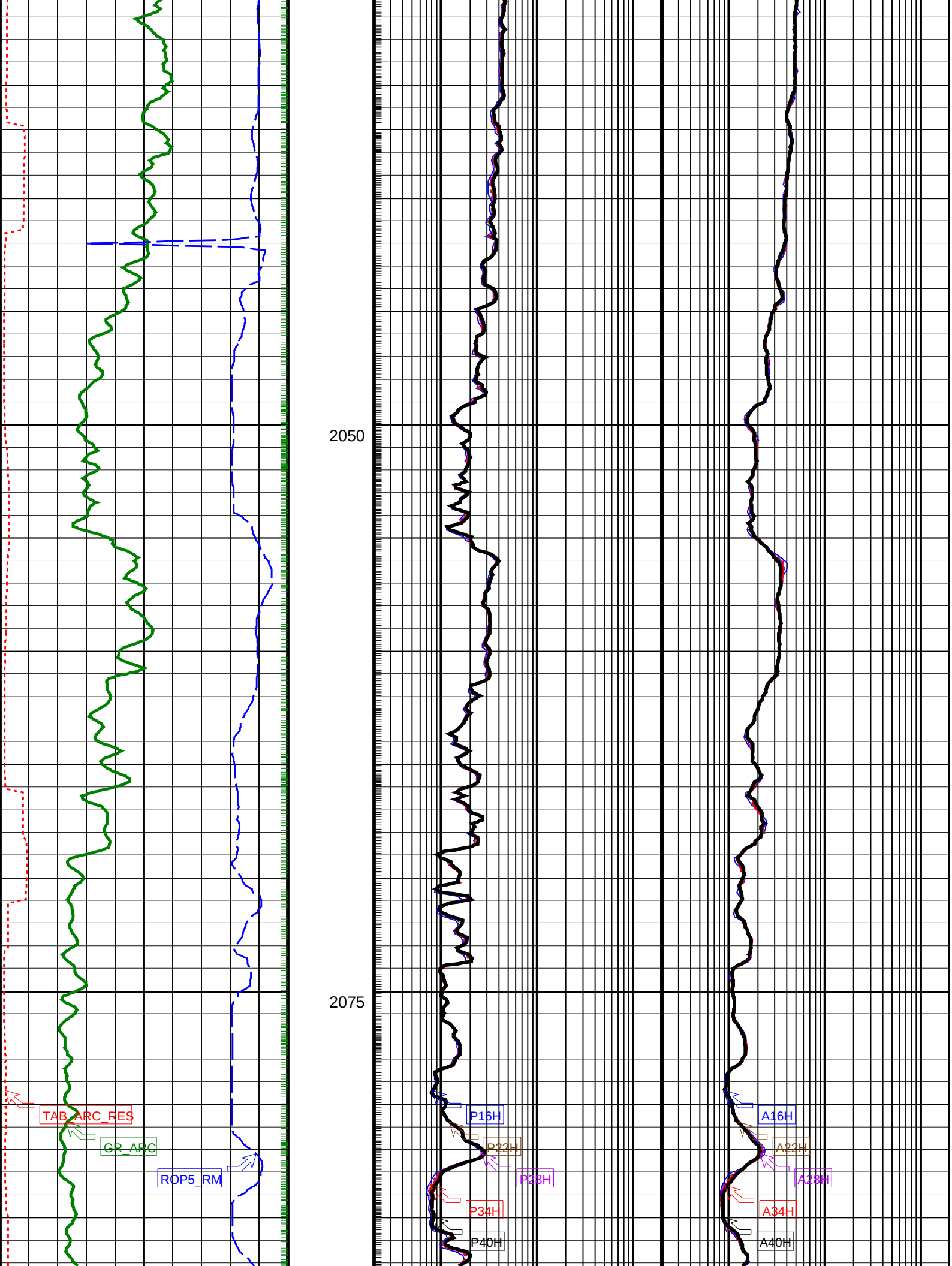
GR_ARC
ROP5_RM
1975
2000
2025
P16H
P22H
P28H
P34H
P40H
A16H
A22H
A28H
A34H
A40H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2075
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GR_ARC
ROP5_RM
P16H
P22H
P28H
P34H
P40H
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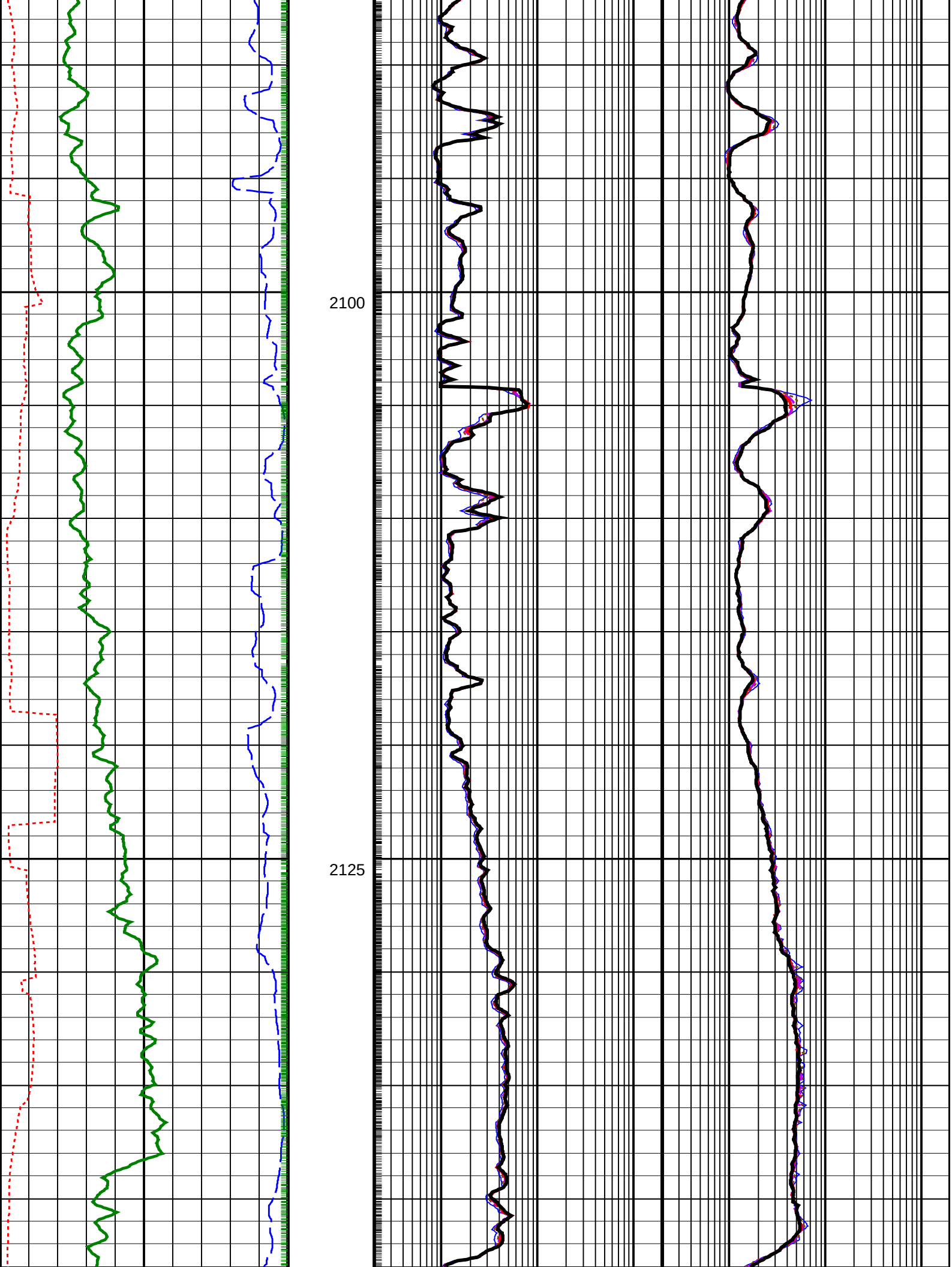
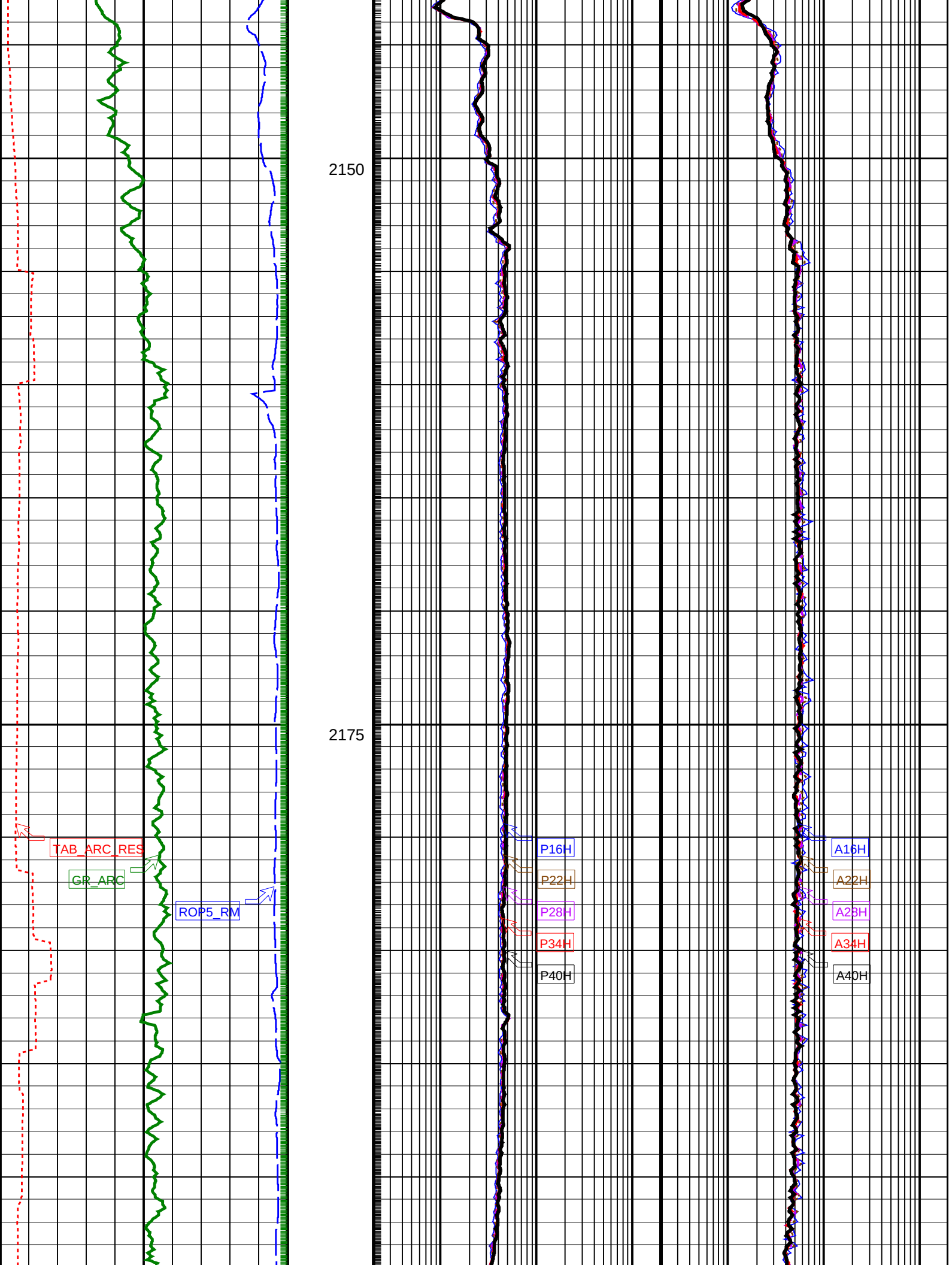
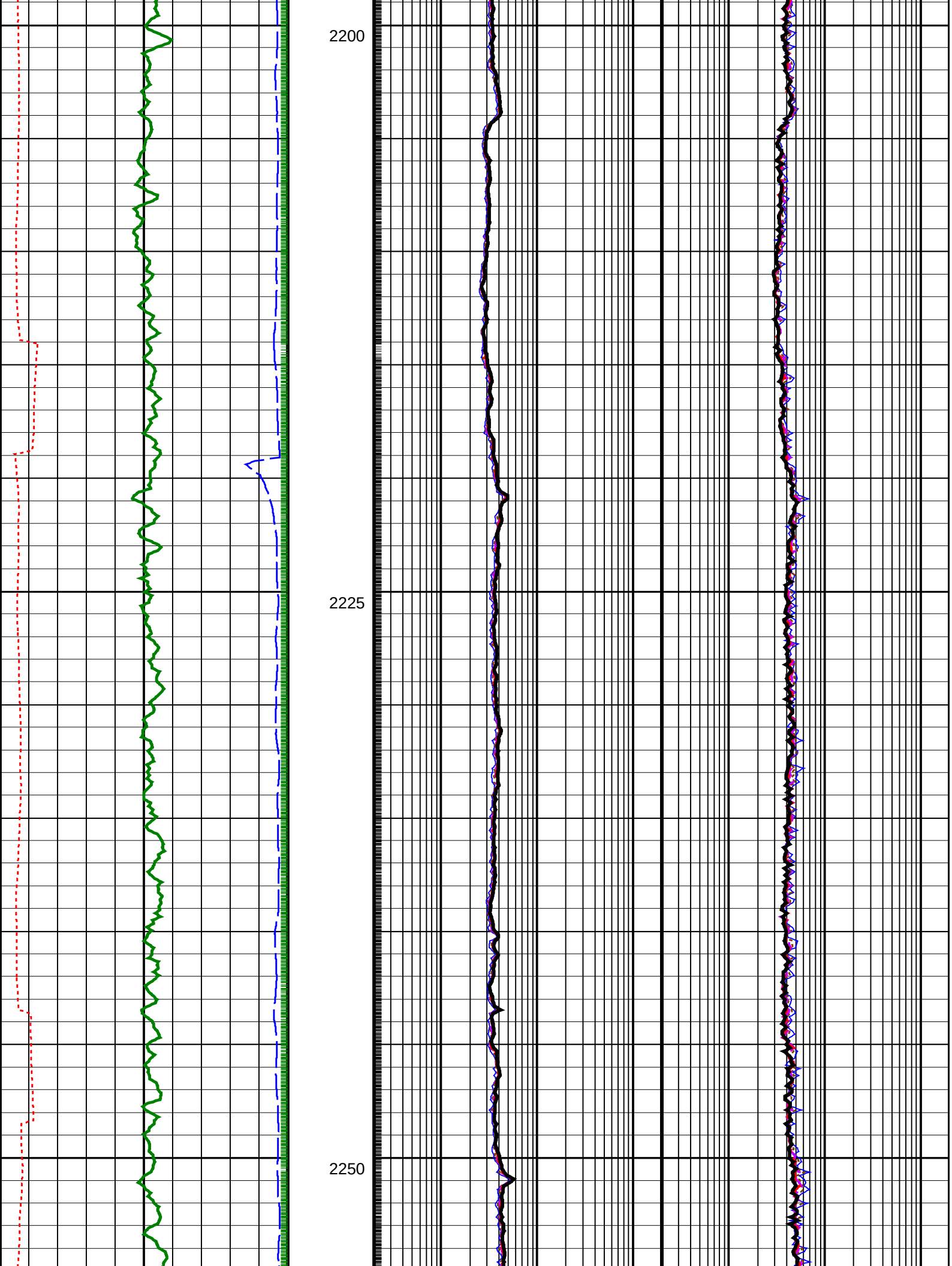
A22H
A28H
A34H
A40H


2100
2125


2150
2175
TAB_ARC_RES
GR_ARC
ROP5_RM
P16H
P22H
P28H
P34H
P40H
A16H
A22H
A28H
A34H
A40H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2225
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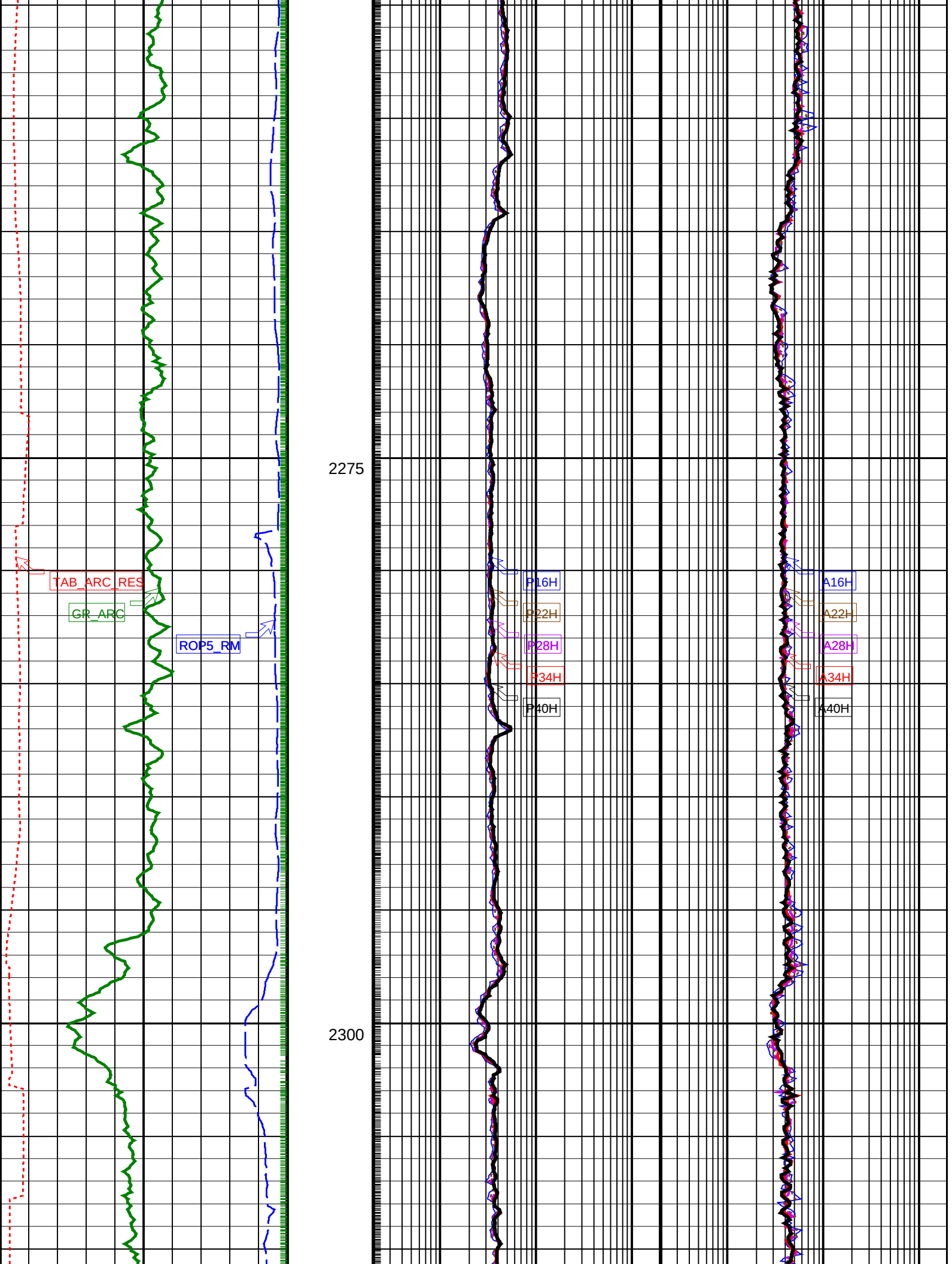
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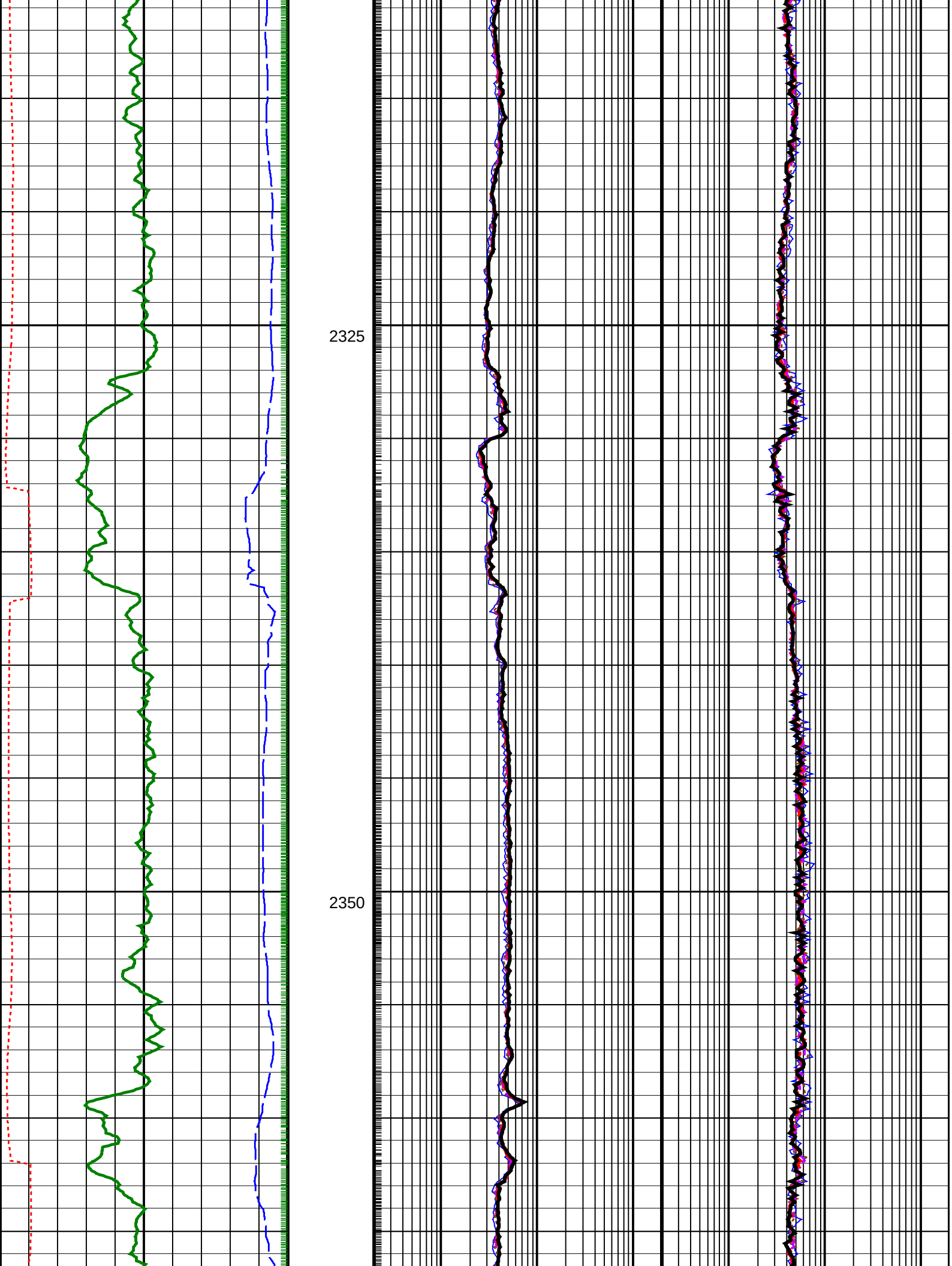
ROP5_RM
P16H
P22H
P28H
P34H
P40H
A16H
A22H
A28H
A34H
A40H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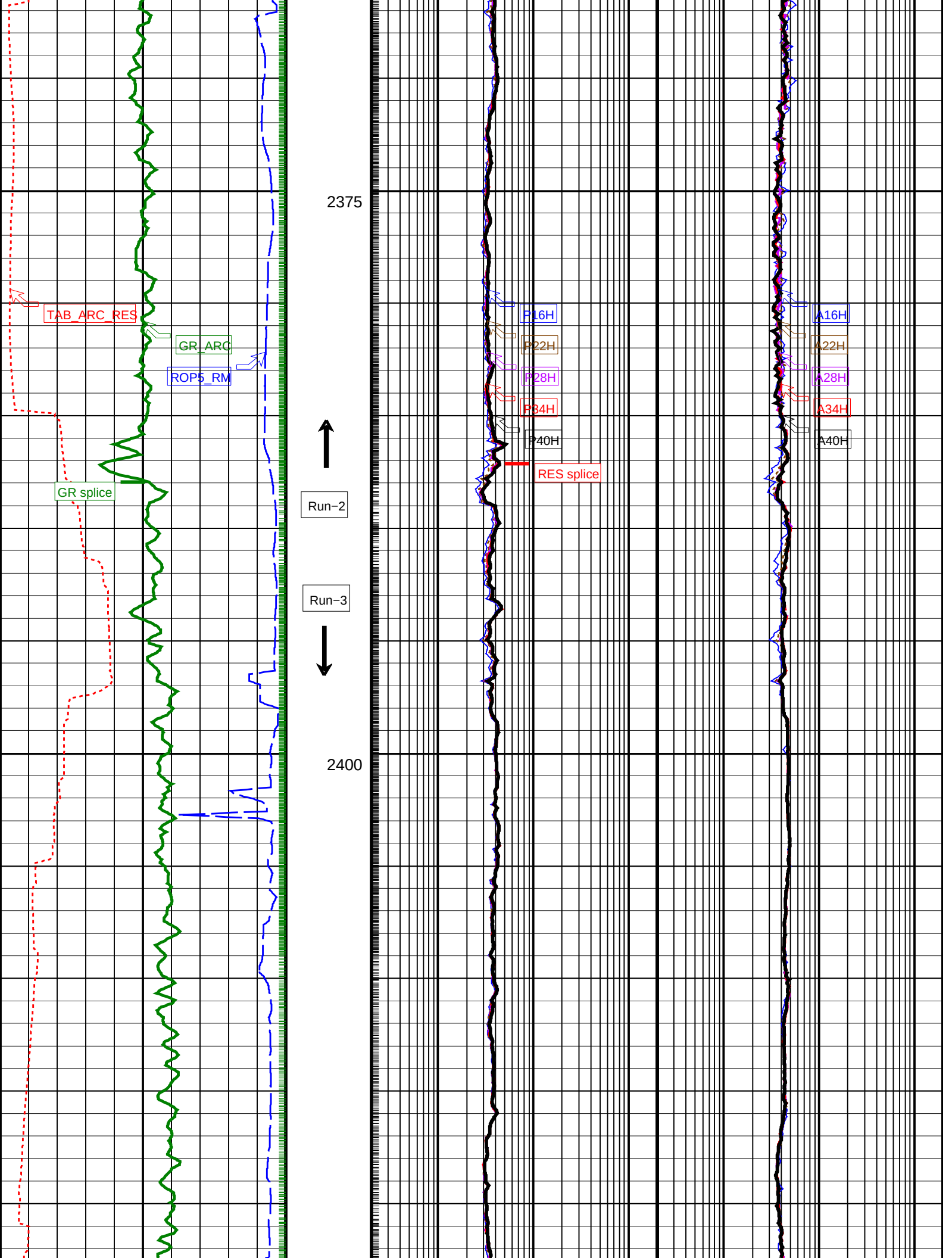
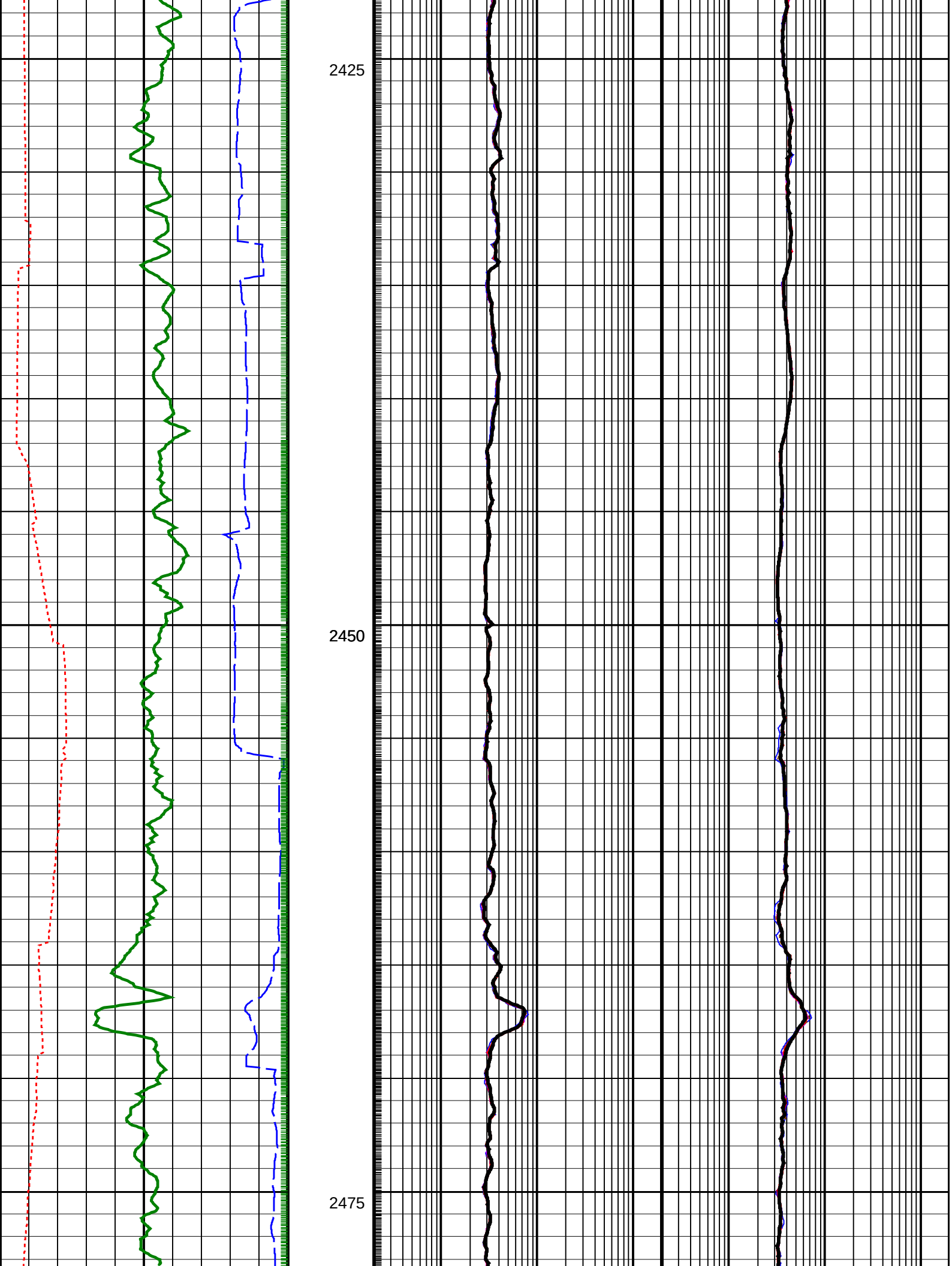

2375
2400
TAB_ARC_RES
GR_ARC
ROP5_RM
GR splice
Run-2
Run-3
P16H
P22H
P28H
P34H
P40H
RES splice
A16H
A22H
A28H
A34H
A40H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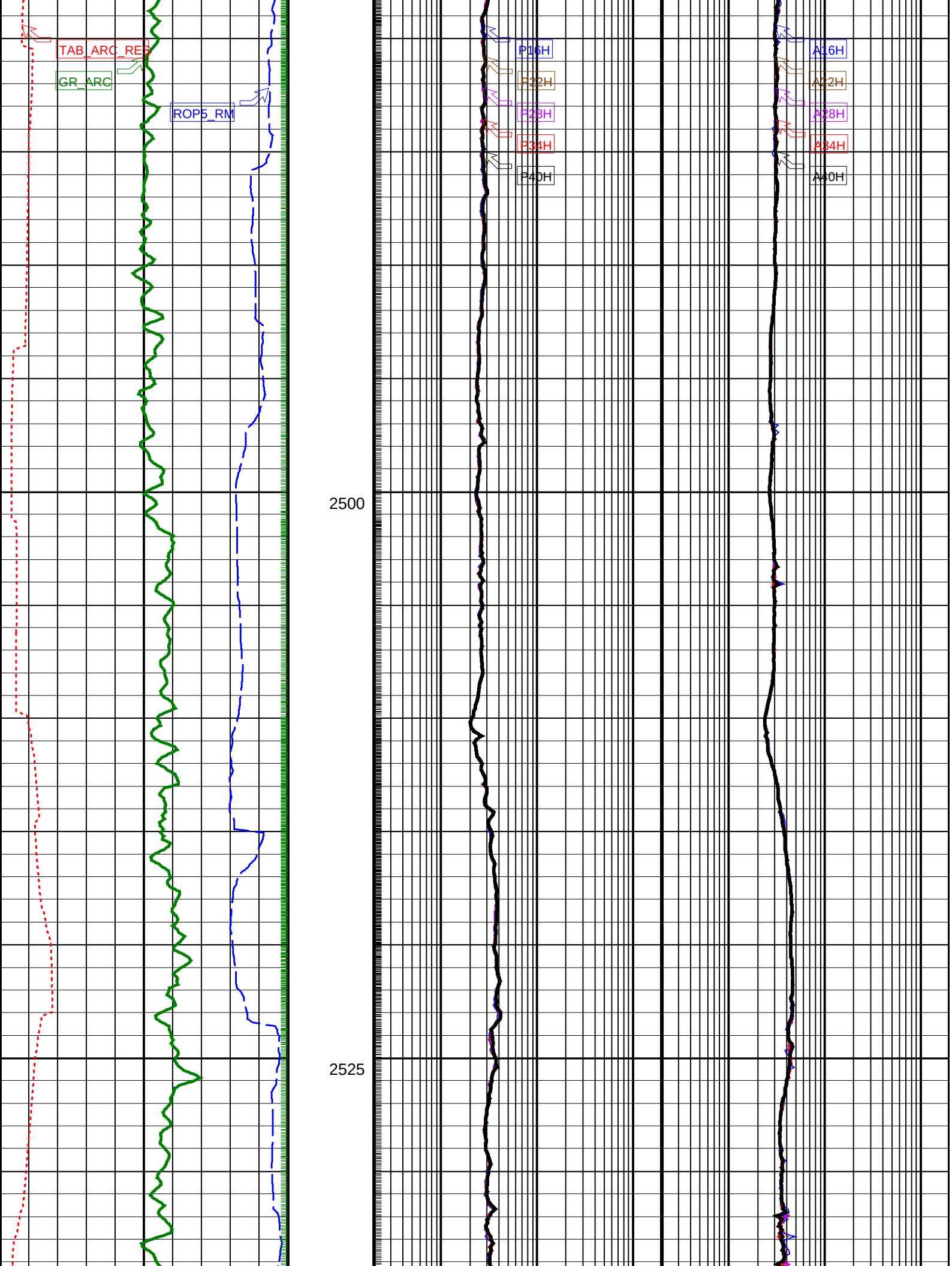
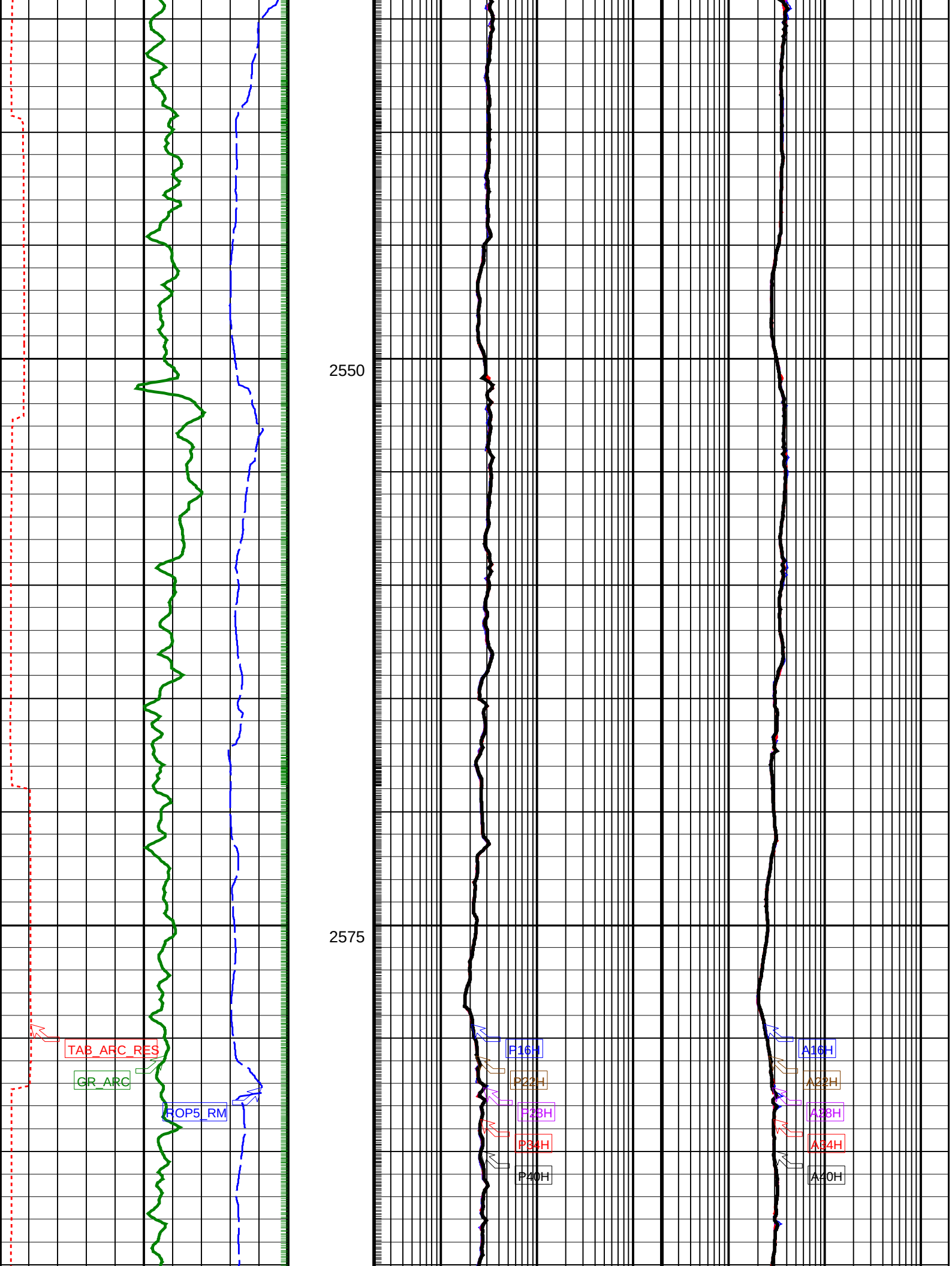

TAB_ARC_RES
GR_ARC
ROP5_RM
P16H
P22H
P28H
P34H
P40H
A16H
A22H
A28H
A34H
A40H
2500
2525


2550
2575
TAB_ARC_RES
GR_ARC
ROP5_RM
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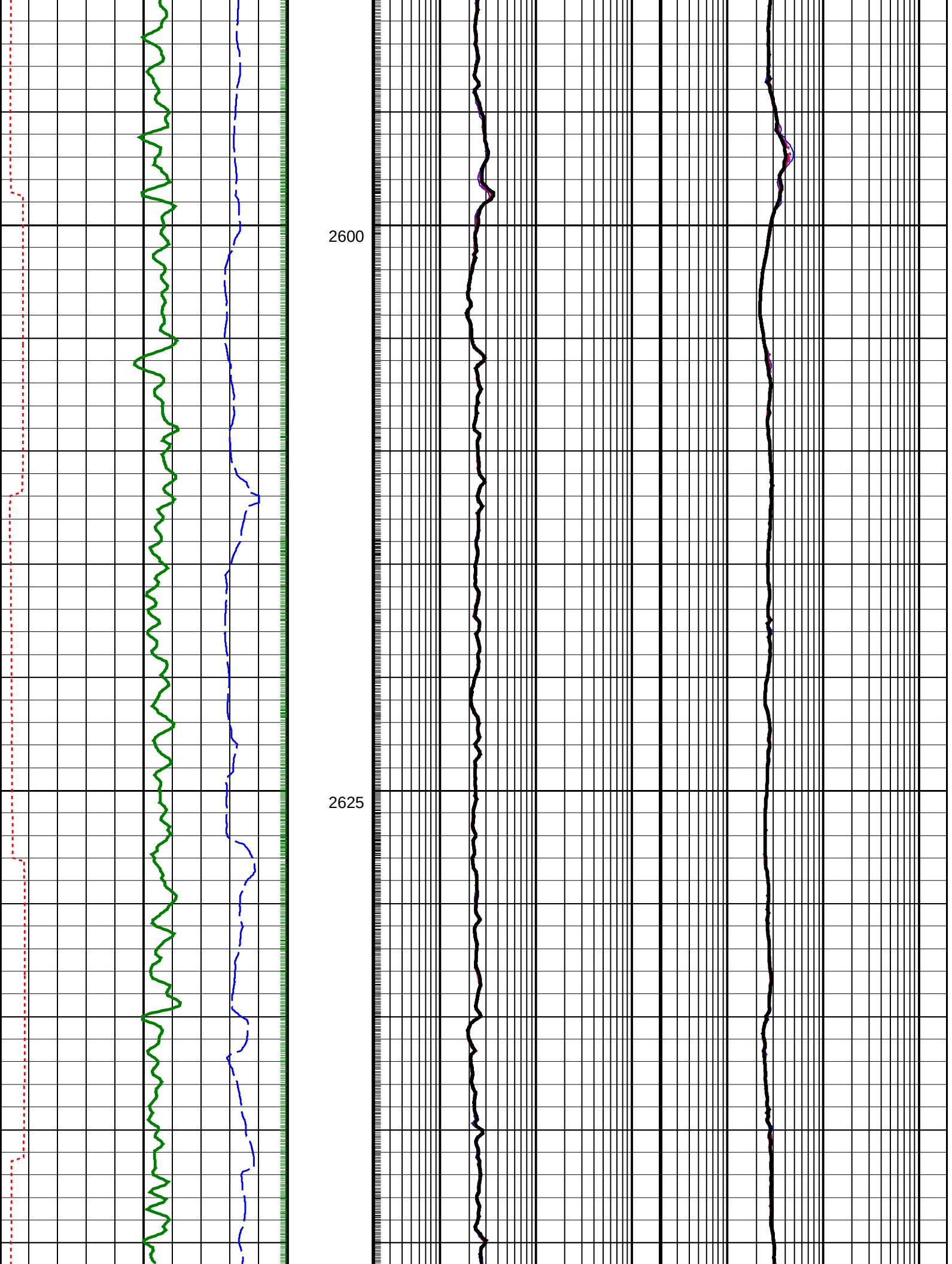
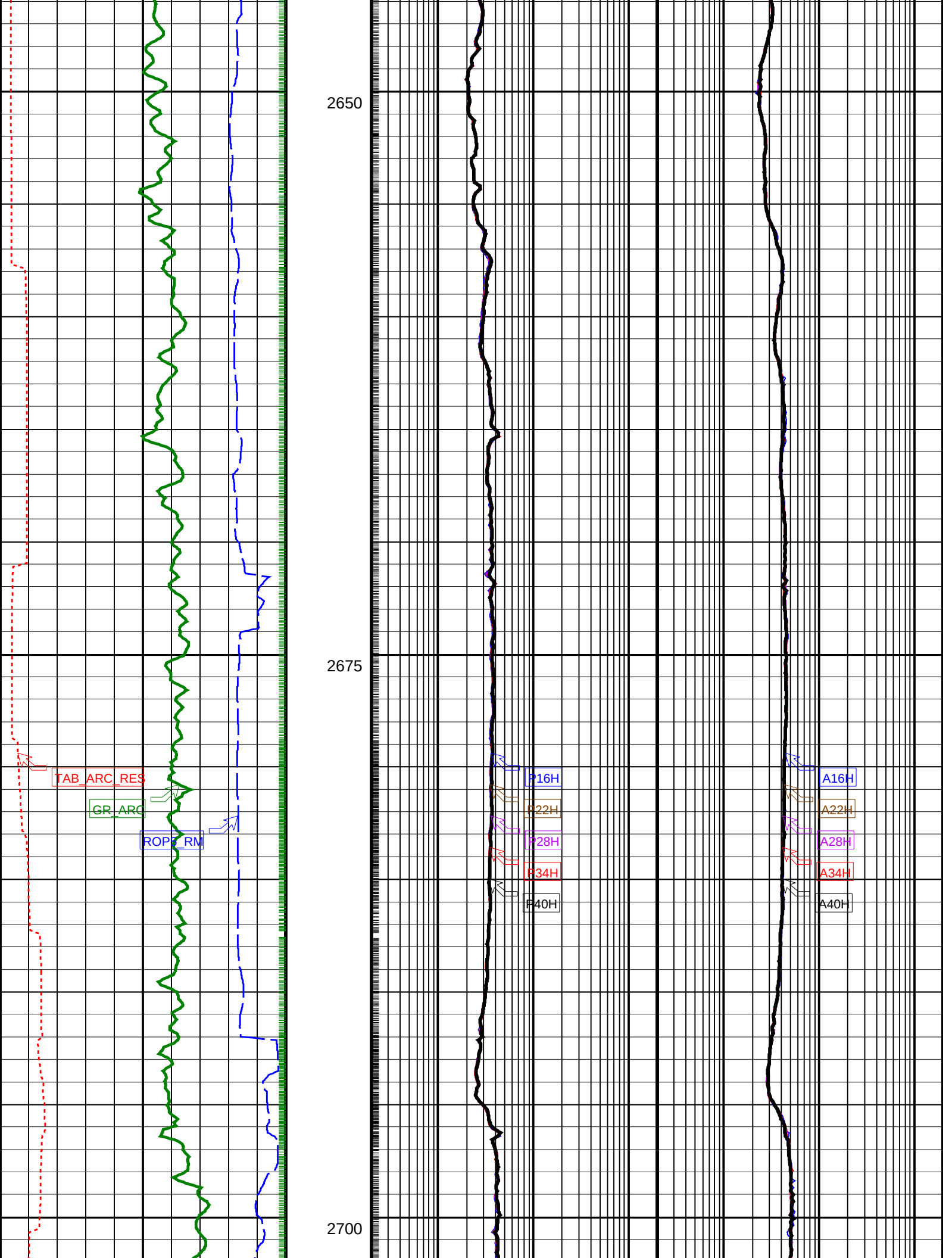
P22H
P28H
P34H
P40H
A16H
A22H
A28H
A34H
A40H


2600
2625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2675
2700
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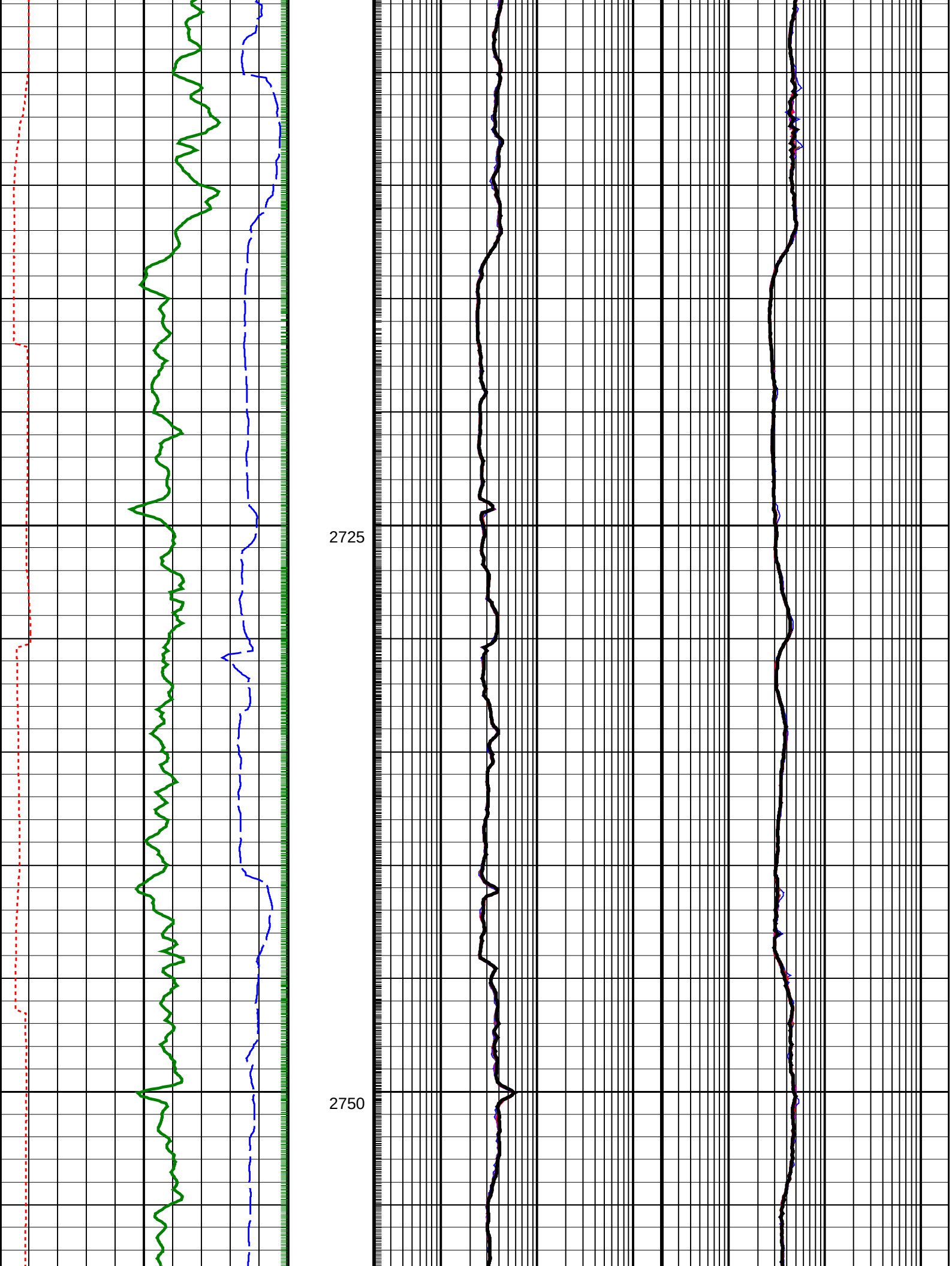
GR_ARC
ROPE_RM
P16H
P22H
P28H
P34H
P40H
A16H
A22H
A28H
A34H
A40H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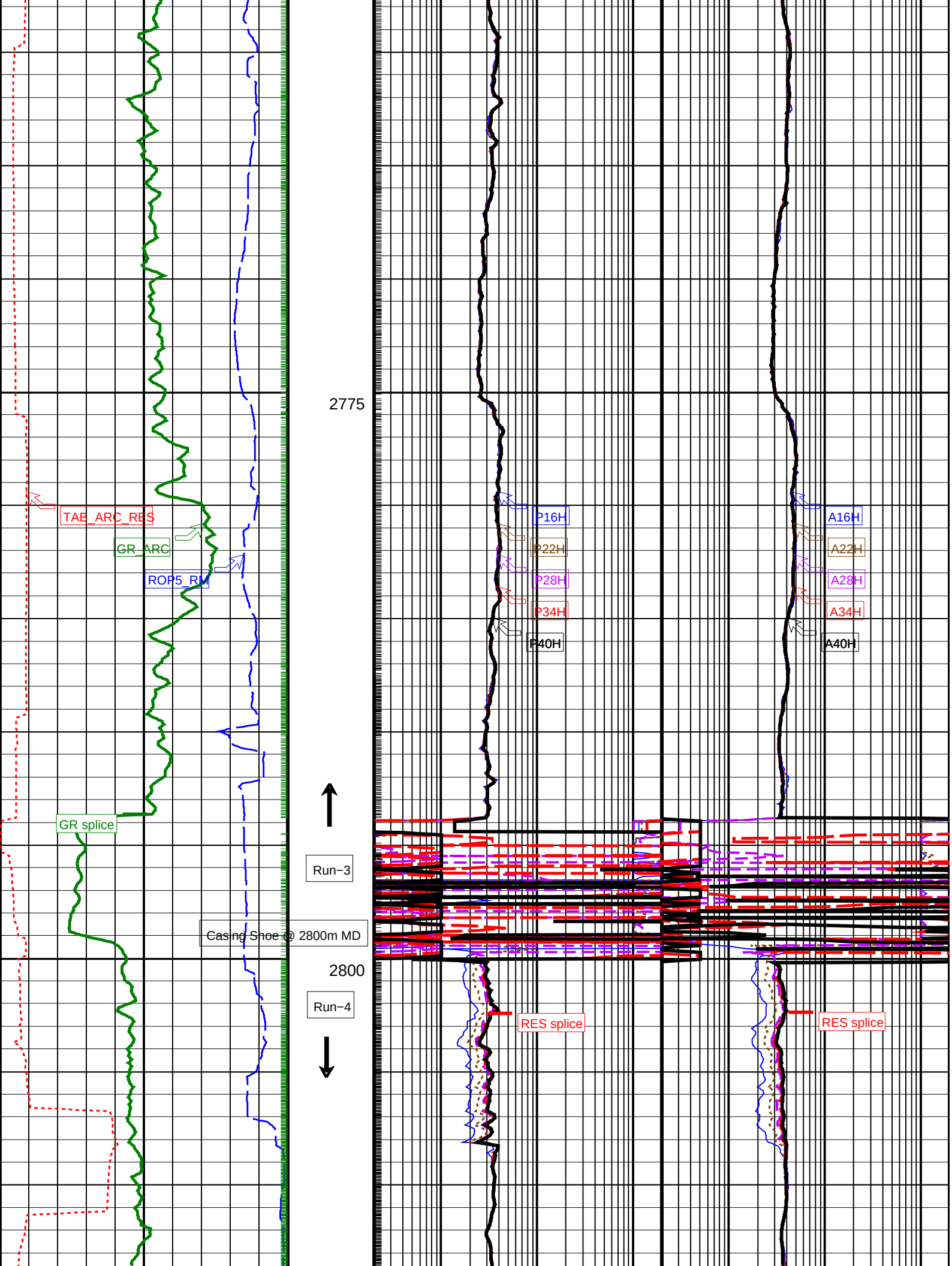
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GR_ARC
ROP5_RM
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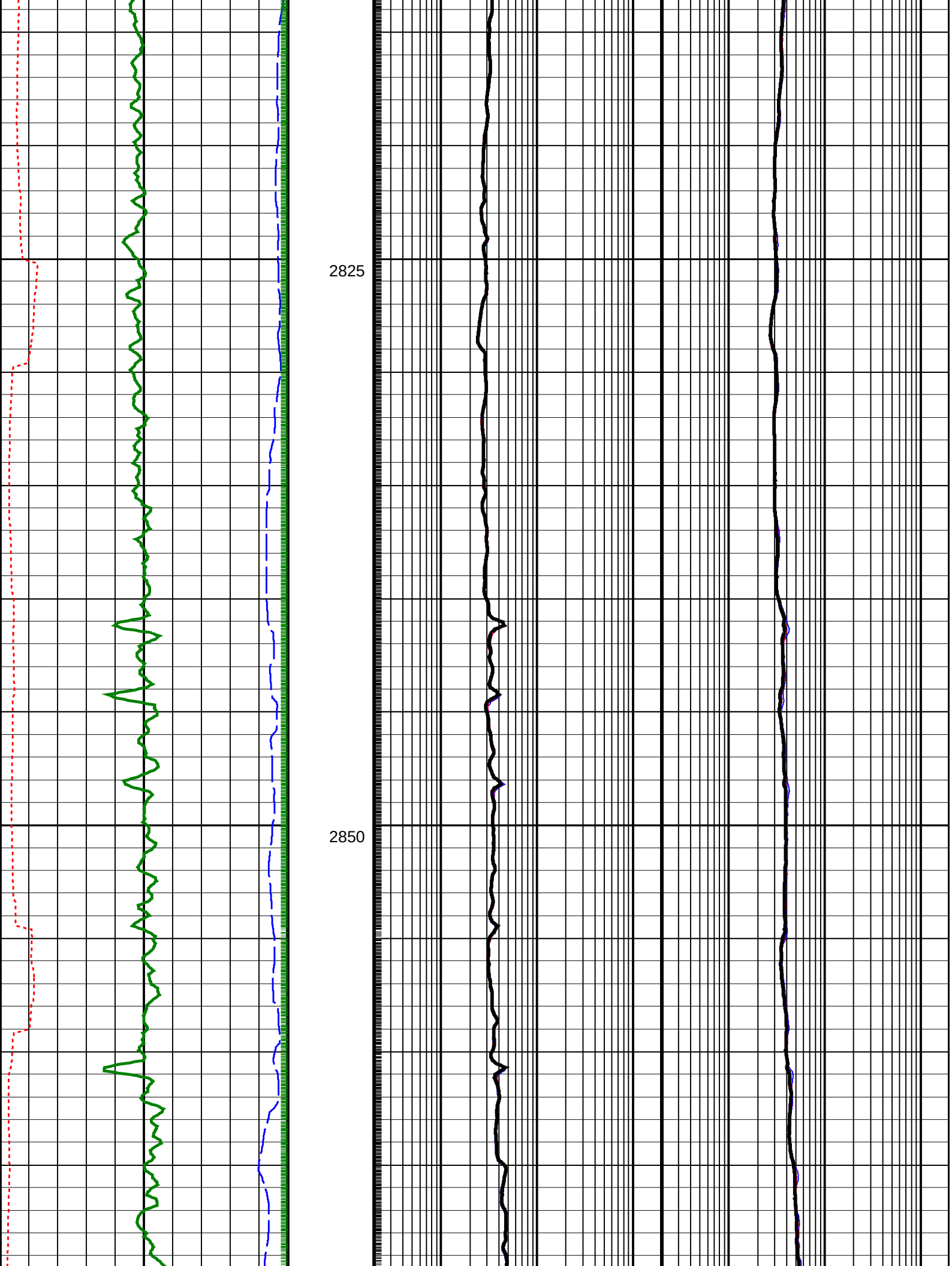
P16H
P22H
P28H
P34H
P40H
A16H
A22H
A28H
A34H
A40H
Run−3
Casing Shoe @ 2800m MD
2800
Run−4
RES splice
RES splice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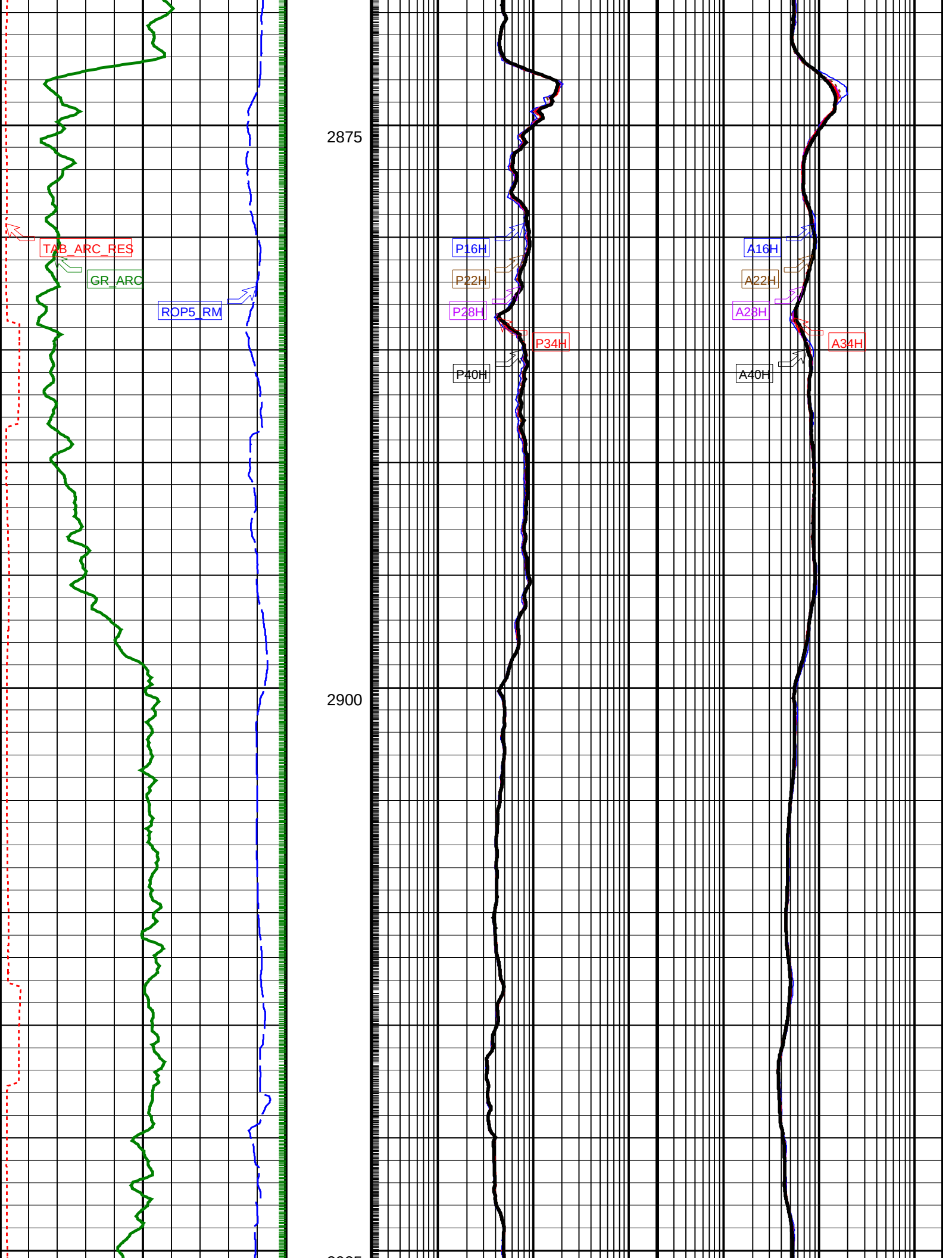
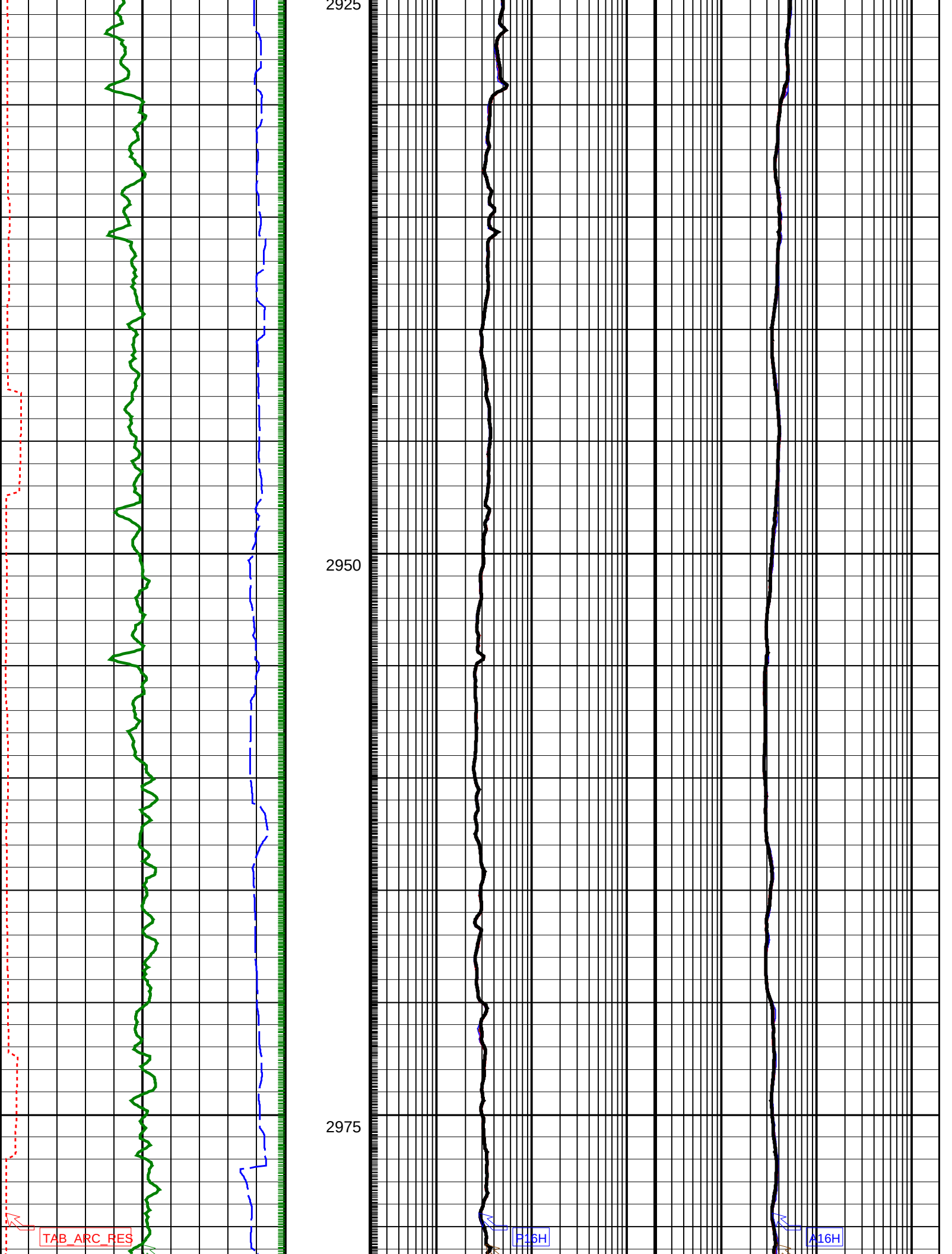

2875
2900
TAB_ARC_RES
GR_ARC
ROP5_RM
P16H
P22H
P28H
P34H
P40H
A16H
A22H
A28H
A34H
A40H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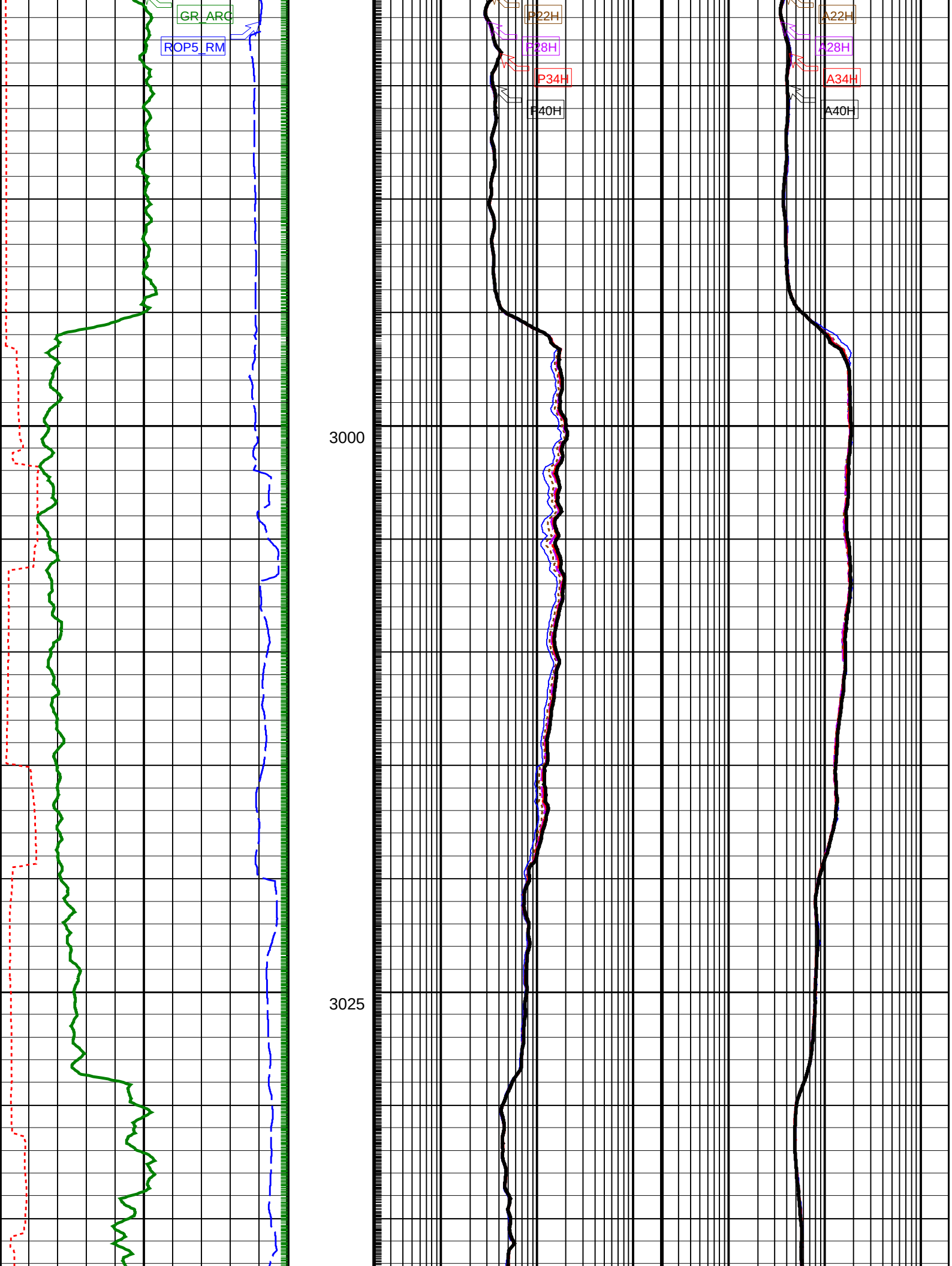
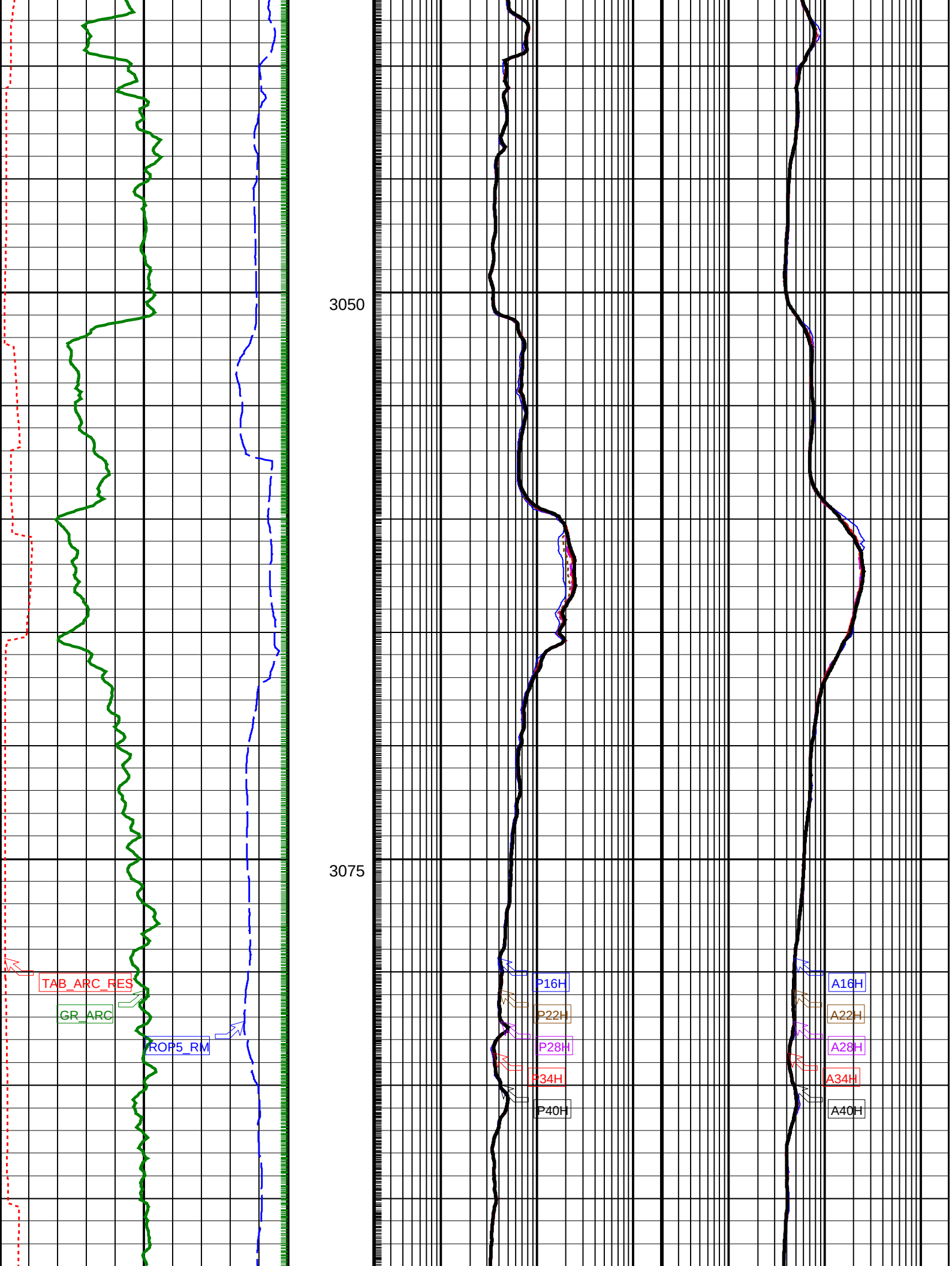
P16H
A16H


GR_ARC
ROP5_RM
P22H
P28H
P34H
P40H
A22H
A28H
A34H
A40H
3000
3025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GR_ARC
ROP5_RM
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P22H
P28H
P34H
P40H
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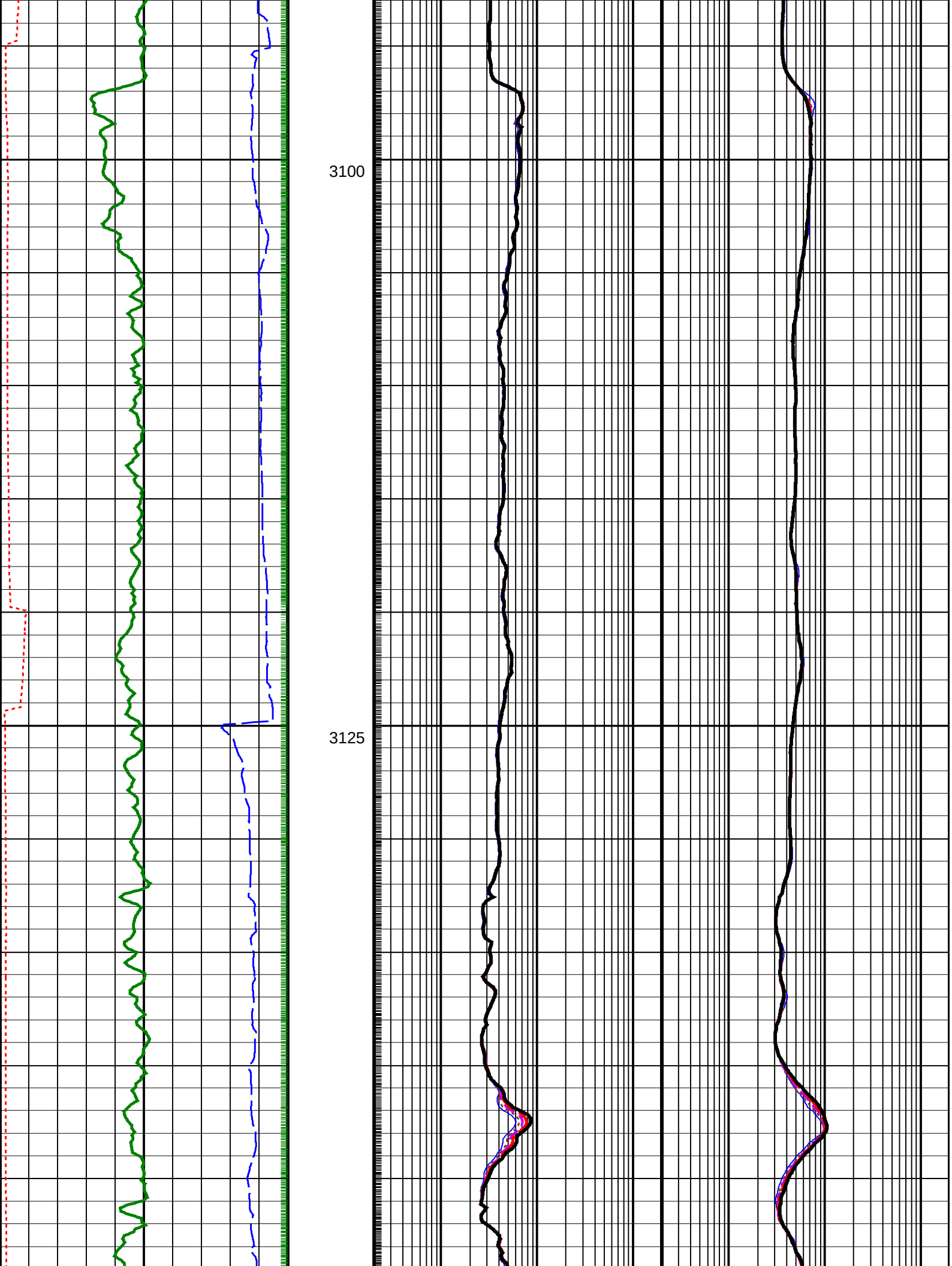
A28H
A34H
A40H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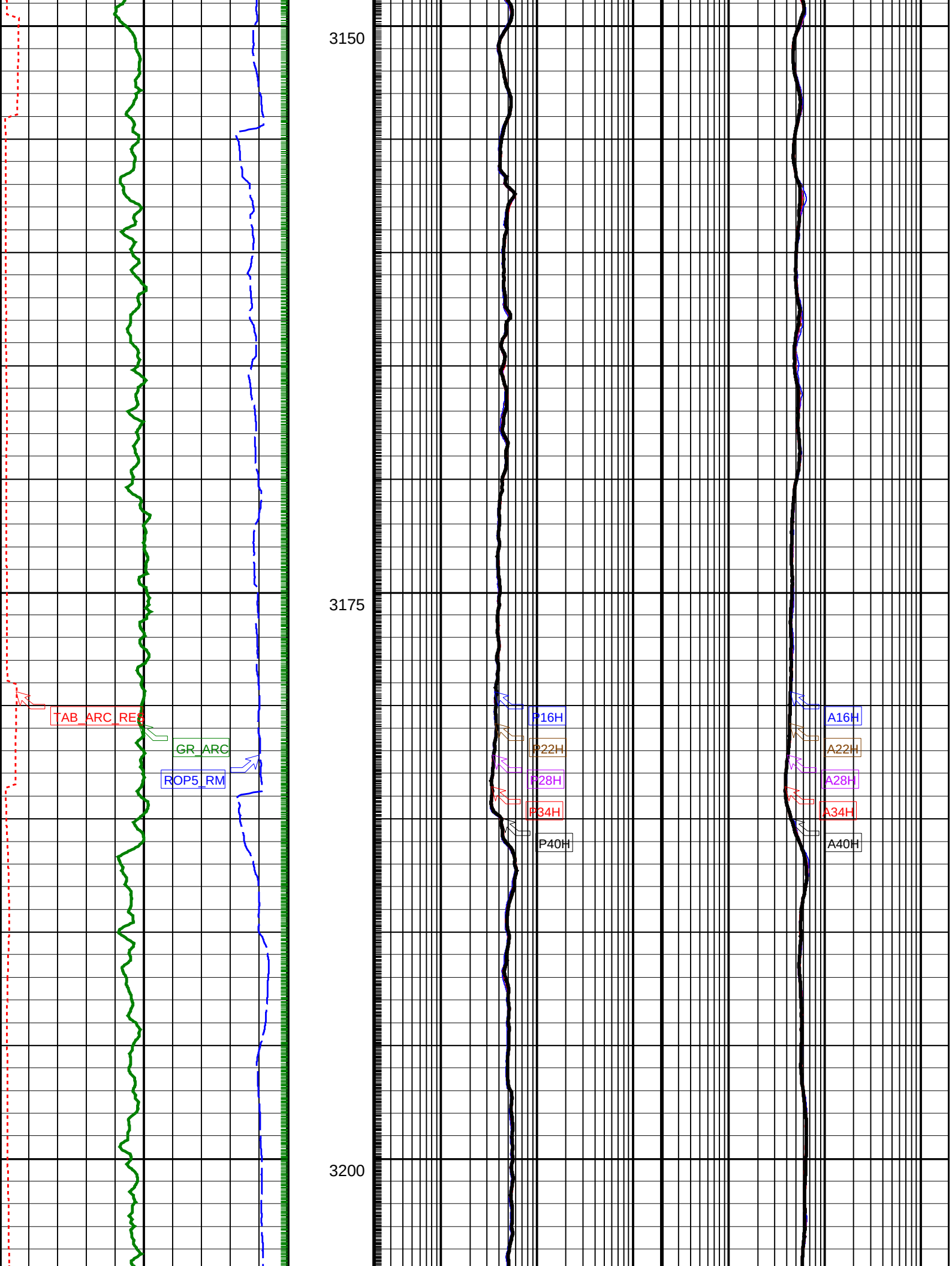
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3175
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ROP5_RM
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P22H
P28H
P34H
P40H
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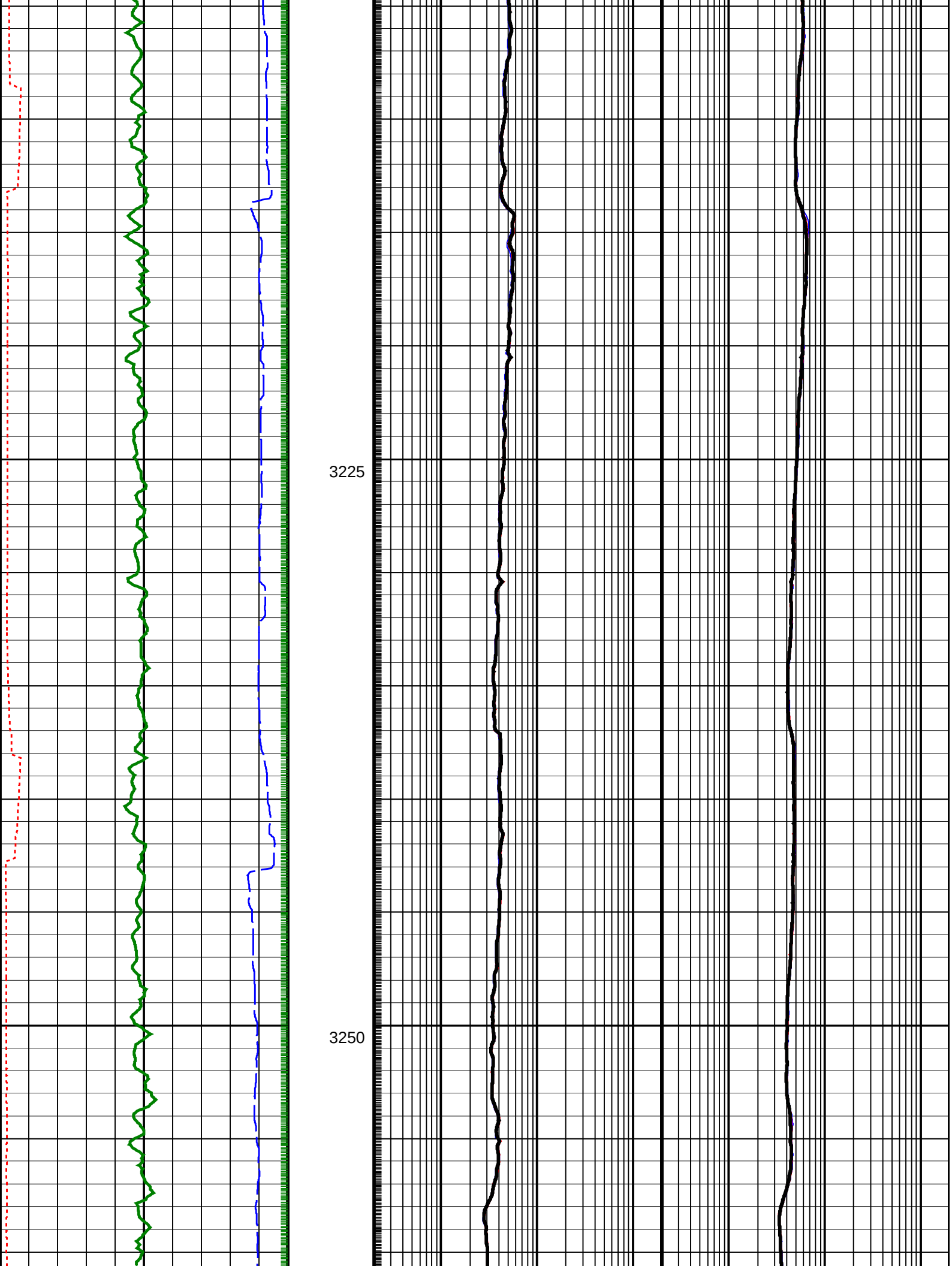
A22H
A28H
A34H
A40H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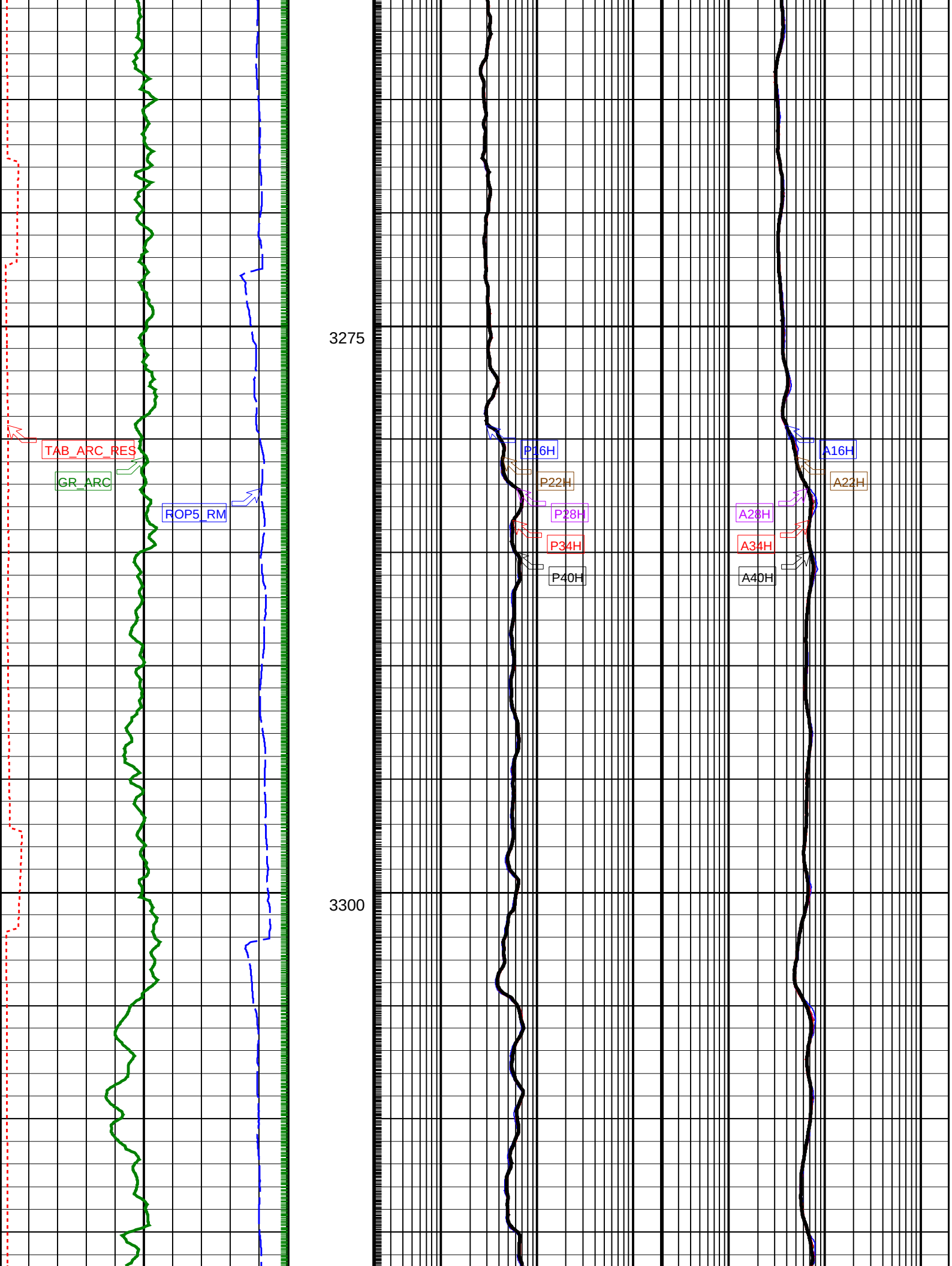
3275
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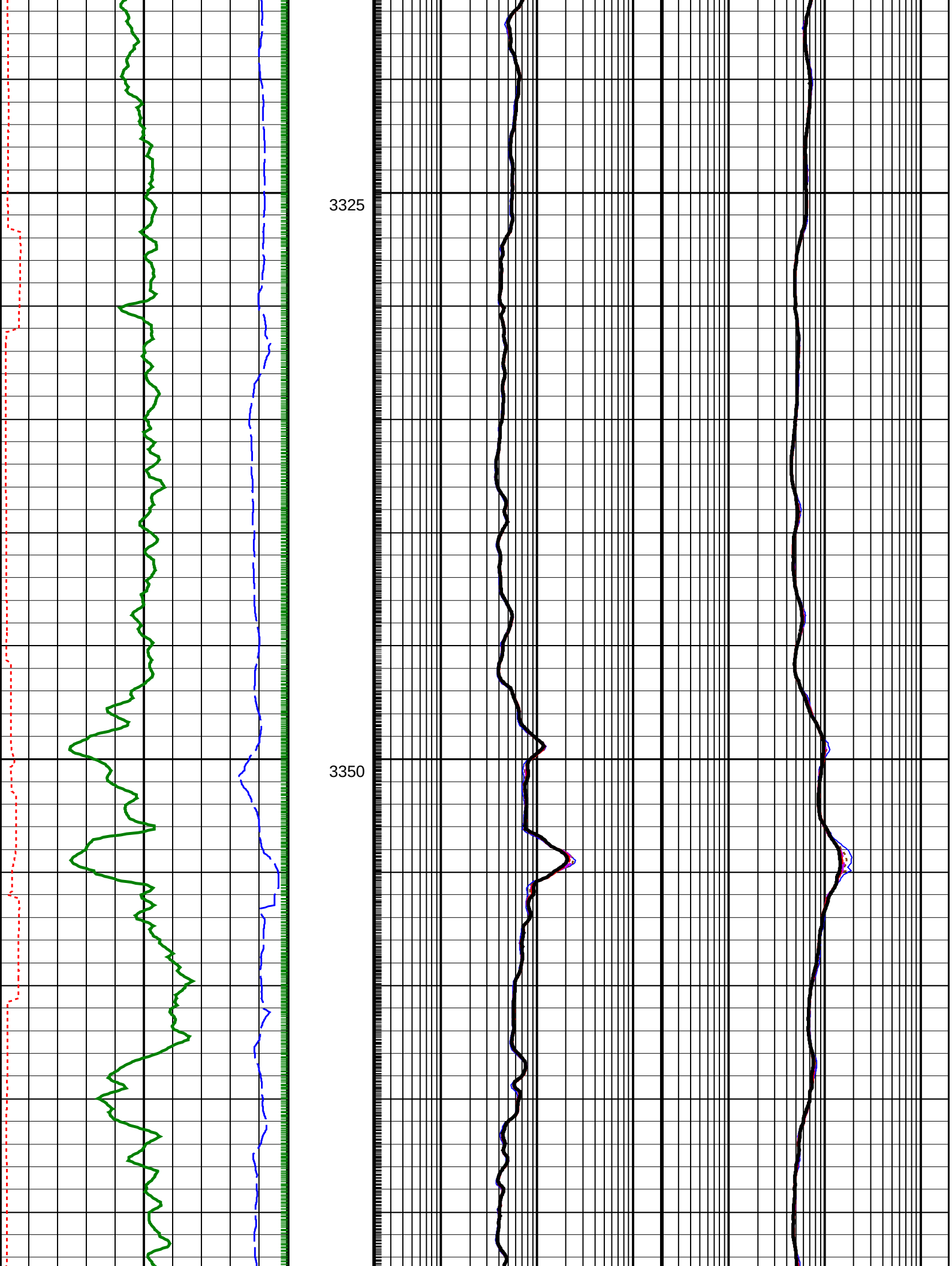
TAB_ARC_RES
GR_ARC
ROP5_RM
P16H
P22H
P28H
P34H
P40H
A16H
A22H
A28H
A34H
A40H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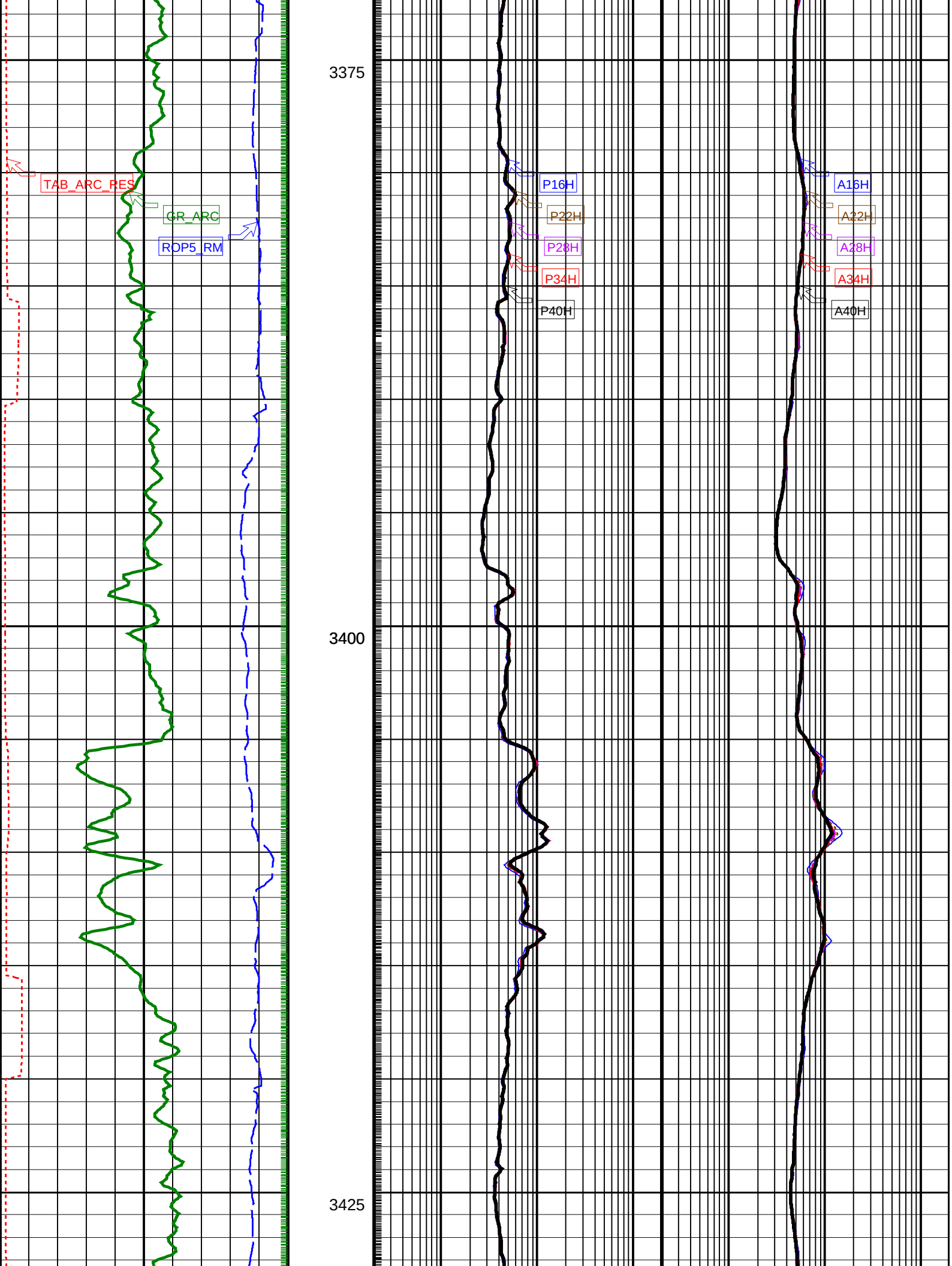
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GR_ARC
ROP5_RM
3375
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3425
P16H
P22H
P28H
P34H
P40H
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A22H
A28H
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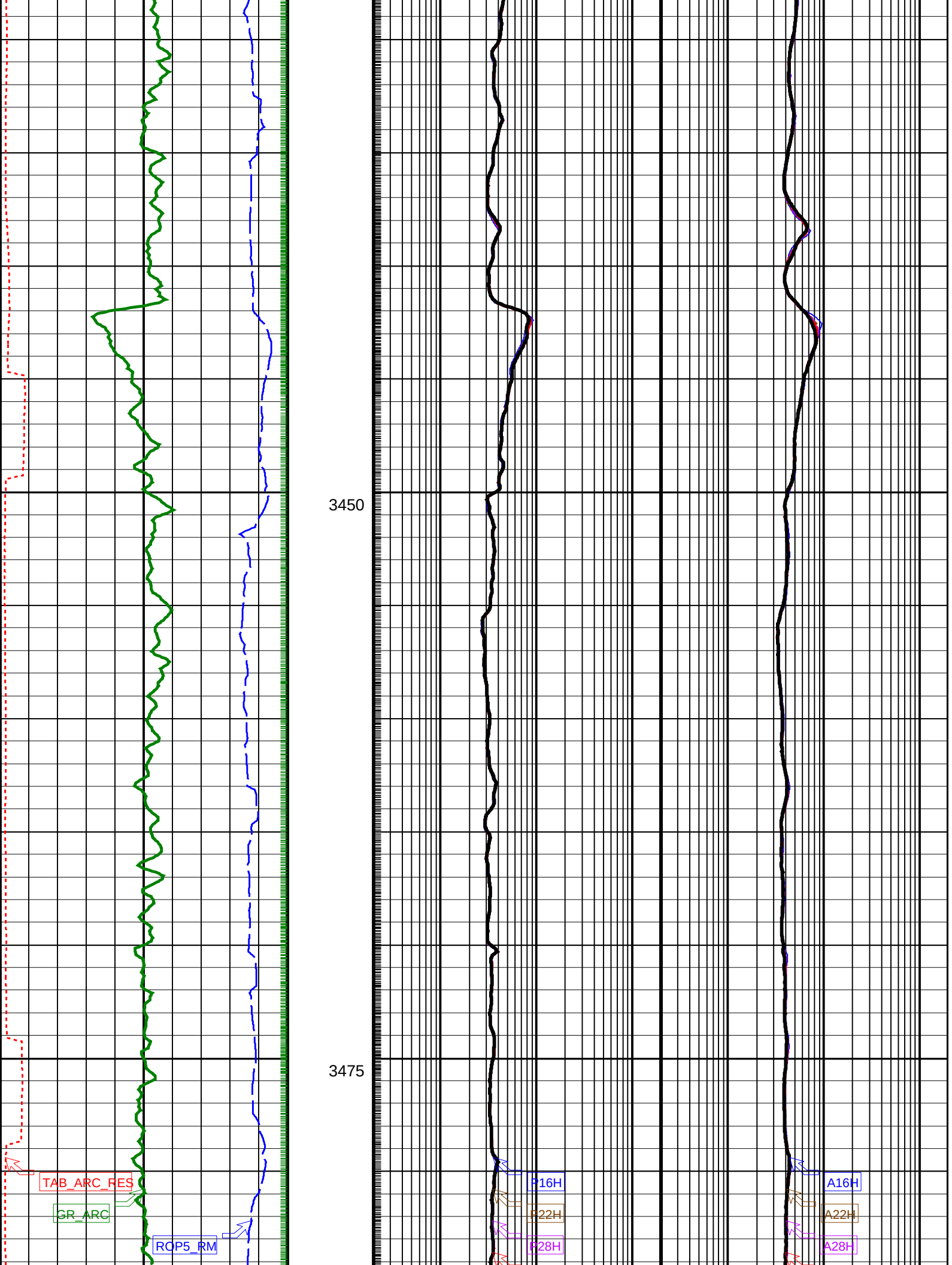
A40H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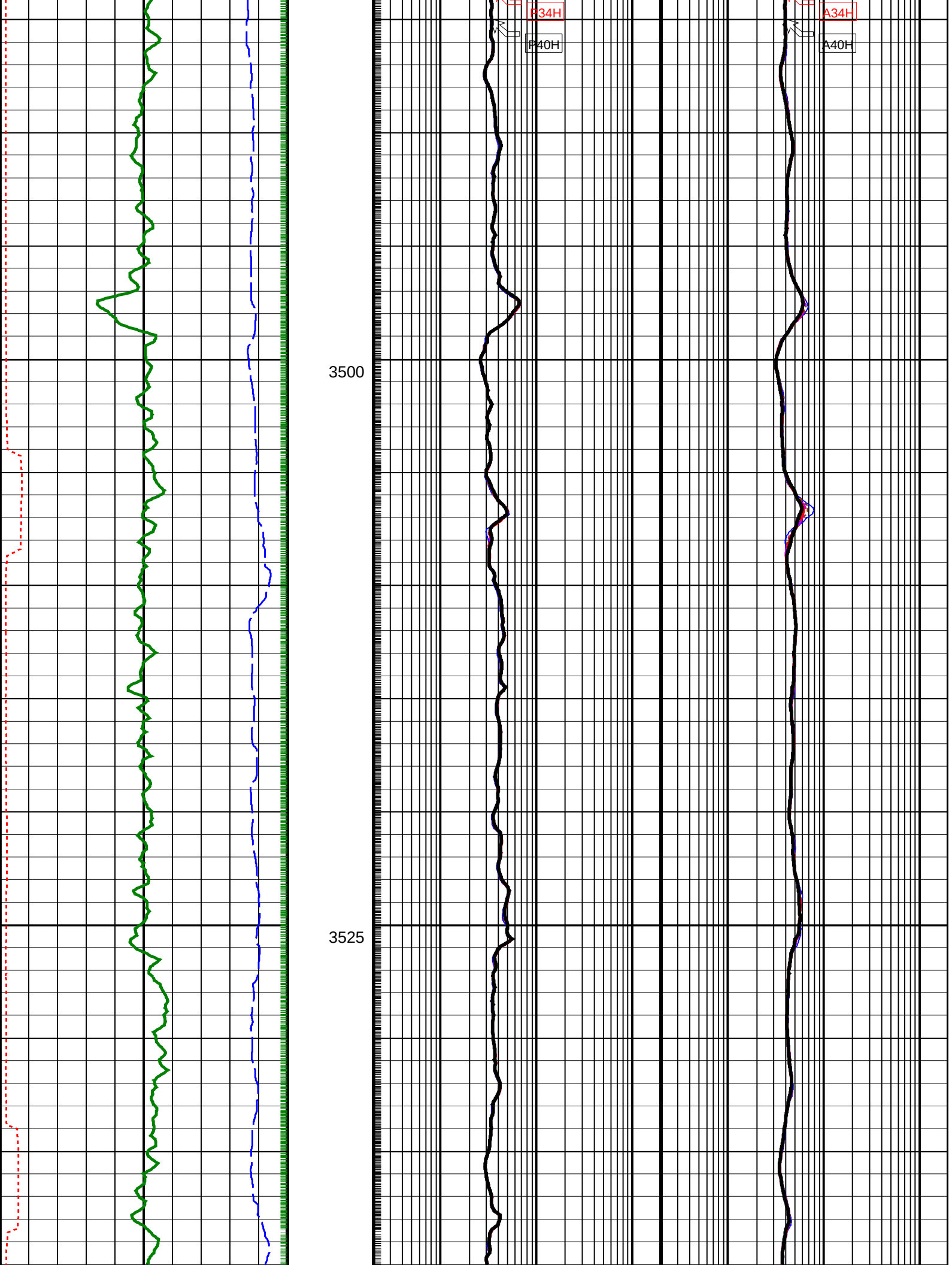
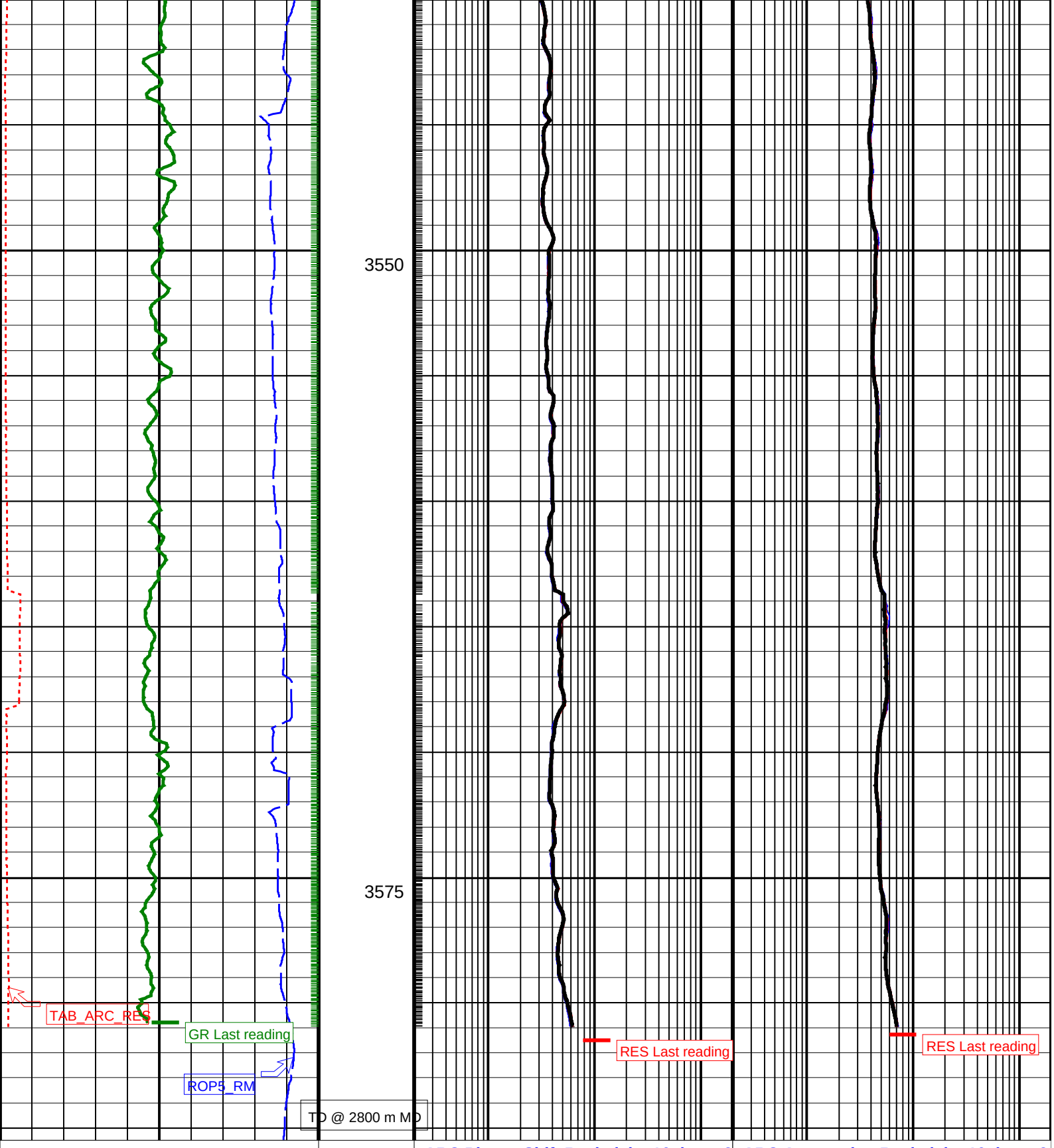
GR_ARC
ROP5_RM
P16H
P22H
P28H
A16H
A22H
A28H


P34H
P40H
A34H
A40H
3500
3525



ARC Gamma Ray (GR_ARC)
0 (GAPI) 200

ARC Resistivity Time After Bit (TAB_ARC_RES)
0 (HR) 10

Rate of Penetration, Averaged over Last 5ft (ROP5_RM)
200 (M/HR) 0

ARC Phase−Shift Resistivity 16−in. at 2 MHz (P16H)
0.2 (OHMM) 200

ARC Phase−Shift Resistivity 22−in. at 2 MHz (P22H)
0.2 (OHMM) 200

ARC Phase−Shift Resistivity 28−in. at 2 MHz (P28H)
0.2 (OHMM) 200

ARC Phase−Shift Resistivity 34−in. at 2

ARC Attenuation Resistivity 16−in. at 2 MHz (A16H)
0.2 (OHMM) 200

ARC Attenuation Resistivity 22−in. at 2 MHz (A22H)
0.2 (OHMM) 200

ARC Attenuation Resistivity 28−in. at 2 MHz (A28H)
0.2 (OHMM) 200

ARC Attenuation Resistivity 34−in. at 2

	MHz (P34H)			MHz (A34H)	
0.2	(OHMM)	200	0.2	(OHMM)	200
	ARC Phase−Shift Resistivity 40−in. at 2 MHz (P40H)			ARC Attenuation Resistivity 40−in. at 2 MHz (A40H)	
0.2	(OHMM)	200	0.2	(OHMM)	200

PIP SUMMARY

ARC Gamma Ray Samples

ARC Resistivity Samples

IDEAL Version: ID13_0C_14

IDF

6.75−in. Array Resistivity Compensated / Equipment Identification

Primary Equipment:		
Tool Name and Serial Number	ARC6 − BA	2056
ARC675 Calibration Status	AUTO −	

Master: 22−Dec−2008 13:17

6.75−in. Array Resistivity Compensated Calibration

Resistivity: Air

Phase	Phase−Shift T1	Value	Phase	Phase−Shift T2	Value	Phase	Phase−Shift T3	Value
Master		0.8546	Master		−0.8010	Master		0.7773
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)	−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)	−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)
Phase	Phase−Shift T4	Value	Phase	Phase−Shift T5	Value	Phase	Phase−Shift T1 at 400KHz	Value
Master		−0.8386	Master		0.7520	Master		−0.1963
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)	−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)	−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)
Phase	Phase−Shift T2 at 400KHz	Value	Phase	Phase−Shift T3 at 400KHz	Value	Phase	Phase−Shift T4 at 400KHz	Value
Master		0.1349	Master		−0.1704	Master		0.1058
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)	−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)	−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)
Phase	Phase−Shift T5 at 400KHz	Value						
Master		−0.2120						
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)						

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6.75−in. Array Resistivity Compensated Calibration

Resistivity: Air

Phase	Attenuation T1	Value	Phase	Attenuation T2	Value	Phase	Attenuation T3	Value
Master		9.556	Master		5.411	Master		6.173
6.500 (Minimum)	8.500 (Nominal)	10.50 (Maximum)	4.500 (Minimum)	6.500 (Nominal)	8.500 (Maximum)	2.500 (Minimum)	4.500 (Nominal)	6.500 (Maximum)
Phase	Attenuation T4	Value	Phase	Attenuation T5	Value	Phase	Attenuation T1 at 400KHz	Value
Master		3.310	Master		4.722	Master		9.527
2.600 (Minimum)	4.600 (Nominal)	6.600 (Maximum)	1.600 (Minimum)	3.600 (Nominal)	5.600 (Maximum)	6.500 (Minimum)	8.500 (Nominal)	10.50 (Maximum)
Phase	Attenuation T2 at 400KHz	Value	Phase	Attenuation T3 at 400KHz	Value	Phase	Attenuation T4 at 400KHz	Value
Master		5.448	Master		6.134	Master		3.337
4.500 (Minimum)	6.500 (Nominal)	8.500 (Maximum)	2.500 (Minimum)	4.500 (Nominal)	6.500 (Maximum)	2.600 (Minimum)	4.600 (Nominal)	6.600 (Maximum)
Phase	Attenuation T5 at 400KHz	Value						
Master		4.697						
1.600 (Minimum)	3.600 (Nominal)	5.600 (Maximum)						

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6.75−in. Array Resistivity Compensated Calibration

Gamma Ray: Blanket		
Phase	Gamma ray factor (equals Calibration Gain multiplied by API Gain Factor) CPS	Value
Master		5.261
2.780 (Minimum)	4.800 (Nominal)	6.000 (Maximum)

SCHLUMBERGER

Survey report 14-Jan-2009 10:12:39

Client.....: Beach Petroleum Ltd
Field.....: Fermat

Well.....: Fermat-1
Job number.....: 08ASQ0034
Engineer.....: Joshua Seevaratnam

West Triton.....: West Triton
State:.....: Victoria

Spud date.....: 13-Dec-2008
Last survey date.....: 14-Jan-09
Total accepted surveys...: 104
MD of first survey.....: 0.00 m
MD of last survey.....: 3585.00 m

----- Survey calculation methods-----
Method for positions.....: Minimum curvature
Method for DLS.....: Mason & Taylor

----- Depth reference -----
Permanent datum.....: Mean Sea Level
Depth reference.....: Driller's Depth
GL above permanent.....: -38.00 m
KB above permanent.....: 42.85 m
DF above permanent.....: 42.85 m

----- Vertical section origin----
Latitude (+N/S-).....: 0.00 m
Departure (+E/W-).....: 0.00 m

----- Platform reference point----
Latitude (+N/S-).....: 0.00 m
Departure (+E/W-).....: 0.00 m

Azimuth from Vsect Origin to target: 0.00 degrees

----- Geomagnetic data -----
Magnetic model.....: BGGM version 2008
Magnetic date.....: 15-Dec-2008
Magnetic field strength..: 1214.44 HCNT
Magnetic dec (+E/W-).....: 9.87 degrees
Magnetic dip.....: -69.62 degrees

----- MWD survey Reference Criteria ---
Reference G.....: 1000.02 mGal
Reference H.....: 1214.44 HCNT
Reference Dip.....: -69.62 degrees
Tolerance of G.....: (+/-) 2.50 mGal
Tolerance of H.....: (+/-) 6.00 HCNT
Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections -----
Magnetic dec (+E/W-).....: 9.87 degrees
Grid convergence (+E/W-).: -0.03 degrees
Total az corr (+E/W-).....: 9.90 degrees
(Total az corr = magnetic dec - grid conv)
Survey Correction Type ...:
I=Sag Corrected Inclination
M=Schlumberger Magnetic Correction
S=Shell Magnetic Correction
F=Failed Axis Correction
R=Magnetic Resonance Tool Correction
D=Dmag Magnetic Correction

Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 10m)	Srvy tool type	Tool Corr (deg)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIP	None
2	167.75	1.24	1.78	167.75	167.74	1.81	1.81	0.06	1.82	1.78	0.07	PUP	None
3	197.16	0.28	58.77	29.41	197.14	2.17	2.17	0.13	2.17	3.37	0.38	PUP	None
4	256.53	0.60	153.30	59.37	256.51	1.97	1.97	0.39	2.01	11.25	0.11	PUP	None
5	286.11	2.77	188.85	29.58	286.08	1.12	1.12	0.35	1.18	17.37	0.78	PUP	None
6	315.55	1.66	227.88	29.44	315.50	0.13	0.13	-0.07	0.15	330.76	0.62	PUP	None
7	345.27	0.27	15.10	29.72	345.21	-0.09	-0.09	-0.38	0.39	256.86	0.64	PUP	None
8	374.62	0.25	25.51	29.35	374.56	0.04	0.04	-0.33	0.33	276.37	0.02	PUP	None
9	404.16	1.88	211.90	29.54	404.10	-0.32	-0.32	-0.56	0.64	240.47	0.72	PUP	None
10	463.95	0.32	269.03	59.79	463.88	-1.15	-1.15	-1.24	1.70	227.20	0.29	PUP	None
11	493.39	0.43	249.60	29.44	493.32	-1.19	-1.19	-1.43	1.86	230.18	0.06	PUP	None
12	523.07	0.44	347.74	29.68	523.00	-1.12	-1.12	-1.56	1.92	234.31	0.22	PUP	None
13	552.74	0.22	270.06	29.67	552.67	-1.01	-1.01	-1.64	1.92	238.42	0.15	PUP	None
14	582.42	0.09	59.69	29.68	582.35	-1.00	-1.00	-1.68	1.95	239.28	0.10	PUP	None
15	611.99	0.51	339.54	29.57	611.92	-0.86	-0.86	-1.70	1.91	243.17	0.17	PUP	None
16	641.40	0.19	327.69	29.41	641.32	-0.70	-0.70	-1.77	1.91	248.54	0.11	PUP	None
17	670.88	0.49	288.55	29.48	670.80	-0.62	-0.62	-1.92	2.02	252.21	0.12	PUP	None
18	700.49	0.33	247.43	29.61	700.41	-0.61	-0.61	-2.12	2.20	253.98	0.11	PUP	None
19	729.55	0.46	275.90	29.06	729.47	-0.63	-0.63	-2.31	2.40	254.79	0.08	PUP	None
20	759.18	0.36	241.87	29.63	759.10	-0.66	-0.66	-2.51	2.60	255.28	0.09	PUP	None
21	788.76	0.65	163.00	29.58	788.68	-0.86	-0.86	-2.54	2.69	251.24	0.23	PUP	None
22	818.32	0.12	122.27	29.56	818.24	-1.04	-1.04	-2.47	2.68	247.14	0.19	PUP	None
23	848.13	0.24	67.63	29.81	848.05	-1.03	-1.03	-2.39	2.60	246.57	0.07	PUP	None
24	877.69	0.50	112.18	29.56	877.61	-1.06	-1.06	-2.21	2.45	244.38	0.13	PUP	None
25	906.92	0.33	214.11	29.23	906.84	-1.18	-1.18	-2.14	2.44	241.17	0.22	PUP	None
26	936.44	1.52	212.18	29.52	936.35	-1.58	-1.58	-2.39	2.87	236.60	0.40	PUP	None
27	966.55	2.74	216.55	30.11	966.44	-2.49	-2.49	-3.04	3.93	230.58	0.41	PUP	None
28	990.90	2.28	226.38	24.35	990.77	-3.30	-3.30	-3.73	4.98	228.55	0.26	PUP	None
29	1023.76	2.63	224.84	32.86	1023.60	-4.28	-4.28	-4.74	6.39	227.89	0.11	PUP	None
30	1053.62	2.63	224.67	29.86	1053.43	-5.26	-5.26	-5.70	7.75	227.34	0.00	PUP	None

Seq # -	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 10m)	Srvy tool type	Tool Corr (deg)
31	1083.09	2.60	225.86	29.47	1082.87	-6.20	-6.20	-6.66	9.10	227.03	0.02	PUP	None
32	1112.27	2.75	224.69	29.18	1112.02	-7.16	-7.16	-7.62	10.46	226.80	0.05	PUP	None
33	1141.71	2.61	223.95	29.44	1141.42	-8.14	-8.14	-8.59	11.83	226.51	0.05	PUP	None
34	1171.39	2.66	223.44	29.68	1171.07	-9.13	-9.13	-9.53	13.20	226.22	0.02	PUP	None
35	1200.78	2.64	223.80	29.39	1200.43	-10.12	-10.12	-10.47	14.56	225.98	0.01	PUP	None
36	1230.79	2.72	225.15	30.01	1230.41	-11.12	-11.12	-11.45	15.96	225.85	0.03	PUP	None
37	1288.88	2.77	225.56	58.09	1288.43	-13.07	-13.07	-13.43	18.74	225.77	0.01	PUP	None
38	1318.86	2.69	226.89	29.98	1318.38	-14.06	-14.06	-14.46	20.17	225.81	0.03	PUP	None
39	1407.48	2.91	229.04	88.62	1406.89	-16.95	-16.95	-17.68	24.49	226.19	0.03	PUP	None
40	1436.37	2.94	228.54	28.89	1435.74	-17.93	-17.93	-18.79	25.97	226.34	0.01	PUP	None
41	1465.90	3.02	227.97	29.53	1465.23	-18.95	-18.95	-19.93	27.50	226.45	0.03	PUP	None
42	1495.44	3.02	228.27	29.54	1494.73	-19.99	-19.99	-21.09	29.06	226.54	0.01	PUP	None
43	1525.13	3.06	228.31	29.69	1524.38	-21.03	-21.03	-22.27	30.63	226.63	0.01	PUP	None
44	1554.71	3.12	227.55	29.58	1553.92	-22.10	-22.10	-23.45	32.22	226.69	0.02	PUP	None
45	1584.40	3.16	227.33	29.69	1583.56	-23.20	-23.20	-24.65	33.85	226.73	0.01	PUP	None
46	1614.18	3.15	227.26	29.78	1613.30	-24.31	-24.31	-25.85	35.49	226.75	0.00	PUP	None
47	1643.45	3.22	227.15	29.27	1642.52	-25.42	-25.42	-27.04	37.12	226.77	0.02	PUP	None
48	1732.53	3.23	229.06	89.08	1731.46	-28.77	-28.77	-30.77	42.12	226.93	0.01	PUP	None
49	1761.71	3.31	229.32	29.18	1760.59	-29.85	-29.85	-32.03	43.79	227.02	0.03	PUP	None
50	1791.33	3.27	229.40	29.62	1790.17	-30.96	-30.96	-33.32	45.49	227.11	0.01	PUP	None
51	1820.98	3.35	229.44	29.65	1819.77	-32.07	-32.07	-34.62	47.20	227.19	0.03	PUP	None
52	1880.19	3.46	227.97	59.21	1878.87	-34.40	-34.40	-37.27	50.71	227.29	0.02	PUP	None
53	1939.47	3.51	227.37	59.28	1938.04	-36.82	-36.82	-39.93	54.32	227.32	0.01	PUP	None
54	2028.16	3.39	229.51	88.69	2026.57	-40.36	-40.36	-43.92	59.65	227.42	0.02	PUP	None
55	2057.35	3.37	231.70	29.19	2055.71	-41.46	-41.46	-45.25	61.37	227.51	0.04	PUP	None
56	2086.92	3.34	227.82	29.57	2085.23	-42.57	-42.57	-46.57	63.10	227.57	0.08	PUP	None
57	2116.75	3.44	227.04	29.83	2115.01	-43.77	-43.77	-47.87	64.86	227.56	0.04	PUP	None
58	2146.40	3.29	227.47	29.65	2144.61	-44.95	-44.95	-49.15	66.60	227.56	0.05	PUP	None
59	2175.52	3.42	228.06	29.12	2173.68	-46.09	-46.09	-50.41	68.31	227.56	0.05	PUP	None
60	2235.00	3.46	227.38	59.48	2233.05	-48.49	-48.49	-53.05	71.87	227.57	0.01	PUP	None

Seq # -	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 10m)	Srvy tool type	Tool Corr (deg)
61	2264.44	3.46	226.56	29.44	2262.44	-49.71	-49.71	-54.35	73.65	227.56	0.02	PUP	None
62	2323.60	3.26	226.76	59.16	2321.49	-52.09	-52.09	-56.87	77.12	227.51	0.03	PUP	None
63	**2382.70**	**3.36**	**228.47**	**59.10**	**2380.49**	**-54.39**	**-54.39**	**-59.39**	**80.53**	**227.52**	**0.02**	**PUP**	**None**
64	**2412.00**	**2.64**	**231.24**	**29.30**	**2409.75**	**-55.38**	**-55.38**	**-60.56**	**82.06**	**227.56**	**0.25**	**DMAG**	**None**
65	2441.90	1.53	213.40	29.90	2439.63	-56.14	-56.14	-61.32	83.14	227.52	0.43	DMAG	None
66	2471.60	0.60	128.24	29.70	2469.33	-56.57	-56.57	-61.41	83.50	227.35	0.54	DMAG	None
67	2500.84	1.41	69.21	29.24	2498.57	-56.54	-56.54	-60.96	83.14	227.15	0.42	DMAG	None
68	2530.68	2.34	71.20	29.84	2528.39	-56.21	-56.21	-60.04	82.24	226.89	0.31	DMAG	None
69	2559.85	2.34	72.69	29.17	2557.54	-55.84	-55.84	-58.90	81.17	226.53	0.02	DMAG	None
70	2589.92	2.25	73.44	30.07	2587.58	-55.49	-55.49	-57.75	80.09	226.15	0.03	DMAG	None
71	2648.85	2.04	82.16	58.93	2646.47	-55.02	-55.02	-55.60	78.22	225.30	0.07	DMAG	None
72	2678.97	2.05	86.30	30.12	2676.57	-54.91	-54.91	-54.54	77.39	224.81	0.05	DMAG	None
73	2708.38	2.63	86.65	29.41	2705.96	-54.84	-54.84	-53.34	76.50	224.21	0.20	DMAG	None
74	2737.95	2.75	86.68	29.57	2735.49	-54.75	-54.75	-51.95	75.48	223.50	0.04	DMAG	None
75	2767.46	3.28	73.47	29.51	2764.96	-54.47	-54.47	-50.44	74.24	222.80	0.29	DMAG	None
76	2783.95	3.22	72.34	16.49	2781.43	-54.20	-54.20	-49.54	73.43	222.43	0.05	DMAG	None
77	2816.25	3.18	78.94	32.30	2813.68	-53.75	-53.75	-47.80	71.93	221.65	0.11	PUP	None
78	2845.87	3.21	82.42	29.62	2843.25	-53.48	-53.48	-46.17	70.66	220.80	0.07	PUP	None
79	2875.23	3.12	85.48	29.36	2872.57	-53.31	-53.31	-44.56	69.48	219.89	0.07	PUP	None
80	2904.72	3.04	88.56	29.49	2902.01	-53.23	-53.23	-42.98	68.41	218.92	0.06	PUP	None
81	2934.24	2.89	94.43	29.52	2931.49	-53.27	-53.27	-41.45	67.50	217.89	0.11	PUP	None
82	2963.69	2.77	103.77	29.45	2960.91	-53.49	-53.49	-40.02	66.81	216.80	0.16	PUP	None
83	2992.79	2.65	116.56	29.10	2989.98	-53.96	-53.96	-38.74	66.43	215.67	0.21	PUP	None
84	3022.28	2.80	118.01	29.49	3019.43	-54.61	-54.61	-37.49	66.24	214.47	0.06	PUP	None
85	3051.99	2.87	121.90	29.71	3049.11	-55.34	-55.34	-36.22	66.14	213.20	0.07	PUP	None
86	3081.57	2.92	130.18	29.58	3078.65	-56.22	-56.22	-35.01	66.23	211.92	0.14	PUP	None
87	3111.25	3.10	139.57	29.68	3108.29	-57.32	-57.32	-33.92	66.60	210.62	0.18	PUP	None
88	3140.79	3.39	147.97	29.54	3137.78	-58.66	-58.66	-32.94	67.28	209.31	0.19	PUP	None
89	3170.28	3.47	152.03	29.49	3167.22	-60.19	-60.19	-32.05	68.19	208.04	0.09	PUP	None
90	3199.75	3.55	146.04	29.47	3196.63	-61.74	-61.74	-31.13	69.14	206.76	0.13	PUP	None

[(c)2009 IDEAL ID13_0C_14]
SCHLUMBERGER Survey Report 14-Jan-2009 10:12:39

Seq # -	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 10m)	Srvy tool type	Tool Corr (deg)
91	3229.40	3.69	145.49	29.65	3226.22	-63.28	-63.28	-30.07	70.07	205.42	0.05	PUP	None
92	3259.28	3.79	146.43	29.88	3256.04	-64.90	-64.90	-28.98	71.08	204.06	0.04	PUP	None
93	3288.90	3.91	148.34	29.62	3285.59	-66.57	-66.57	-27.91	72.19	202.75	0.06	PUP	None
94	3318.10	4.02	150.54	29.20	3314.72	-68.31	-68.31	-26.89	73.41	201.48	0.06	PUP	None
95	3347.40	4.21	152.14	29.30	3343.95	-70.16	-70.16	-25.88	74.78	200.25	0.08	PUP	None
96	3376.97	4.39	156.43	29.57	3373.43	-72.15	-72.15	-24.92	76.34	199.05	0.12	PUP	None
97	3406.76	4.66	160.95	29.79	3403.13	-74.34	-74.34	-24.07	78.14	197.94	0.15	PUP	None
98	3436.14	5.16	162.03	29.38	3432.40	-76.73	-76.73	-23.27	80.18	196.87	0.17	PUP	None
99	3465.57	5.58	159.59	29.43	3461.70	-79.33	-79.33	-22.36	82.42	195.74	0.16	PUP	None
100	3495.57	6.02	157.91	30.00	3491.55	-82.15	-82.15	-21.26	84.86	194.51	0.16	PUP	None

101	3525.24	6.42	158.39	29.67	3521.05	-85.14	-85.14	-20.07	87.47	193.26	0.14	PUP	None
102	3555.17	6.99	159.59	29.93	3550.77	-88.40	-88.40	-18.81	90.38	192.02	0.20	PUP	None
103	3569.38	7.28	160.29	14.21	3564.87	-90.06	-90.06	-18.21	91.88	191.43	0.21	PUP	None
104	3585.00	7.28	160.29	15.62	3580.37	-91.92	-91.92	-17.54	93.58	190.80	0.00	Projection to TD	

Company: **Beach Petroleum Ltd**

Schlumberger

Well: **Fermat−1**

Field: **Fermat**

Rig: **West Triton**

State: **Victoria**

VISION Resistivity
1:200 Measured Depth
Recorded Mode Log