Schlumberger

Company: **ESSO Australia Pty Ltd**

Field Print

Well: **FTA A10A**

Field: **Fortescue**

Rig: **ISDL 175** State: **Victoria**

VISION Service
1:200 Measured Depth
Recorded Mode Log

Rig: ISDL 175 | Field: Fortescue | Location: Bass Strait | Well: FTA A10A | Company: ESSO Australia Pty Ltd

Location

Total depth:	4580.0 m
Spud date:	14−May−07
Runs:	3 To 3

Elevation

K.B.	Top Drive
G.L.	−69.0 m
D.F.	42.5 m

Permanent datum:	Mean Sea Level	Elev.:	0.0 m
Log measured from:	Drill Floor	42.5 m	above Perm. datum
Depth reference:	Driller's Depth		

Service Order no.	E 611592.480m	Longitude	Latitude
07ASQ0015	N 5748242.460m	E 148°16'41.149"	S 38°24'25.529"

Depth logged:	2985.0 m To 4570.3 m	Mag decl:	13.209 deg.	Other services:	
Date logged:	20−May−07 To 25−May−07	Mag dip:	−68.868 deg.	See Remarks	

Bore hole record

Hole size	from	to
8.5 in.	2785.0 m	4580.0 m

Casing record

Size	Density	from	to
9−5/8 in.	43.8 lb/ft	20.3 m	Whipstock

Mud record

Type	from	to
Accolade SBM	2785.0 m	4580.0 m

Borehole deviation record

Min	Max	from	to
52.9 deg.	70.5 deg.	2825.0 m	4580.0 m

Surface equipment

Unit	ESSO Office Cabin
Depth system	PDA

Software record

IDEAL Wis	ID12_0c_09		
SPM	hspm12_0c−04		
LWD	See Remarks		
MWD	V9.1C01		

Bit Run Summary

Run number		3
Bit size	in.	8.5
Bit start depth	m	2985.0
Bit end depth	m	4580.0
Top interval logged	m	2987.0
Bottom interval logged	m	4570.3
Begin log: time		22:24
Begin log: date		20−May−07
End log: time		22:45
End log: date		25−May−07
Mud data		
Depth	m	4580.0
Type		Accolade SBM
Mud weight	ppg	10.1
Solids	%	10.7
Chlorides	mg/L	48896
Rm	ohm.m@°C	N/A
Rmf	ohm.m@°C	N/A
Rmc	ohm.m@°C	N/A

Potassium	%	N/A									
Environmental data											
GR											
Mud weight	ppg	10.1									
Bit size	in.	8.5									
Resistivity											
Neutron porosity											
Hole Size	in.	8.5									
Mud weight	ppg	10.1									
Temperature	ºC	108.0									
Mud salinity	ppk	61.3									
Formation salinity		N/A									
Recording rate 1	SEC	5 (ADN)									
Recording rate 2	SEC	6 (ARC)									
Filtering GR		3 pts									
Filtering density		3 pts									
Filtering Neutron		3 pts									
Company representative		D.Bareswell	J.Bennett								
Schlumberger D&M Personnel		C.Skiba	M.Amarasena	A.Kohli	C.Soper	L.Muskett					

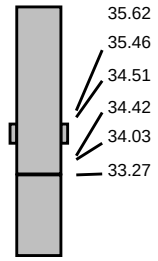
OTHER SERVICES FOR RUN 3	OTHER SERVICES FOR RUN	OTHER SERVICES FOR RUN
Directional Drilling Directional Surveys Annular Pressure & Temperature Shock & Vibrations		

REMARKS: RUN NUMBER 3	REMARKS: RUN NUMBER	REMARKS: RUN NUMBER
Depth is referenced to Driller's Depth. Gamma Ray is corrected for mud weight, tool size and bit size. Resistivity is borehole compensated and environmentally corrected. Neutron Porosity is corrected for the effects of borehole size (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 density of 2.71 g/cm3. Delta−T is borehole compensated. POOH upon reaching TD of FTA A10A.		

EQUIPMENT DESCRIPTION

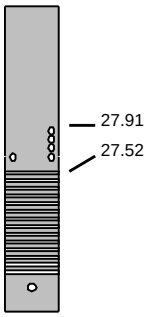
RUN 3	RUN	RUN
DOWNHOLE EQUIPMENT		

DOWNHOLE EQUIPMENT



6−3/4'' adnVISION*
DHS: V8.3
Blade OD: 8−1/4''
S/N: 373

37.34

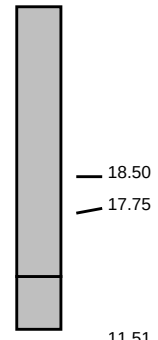


6−3/4'' sonicVISION*
DHS: V6.6B04
S/N: 42256

31.25

8−3/8'' ILS
S/N: OSS061160

23.68

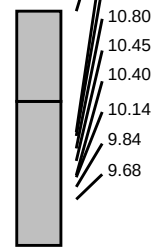


6−3/4'' TeleScope*
MDC: FA28
PMEC: AB−373
MDI: CA−1565
MVC: 282

22.85

8−3/8'' ILS
S/N: OSS070113

14.84



6−3/4'' arcVISION*
DHS: V9.3B13
S/N: FY68

13.84

6−3/4'' PowerDrive Xceed*
S/N: CRSC−111

7.92

8−1/2'' Reed−Hycalog PDC Bit
S/N: 2144575

0.26

Maximum string diameter 8−1/2 in.

All lengths in Metres

Variable Name	Variable Description	Run Name & Value
Run Number		3
General Information		
BHT_RM	Bottom Hole Temperature (RM)	108.000000
BSAL_RM	Mud Salinity (RM)	18.051043
BS_RM	Bit Size (RM)	8.500000
COEF_M	User Defined FEXP in Clean Sand	1.650000
C_WS	Overpressure correction to Sw and M	1.000000
FEXP	Formation Factor Exponent(RM)	2.000000
FNUM	Formation Factor Enumerator(RM)	1.000000
FPHI_RM	Formation Factor Porosity Source (RM)	XPLOT
MST_RM	Mud Sample temperature (RM)	20.000000
MW_RM	Mud Weight (RM)	10.150000
OBMF_RM	Oil Based Mud (RM)	YES
RHOF_RM	Mud Filtrate Density (RM)	1.000000
RHOM_RM	Matrix density (RM)	2.710000
RMS_RM	Resistivity of Mud Sample (RM)	1000.000000
RWA_COMP_M	Rwa computation model	BASIC
RWA_DEN_AD	Rwa Density Input ADN	RHOB
RWA_DEN_CD	Rwa Density Input CDN	RHOB
RWA_DEN_IN	Rwa Density Input	RHOB
RWA_FORM_M	Rwa computation formation model	CLASTIC
RWA_RES_IN	Rwa computation resistivity input	P34H
RWS_RM	Resistivity of Connate Water (RM)	1.000000
SHT_RM	Surface Hole Temperature (RM)	
TD_RM	Total Measured Depth (RM)	4580.000000
TWS_RM	Temperature of Connate Water (RM)	75.000000
VF_ILLI	Fraction of illite in shales	0.500000
VF_KAOL	Fraction of kaolinite in shales	0.500000
VF_MONT	Fraction of montmorillonite in shales	0.000000
XPDM_RM	Cross plot density porosity multiplier	0.675000
XPNM_RM	Cross plot neutron porosity multiplier	0.325000
ARC		
LWD_RM/STATION_FILE/PARAMETERStation Time-frame file name		Station
A12A	ARC Air Cal Attenuation From T1 at 2 MHz	9.000460
A14A	ARC Air Cal Attenuation From T1 at 400 KHz	8.989840
A22A	ARC Air Cal Attenuation From T2 at 2 MHz	5.945480
A24A	ARC Air Cal Attenuation From T2 at 400 KHz	5.961420
A32A	ARC Air Cal Attenuation From T3 at 2 MHz	5.634610
A34A	ARC Air Cal Attenuation From T3 at 400 KHz	5.614270
A42A	**ARC Air Cal Attenuation From T4 at 2 MHz**	**3.857180**
A44A	**ARC Air Cal Attenuation From T4 at 400 KHz**	**3.867080**
A52A	ARC Air Cal Attenuation From T5 at 2 MHz	4.191150
A54A	ARC Air Cal Attenuation From T5 at 400 KHz	4.181250
ABNT	Abnormal Transmitter Indicator	No_Tx_Failed
ADHS	ARC Down Hole Software Version	No_Tx_Failed
ANISO_COMP	Anisotropy Computation Option	YES
APICG	ARC5 Gamma Ray Gain Factor	1.050190
APIG	ARC Gamma Ray API Gain Factor	-1.000000
ATMP_ARC	ARC Select Temperature Channel	Annulus_Temp
ATRN	ARC Tool Run Number	5
ATSN	ARC Tool Serial Number	Annulus_Temp
AZMF	Formation DIP Azimuth	0.000000
BH_COMPUTE	Borehole Inversion Computation Option	YES
CALG	ARC Gamma Ray Cal Gain Factor	1.050190
CALI_SLCT_	ARC Caliper Selection	BITSIZE
CDPTH_ARC	Process Start Depth	100.000000
DIELEC_COM	Dielectric Computation Option	YES
DIPF	Formation DIP Angle	0.000000
ERRCT	Percentage Error Cutoff	4.500000
GRSH	GR Shale (Invasion Computation Cutoff)	1000.000000
HIGH_BLEND	High Resistivity Threshold for Blending	2.000000
INCLIN_B0	ARC Bias Constant (mg)	0.000000
INCLIN_B1	ARC Bias First-order Coefficient (mg/degC)	0.000000
INCLIN_B2	ARC Bias Secod-order Coeeficient (mg/degC)	0.000000
INCLIN_B3	ARC Bias Third-order Coeeficient (mg/degC)	0.000000
INCLIN_C0	ARC Current Scale Factor Constant (mA/g)	1.000000
INCLIN_C1	ARC Scale First-order Coeeficient (mA/g/degC)	0.000000
INCLIN_C2	ARC Scale Second-order Coeeficient (mA/g/degC)	0.000000
INCLIN_C3	ARC Scale Third-order Coeeficient (mA/g/degC)	0.000000
INVAS_COMP	Invasion Computation Option	YES
JSD_ARC	ARC Acquisition start date	YES
KPER	Potassium Concentration (RM)	0.000000
LOW_BLEND	Low Resistivity Threshold for Blending	1.000000
MSWS	ARC Wizard Model Switch Window	5.000000
MULTIEFFEC	Multi Effect Option	YES
P12A	ARC Air Cal Phase-Shift From T1 at 2 MHz	0.901520
P14A	ARC Air Cal Phase-Shift From T1 at 400 KHz	-0.312112
P22A	ARC Air Cal Phase-Shift From T2 at 2 MHz	-0.847696
P24A	ARC Air Cal Phase-Shift From T2 at 400 KHz	0.306136
P32A	ARC Air Cal Phase-Shift From T3 at 2 MHz	0.818240
P34A	ARC Air Cal Phase-Shift From T3 at 400 KHz	-0.298400
P42A	ARC Air Cal Phase-Shift From T4 at 2 MHz	-0.891928
P44A	ARC Air Cal Phase-Shift From T4 at 400 KHz	0.290408
P52A	ARC Air Cal Phase-Shift From T5 at 2 MHz	0.800528
P54A	ARC Air Cal Phase-Shift From T5 at 400 KHz	-0.316928
POFFSET_AR	ARC: Pressure Offset	0.000000
PRTD	Preferred Resistivity Log for Rt Display while Multi-Effects	P34B
PSOF_ADJ_T	ARC: User Input Phase offset	0.000000

RESTIK	ARC resistivity tick source	Phase
SHIG	ARC High Shock Risk Level	0.500000
SHT_RM	Ground Level Temperature (Mud-Line When Offshore) (RM)	50.000000
SMED	ARC Medium Shock Risk Level	0.330000
SMIN	ARC Minimum Shock Risk Level	0.160000
SUPD	ARC Real Time Shock Update Rate	30.000000
TCODE_ARC	ARC Tool File Code	30.000000
TSIZ_ARC	ARC Tool Size	6.750000
UNIFORM_CO	Uniform Rock Option	YES
VERS_ARC	ARC Down hole software version Number	9.300000
WRK	Way to Report Potassium Concentration (RM)	K_by_Wgt_%

ISONIC

FP_SD	First Sample delay	400.00
STC_CF	Center frequency of Filter	13.00
STC_BW	Bandwidth (kHz)	Default
STC_RWI	Receiver waveform ignored	None
PM_TOFF	Tool Time offset from surface system	0.00
DT_COH	Delta-T Coherence Cutoff Value	0.70
PPC_PF	Porosity Formula	Raymer-Hunt
PPC_PS	Sonic Porosity Source	DTRA
PPC_MDT	Matrix Delta-T	55.50
PPC_FDT	Fluid Delta-T	189.00

ADN

ADN_CHASSI	ADN Chassis Type String	ADN
ADN_COLLAR	ADN Collar Type String	ADN
ADN_STAB_S	ADN Stabilizer Type String	ADN
ALPHA_COMP	Perform Density Enhanced Vertical Resolution process ?	NO
ALPHA_COMP	Perform Neutron Enhanced Vertical Resolution process ?	NO
AVE_ADN	ADN/Array Channels: perform averaging(RM) :	YES
A_DHS	ADN Down Hole Software Version String	YES
CHI_RM	Caliper High limit from BS (RM)	3.000000
CLO_RM	Caliper Low limit from BS (RM)	0.000000
DEVI	Well Section Deviation	57.279999
DTIK_SEL	ADN: Density Tick Channel Name	LSAZ
DTMUD	Delta-T for Mud	227.046997
DYN_IMG_CO	Generate Dynamic Normalized Image?	YES
ECC_CORR_A	Perform Eccentering Correction for TNPH?	YES
ENVCOR	Neutron Quadrant Processing: Environmental Correction?	YES
EVRL	EVR Process averaging number of samples (RM)	49
FCD	Future Casing (Outer) Diameter	0.000000
GCSE	Generalized Caliper Selection	BS
HPS	ADSE-EB (High Pressure Inconel Chassis)?	NO
IBS	Intergal Blade Stabilizer Collar?	YES
IDQT	Image Derived Quality Threshold	2.000000
IHVS	Integrated Hole Volume Start Value(RM)	0.000000
IMAGE_MAX_	**Image SOA (Quadrant) Right Scale**	**2.500000**
IMAGE_MAX_	**Image PEF(Segment) Right Scale**	**6.000000**
IMAGE_MAX_	Image RHOB(Segment) Right Scale	2.650000
IMAGE_MIN_	Image SOA (Quadrant) Left Scale	0.000000
IMAGE_MIN_	Image PEF(Segment) Left Scale	2.000000
IMAGE_MIN_	Image RHOB(Segment) Left Scale	2.050000
JSD_ADN	ADN Acquisition start date	2.050000
LITHO_TYPE	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	1.000000
SSIZ_ADN	ADN Stabilizer Size	8.250000
STOH	ADN Density Top of Hole Sector (Left Boundary):	SECTOR_0
TRPM_RM	Average Tool Rotational Speed	120.000000
USMIN_RM	ADN:Minimum Ultrasonic standoff (RM)	0.180000
USWF_RM	ADN:Process Ultrasonic Waveform?	YES
VERS_ADN	ADN Downhole Software Version	8.300000
WSDI	Window Size of Dynamic Normalization Image	49.999996

IDEAL Version: ID12_0C_09

IDF

ARC6A-AA **id12_0c_01** **ADN** **id12_0c_01**

Format: VISION Service RM Log **Vertical Scale: 1:200** **Graphics File Created: 25-Jun-2007 10:13**

PIP SUMMARY

Density Samples

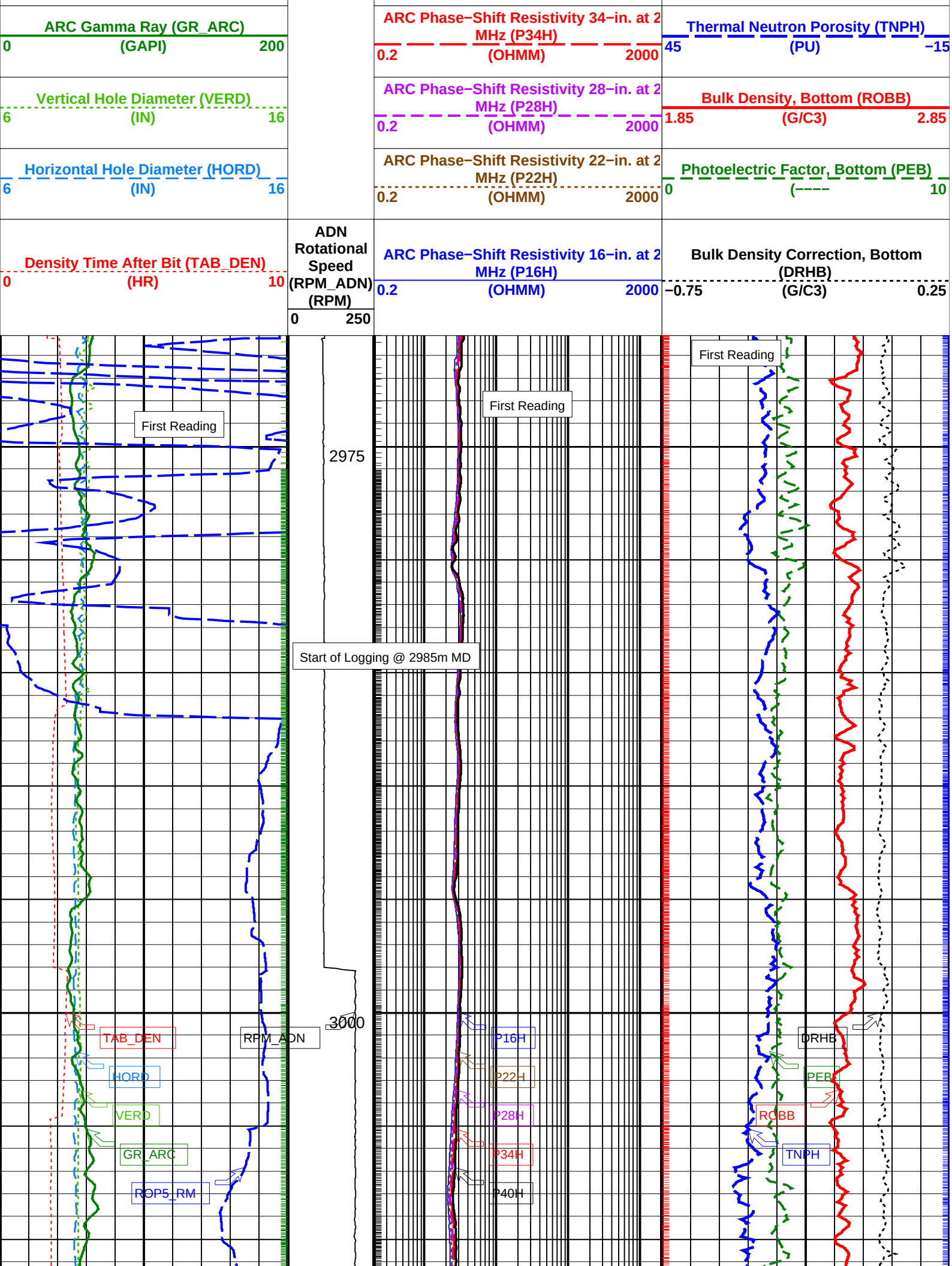
Neutron Samples

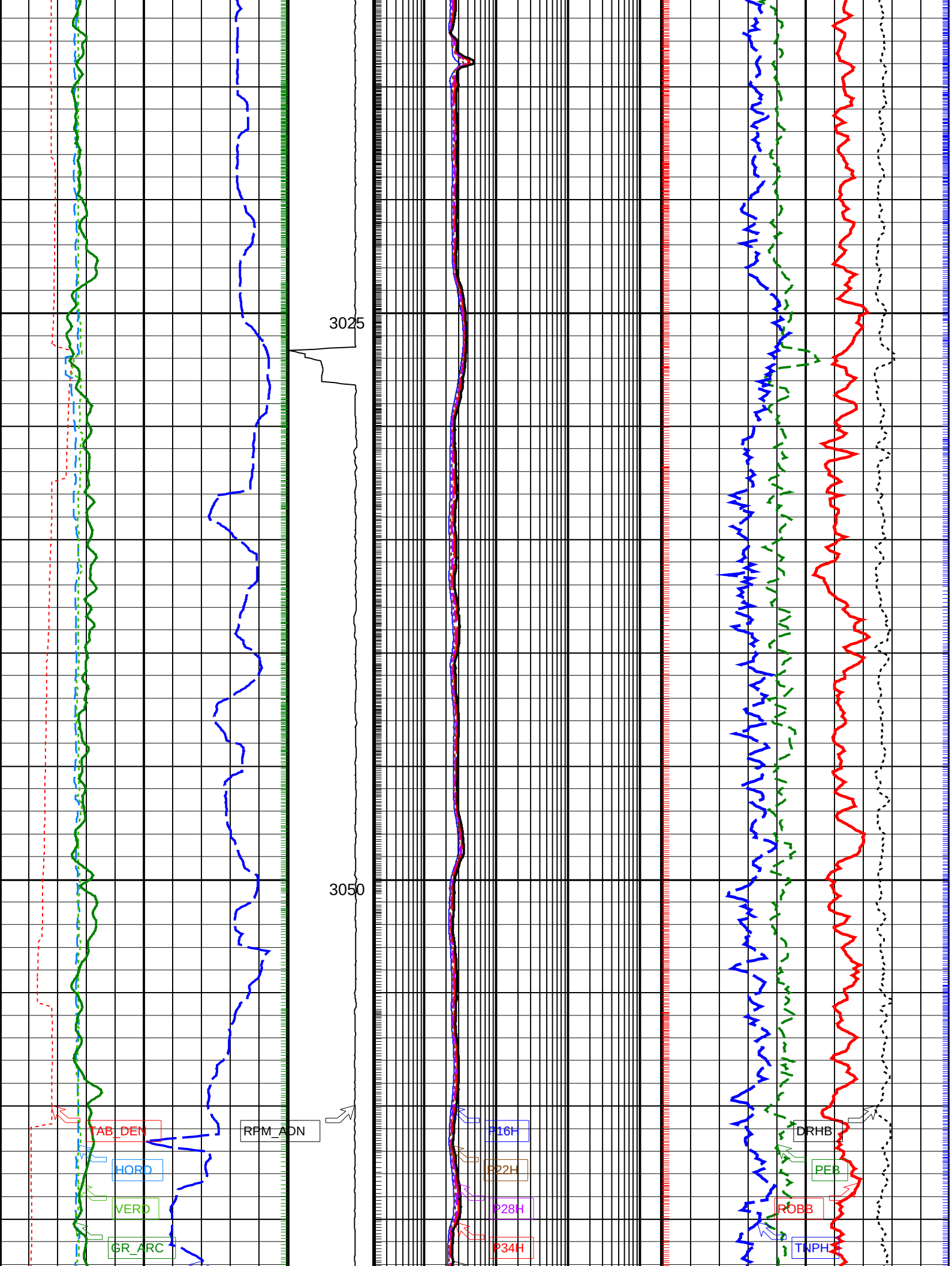
ARC Gamma Ray Samples

ARC Resistivity Samples

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

ARC Phase-Shift Resistivity 40-in. at 2 MHz (P40H)		
0.2	(OHMM)	2000


ARC Gamma Ray (GR_ARC)
0
(GAPI)
200
Vertical Hole Diameter (VERD)
6
(IN)
16
Horizontal Hole Diameter (HORD)
6
(IN)
16
Density Time After Bit (TAB_DEN)
0
(HR)
10
ARC Phase−Shift Resistivity 34−in. at 2 MHz (P34H)
0.2
(OHMM)
2000
ARC Phase−Shift Resistivity 28−in. at 2 MHz (P28H)
0.2
(OHMM)
2000
ARC Phase−Shift Resistivity 22−in. at 2 MHz (P22H)
0.2
(OHMM)
2000
ADN Rotational Speed (RPM_ADN) (RPM)
0
250
ARC Phase−Shift Resistivity 16−in. at 2 MHz (P16H)
0.2
(OHMM)
2000
Thermal Neutron Porosity (TNPH)
45
(PU)
−15
Bulk Density, Bottom (ROBB)
1.85
(G/C3)
2.85
Photoelectric Factor, Bottom (PEB)
0
(−−−−
10
Bulk Density Correction, Bottom (DRHB)
−0.75
(G/C3)
0.25
First Reading
First Reading
First Reading
2975
Start of Logging @ 2985m MD
3000
TAB_DEN
HORD
VERD
GR_ARC
ROP5_RM
RPM_ADN
P16H
P22H
P28H
P34H
P40H
DRHB
PEB
ROBB
TNPH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3050
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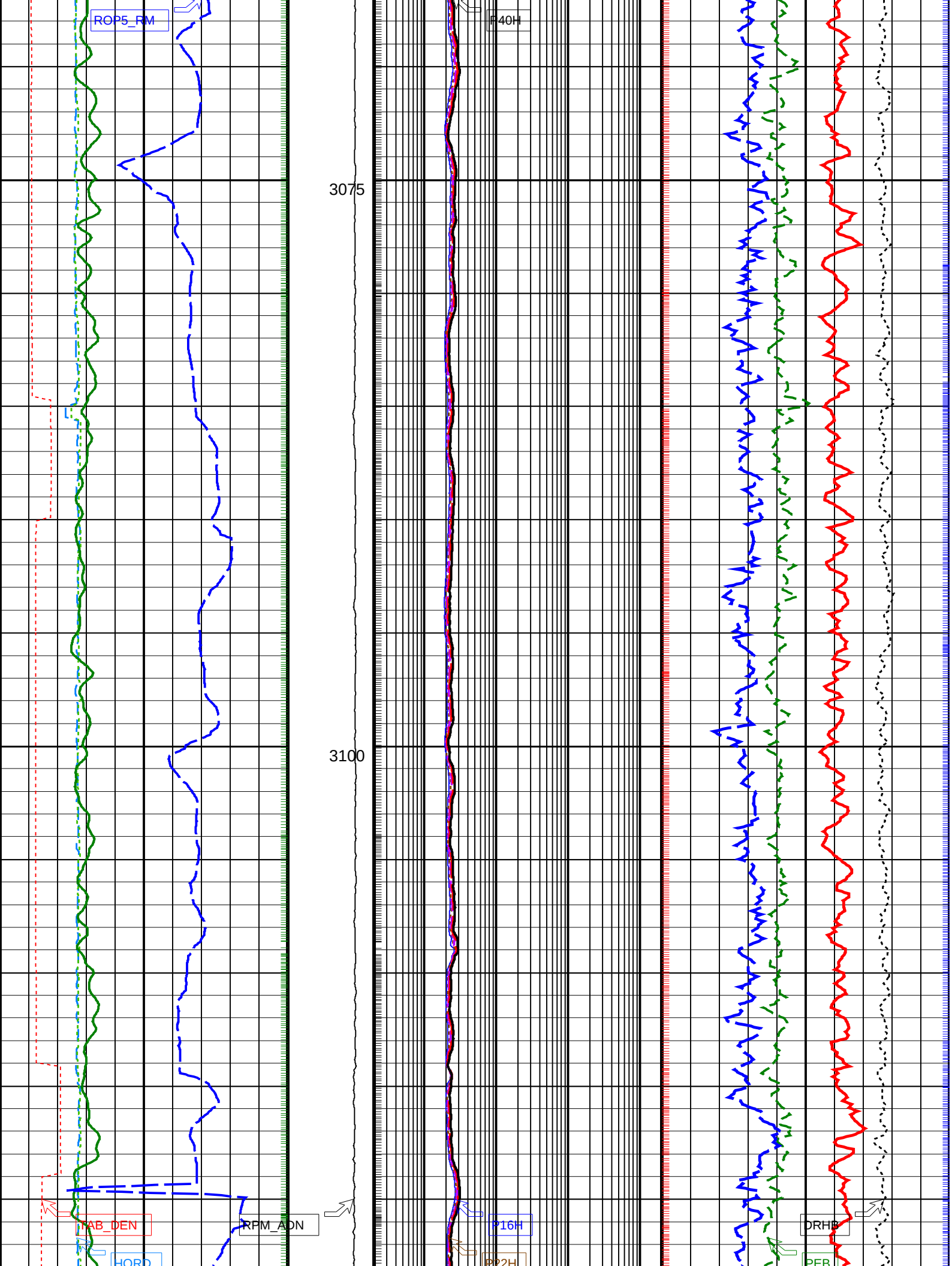
HORD
VERD
GR_ARC
RPM_ADN
P16H
P22H
P28H
P34H
DRHB
PEB
ROBB
TNPH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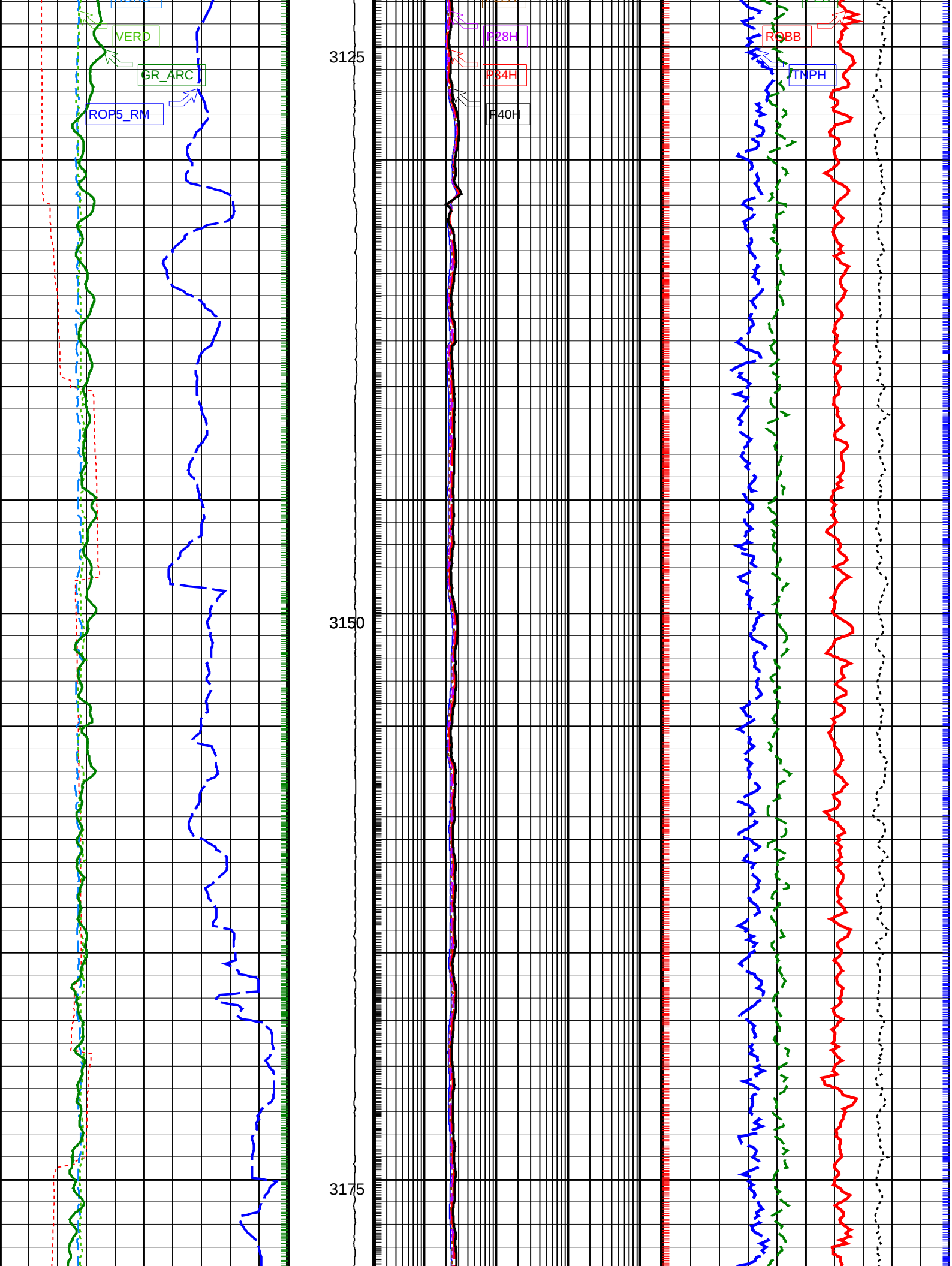
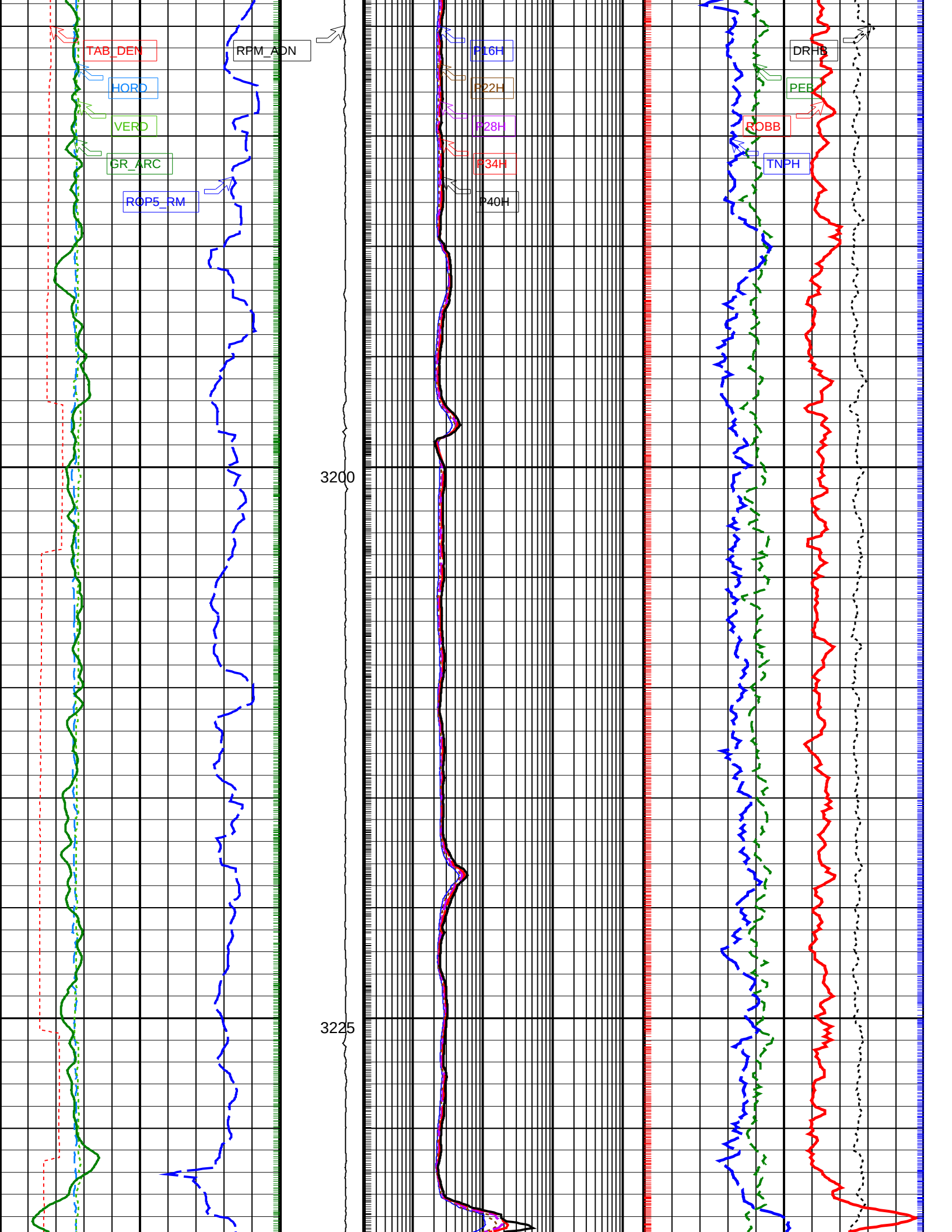
P40H
3075
3100
TAB_DEN
RPM_AON
P16H
DRHB
HORD
PEB


VERD
GR_ARC
ROP5_RM
P28H
P34H
P40H
RGBB
TNPH
3125
3150
3175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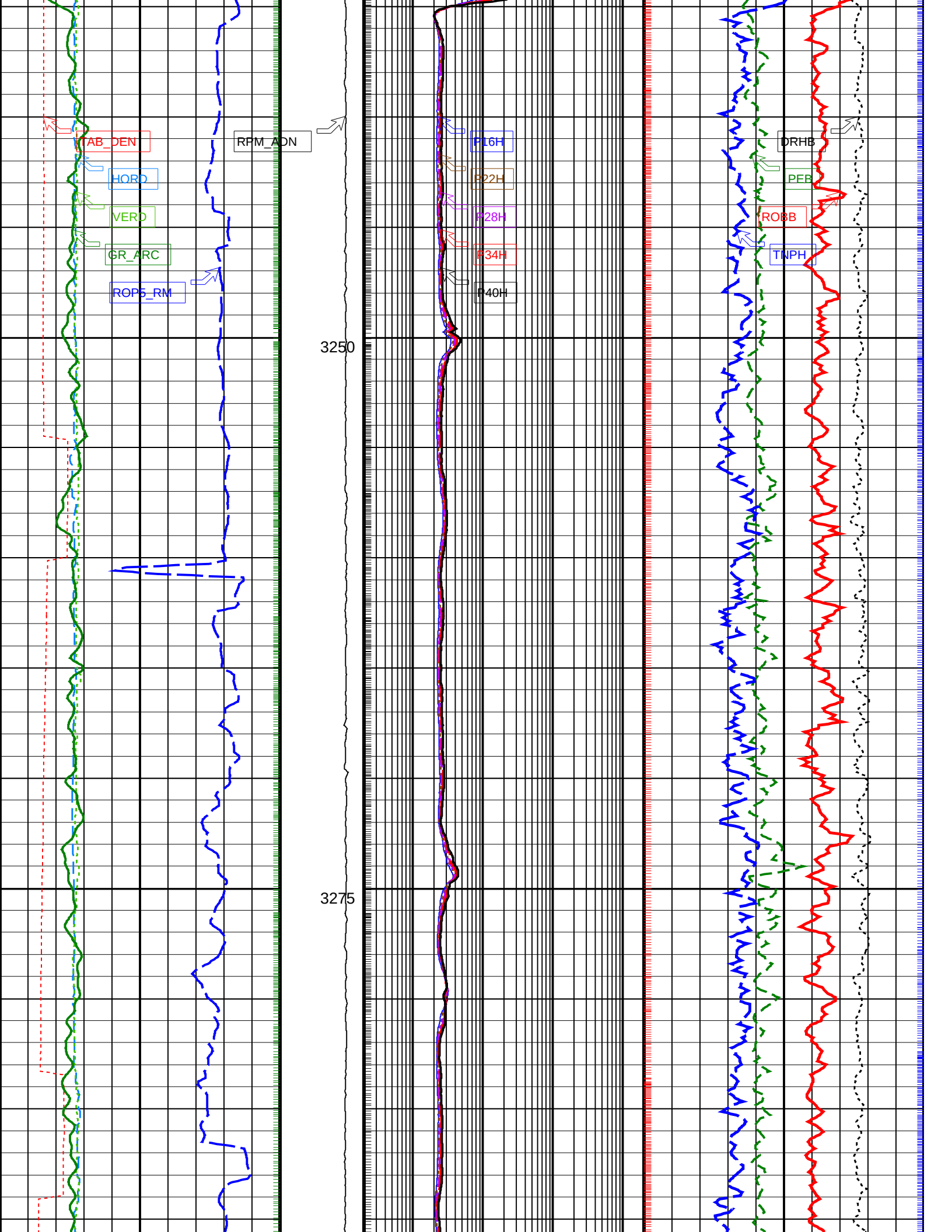
PEB
ROBB
TNPH
3200
3225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VERD
GR_ARC
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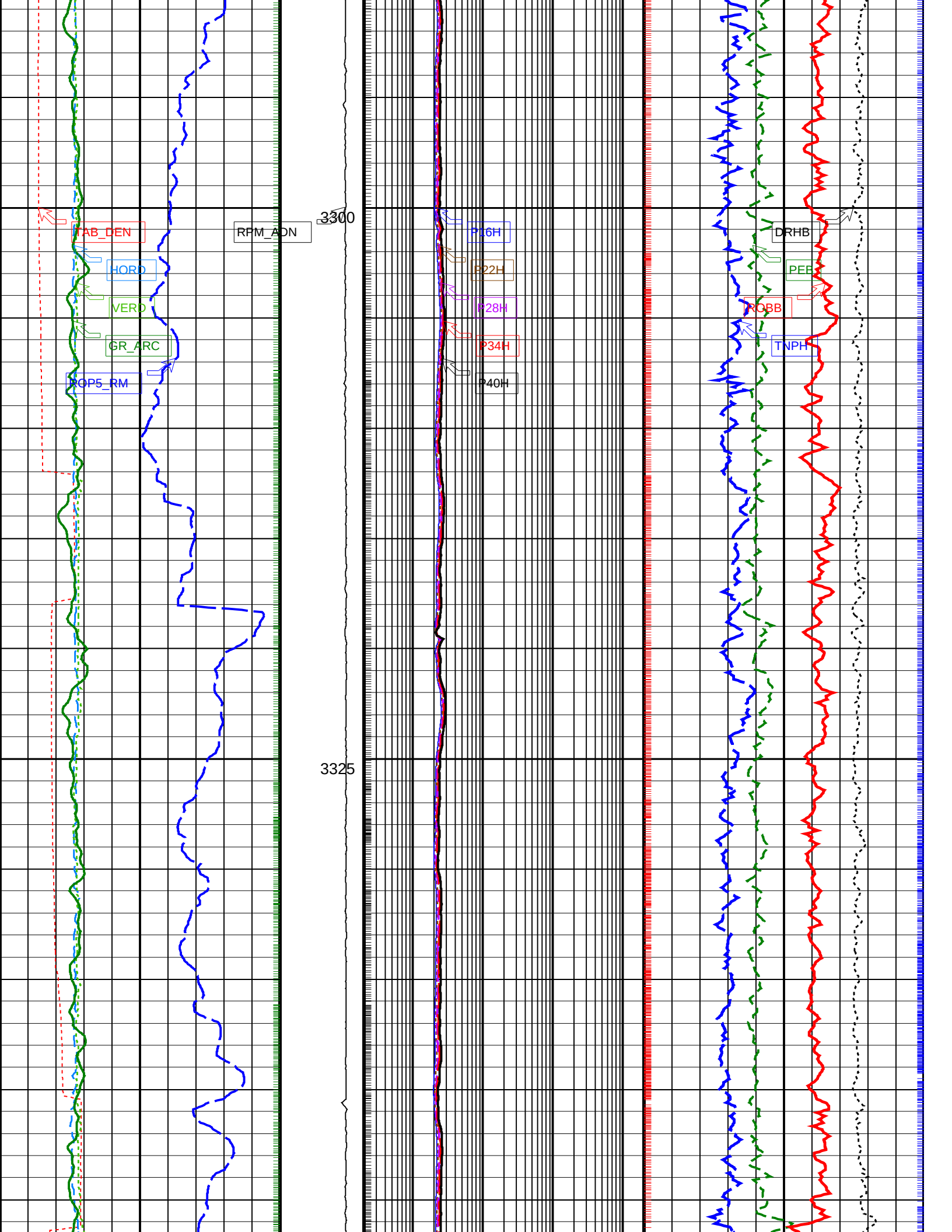
PEB
ROBB
TNPH
3250
3275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P16H
DRHB
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PEB
VERD
P28H
ROBB
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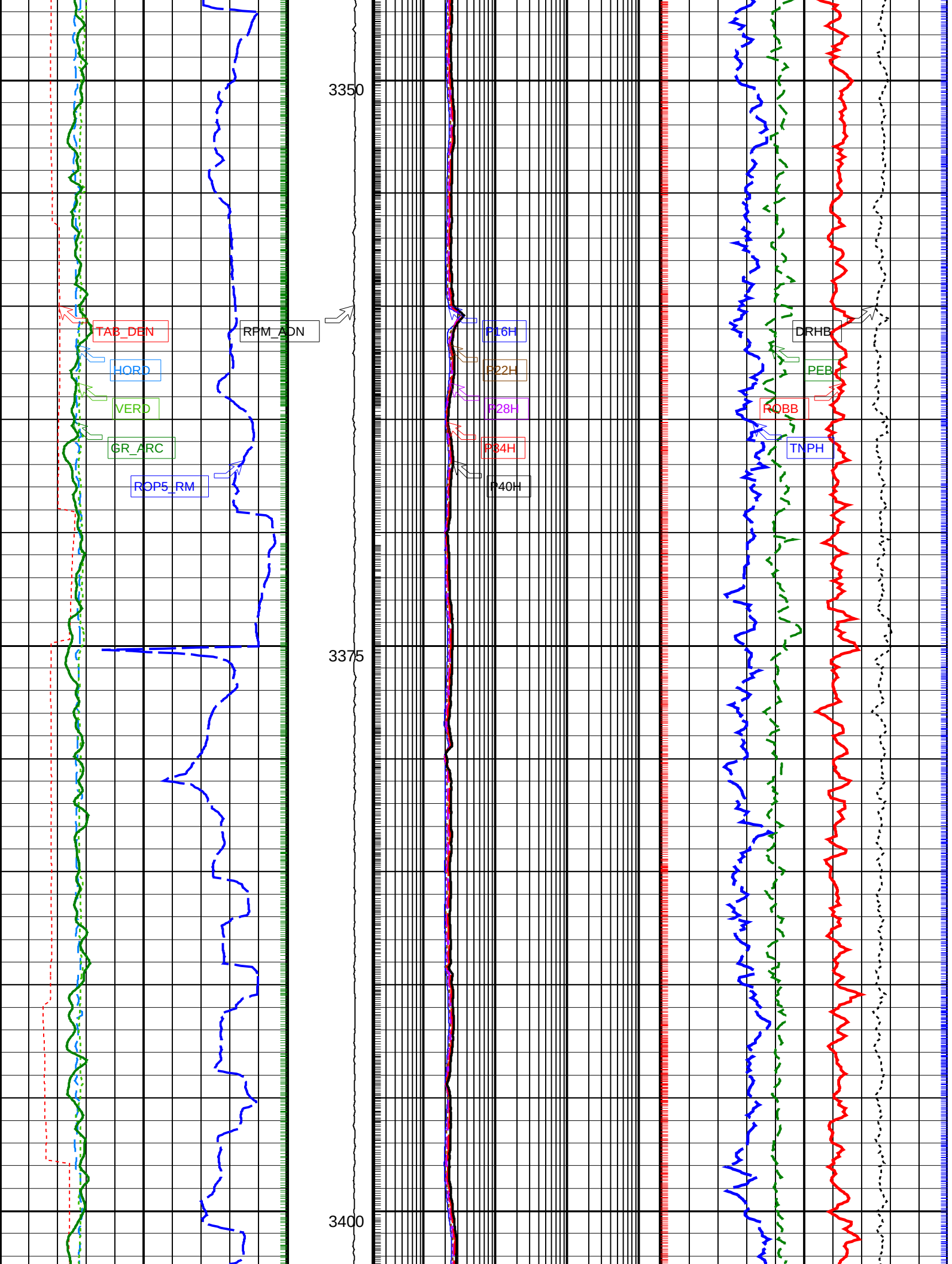
P34H
TNPH
ROP5_RM
P40H
3325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VERO
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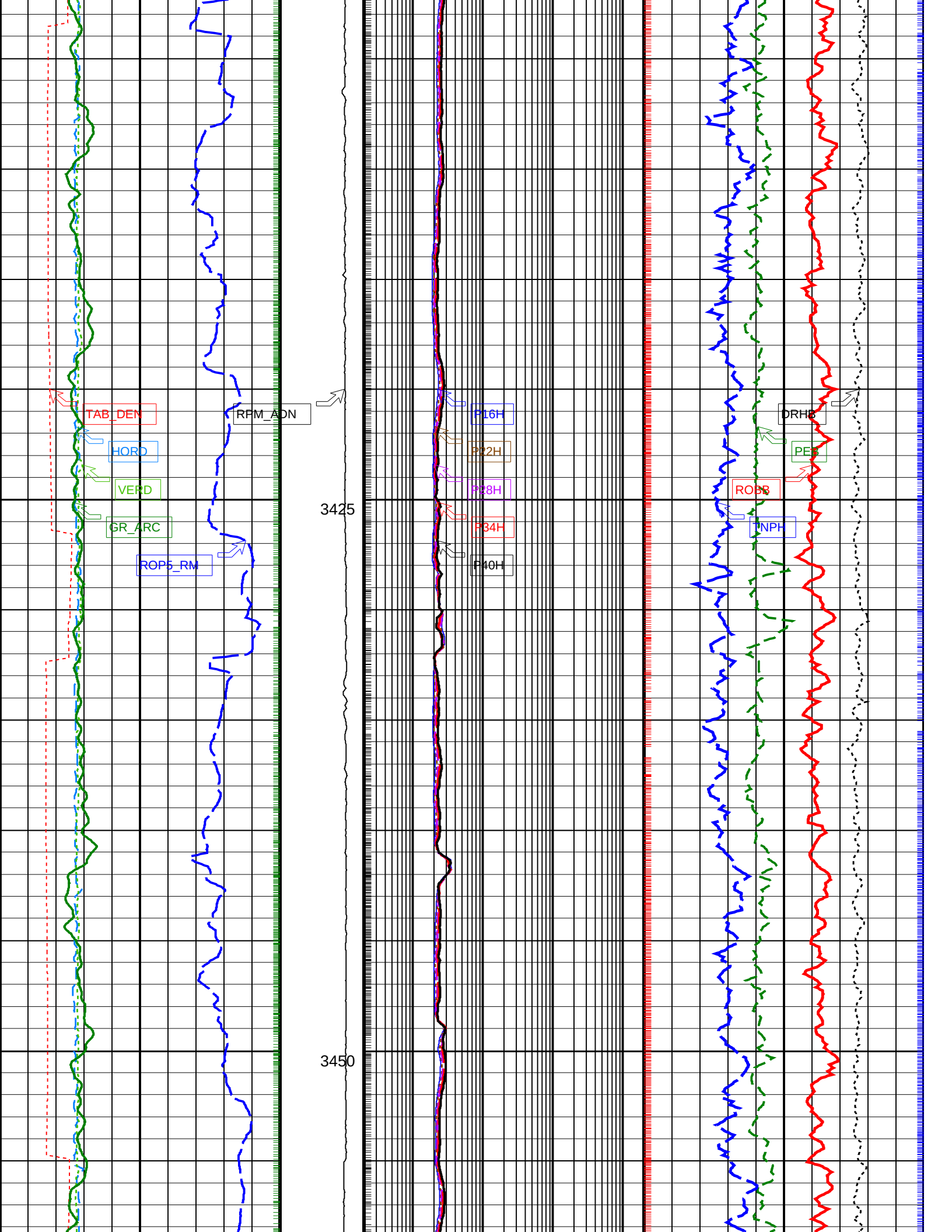
P22H
P28H
P34H
P40H
DRHB
PEB
ROBB
TNPH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HORD
VERD
GR_ARC
ROP5_RM
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P28H
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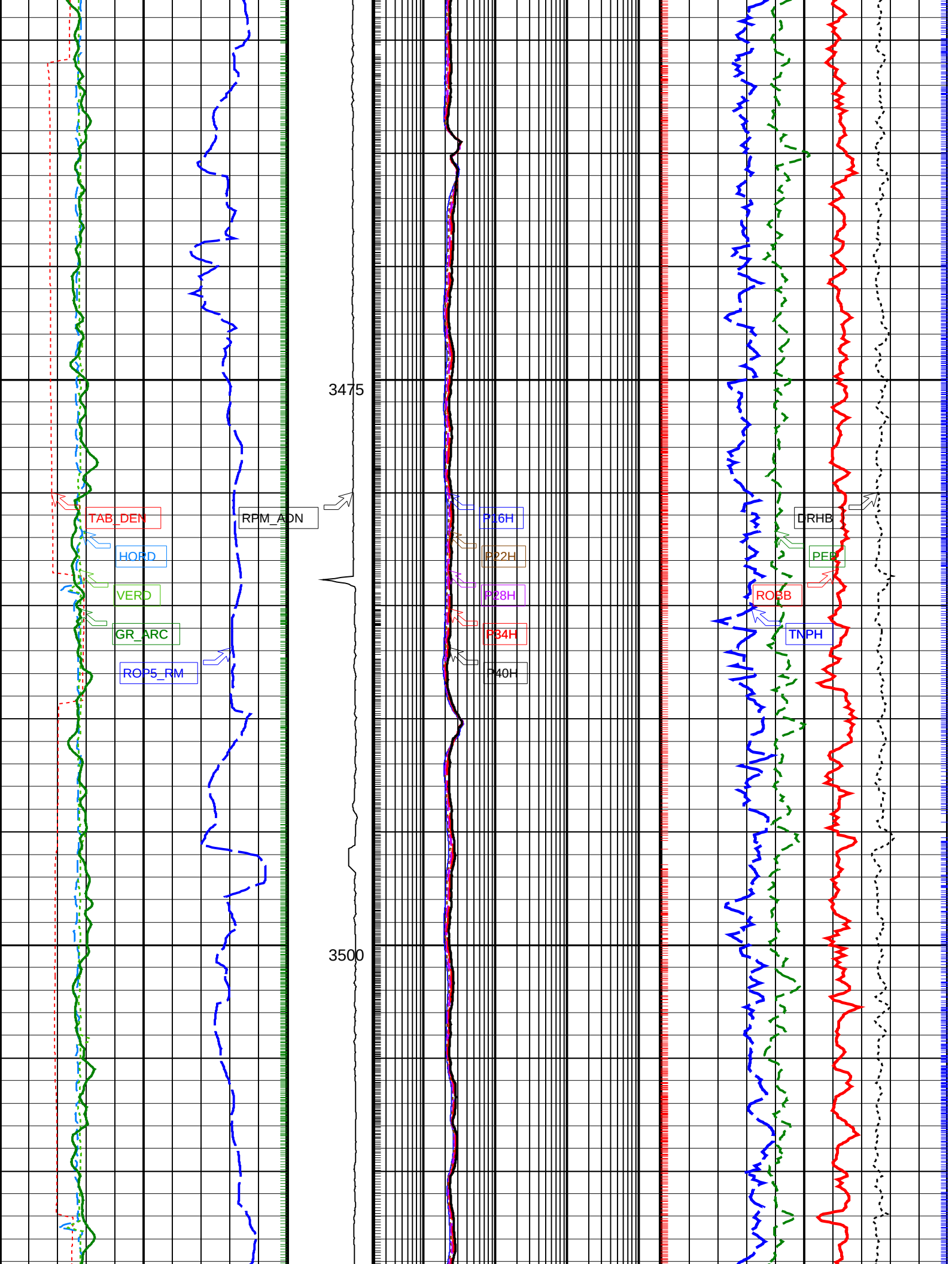
DRHB
PEB
ROBB
TNPH
3425
3450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3500
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VERD
GR_ARC
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P22H
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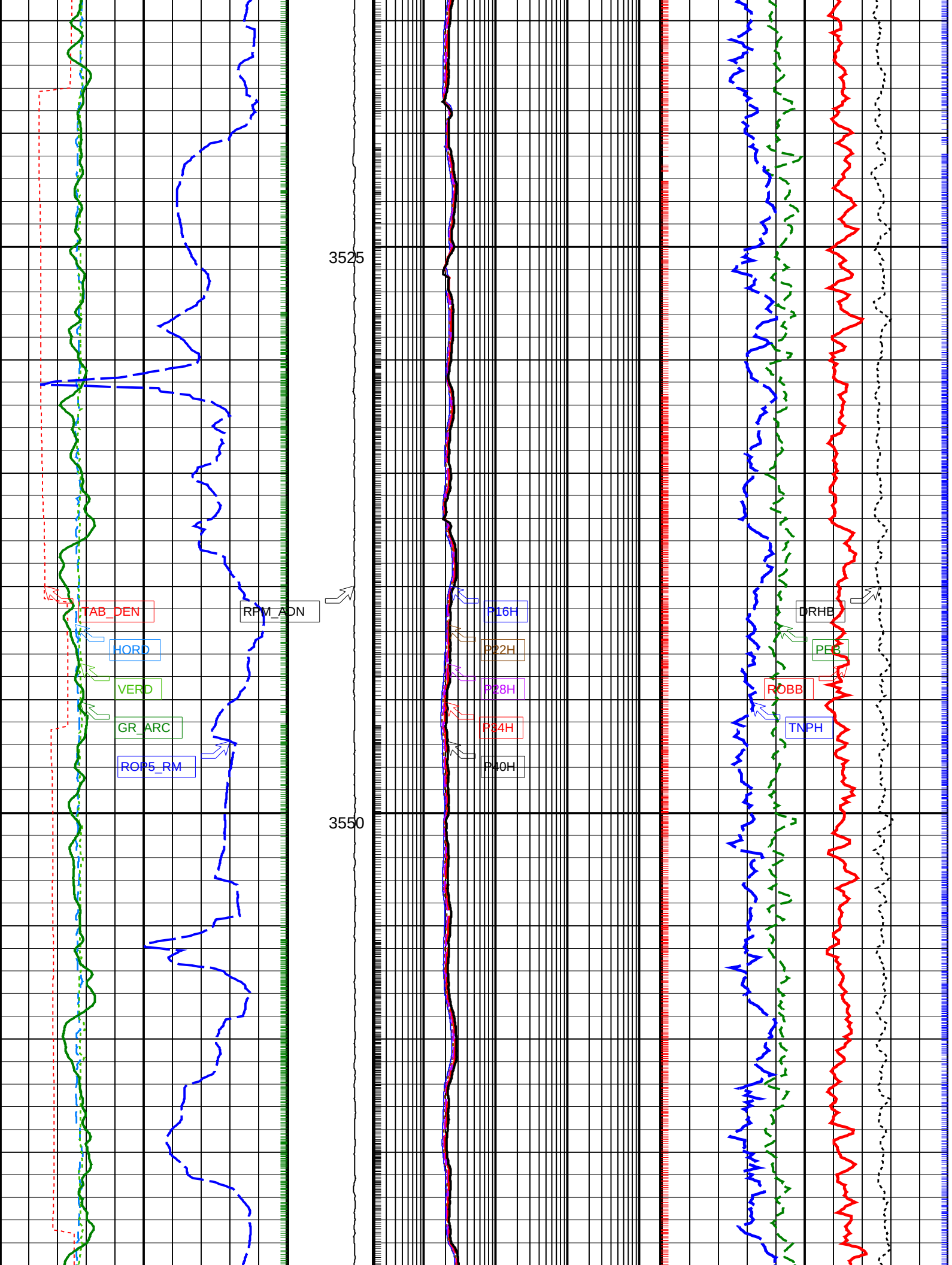
P40H
DRHB
PEB
ROBB
TNPH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3550
TAB_DEN
HORD
VERD
GR_ARC
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RPM_AON
P16H
P22H
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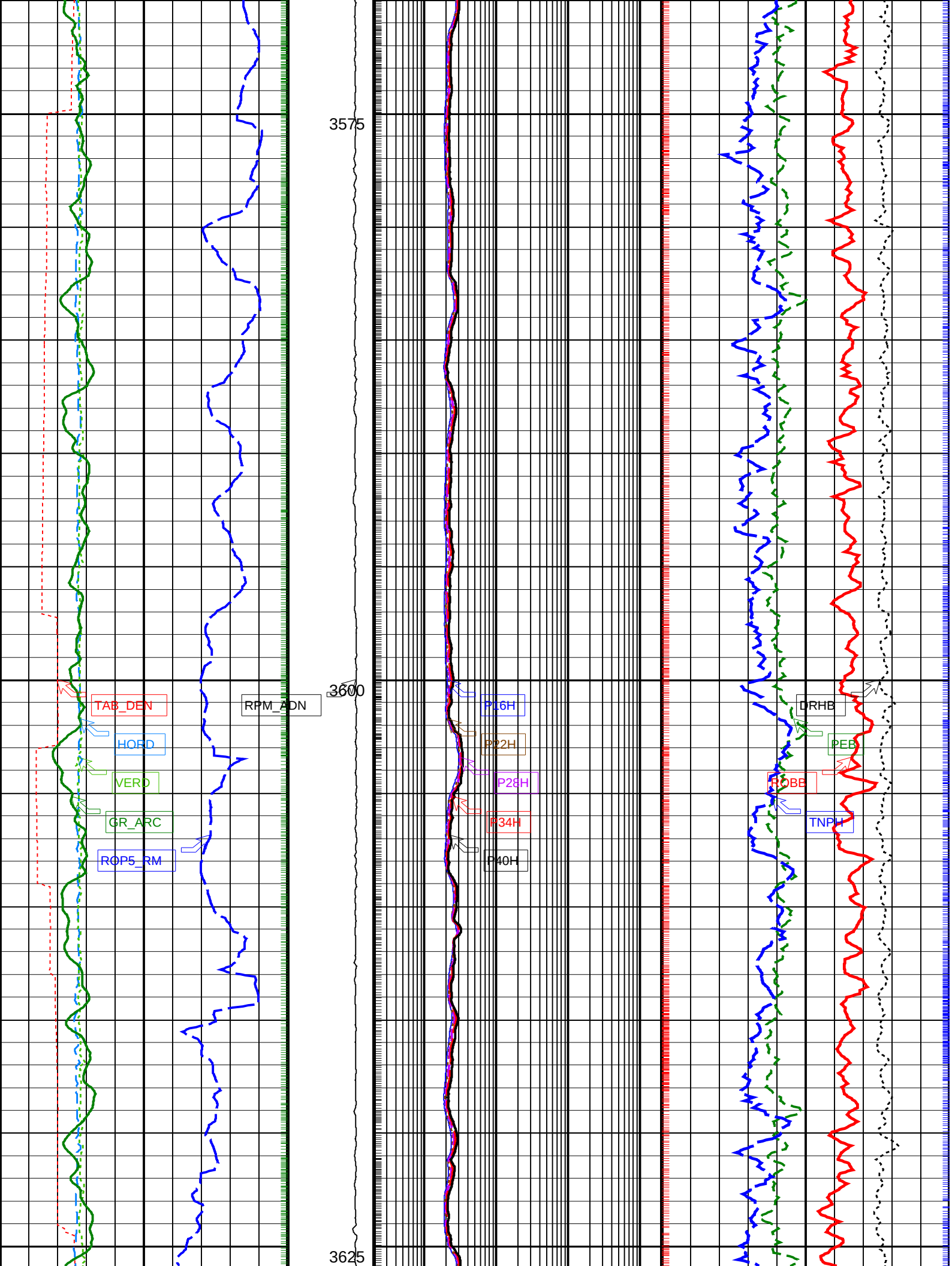
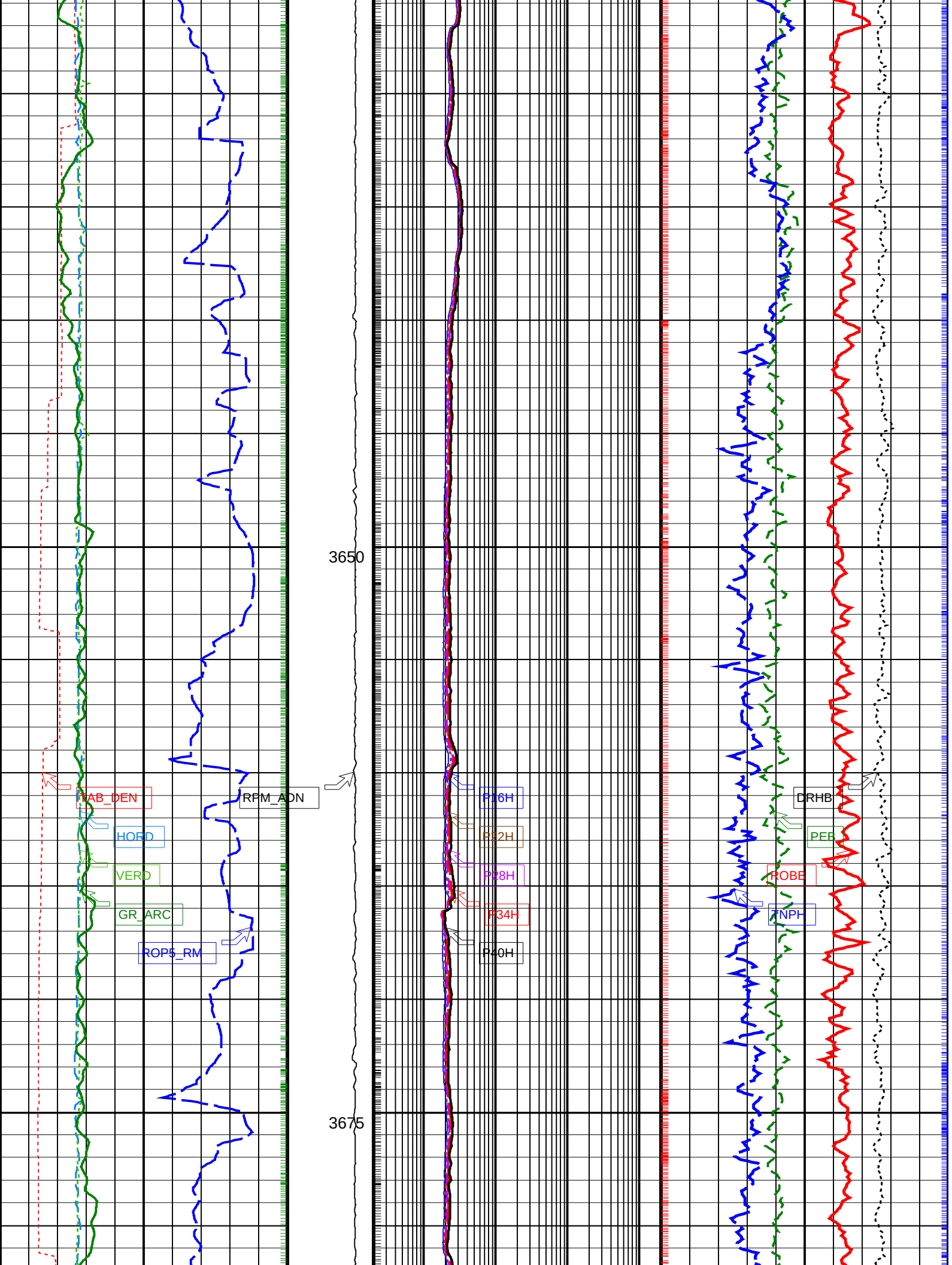
P40H
DRHB
PEB
ROBB
TNPH


3575
3600
3625
TAB_DEN
HQRD
VERD
GR_ARC
ROP5_RM
RPM_ADN
P16H
P22H
P28H
P34H
P40H
DRHB
PEB
ROBB
TNPH


3650
3675
TAB_DEN
HORD
VERD
GR_ARC
ROP5_RM
RPM_AON
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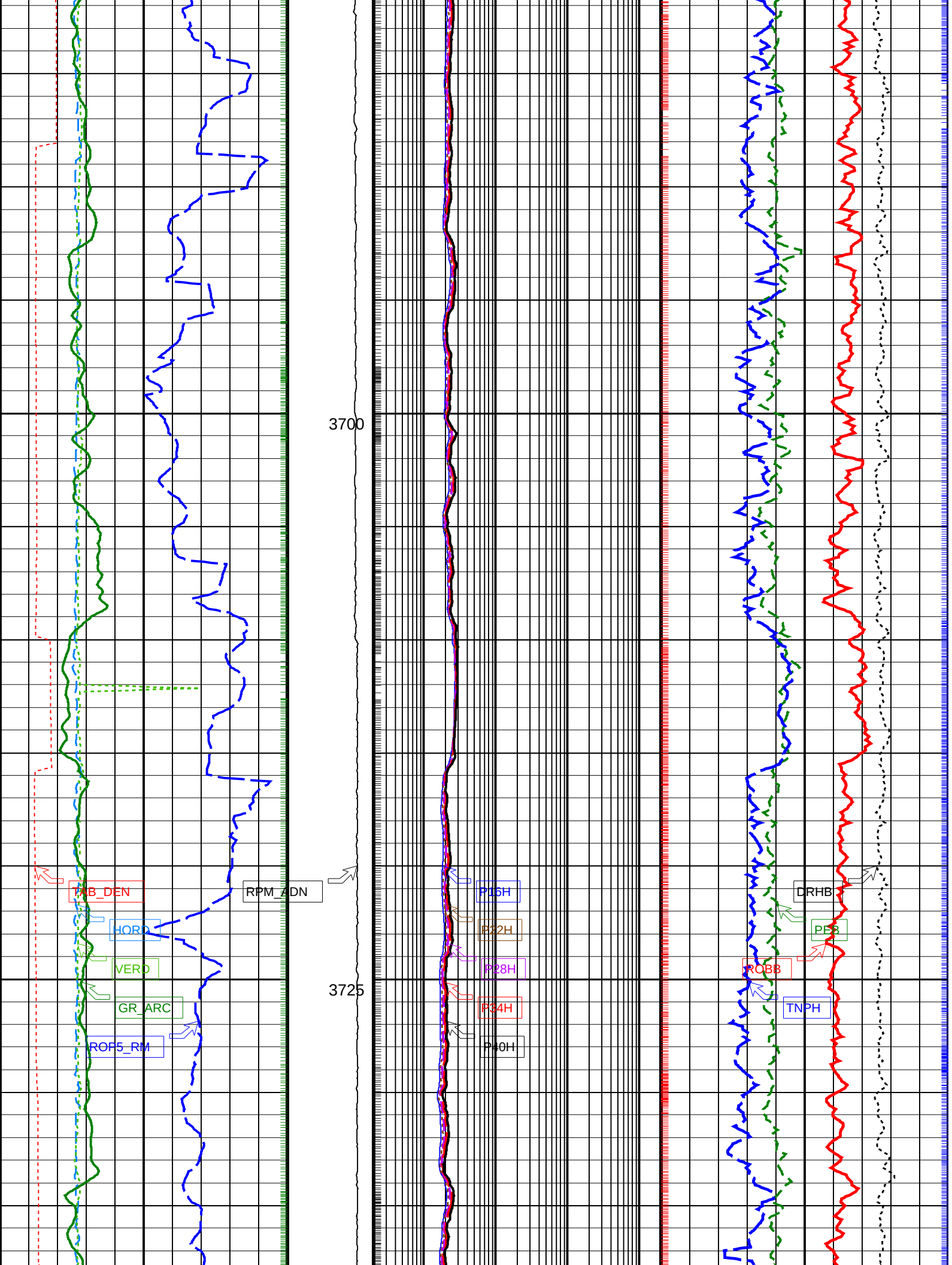
P22H
P28H
P34H
P40H
DRHB
PEB
ROBB
TNPH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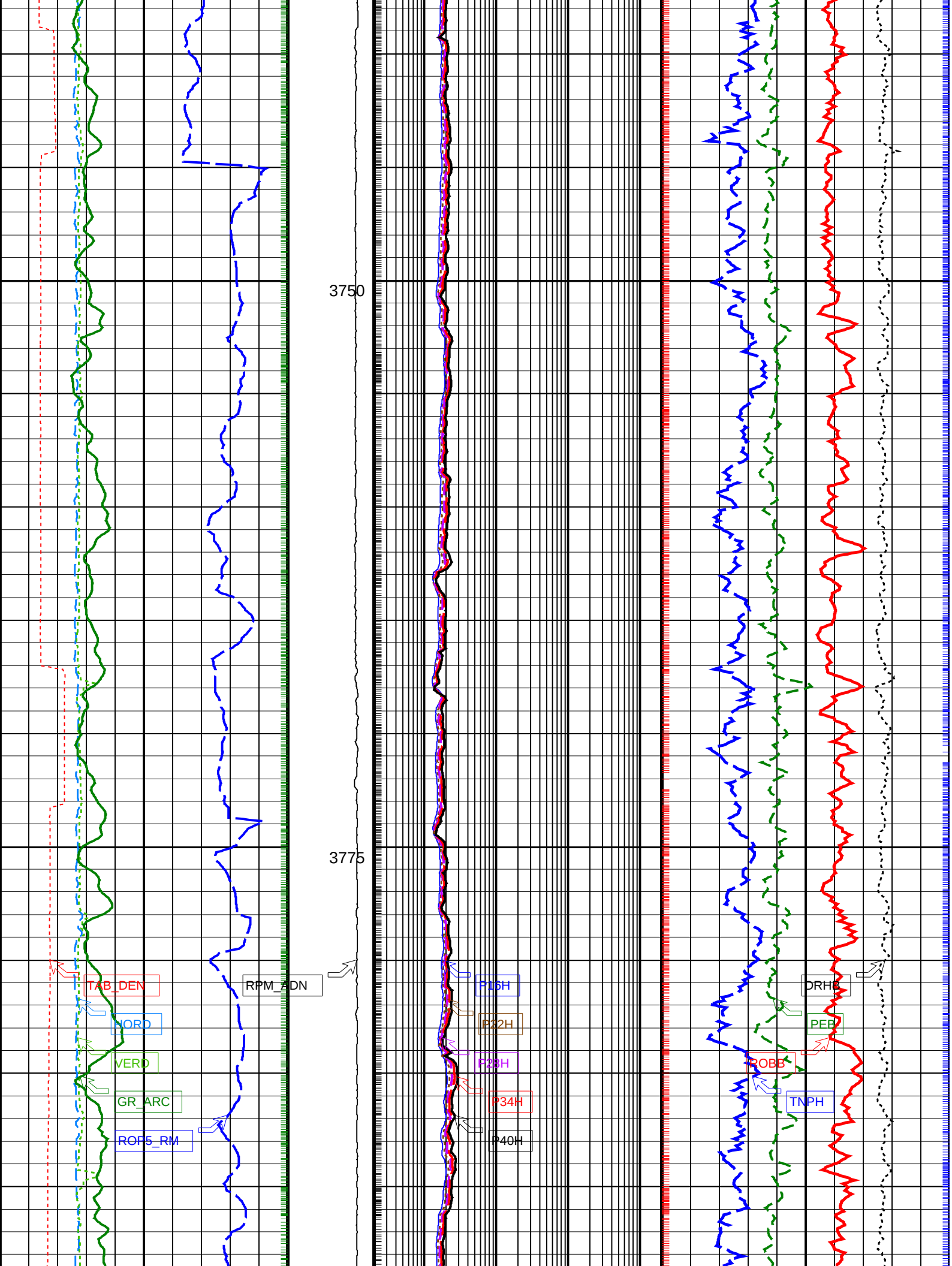
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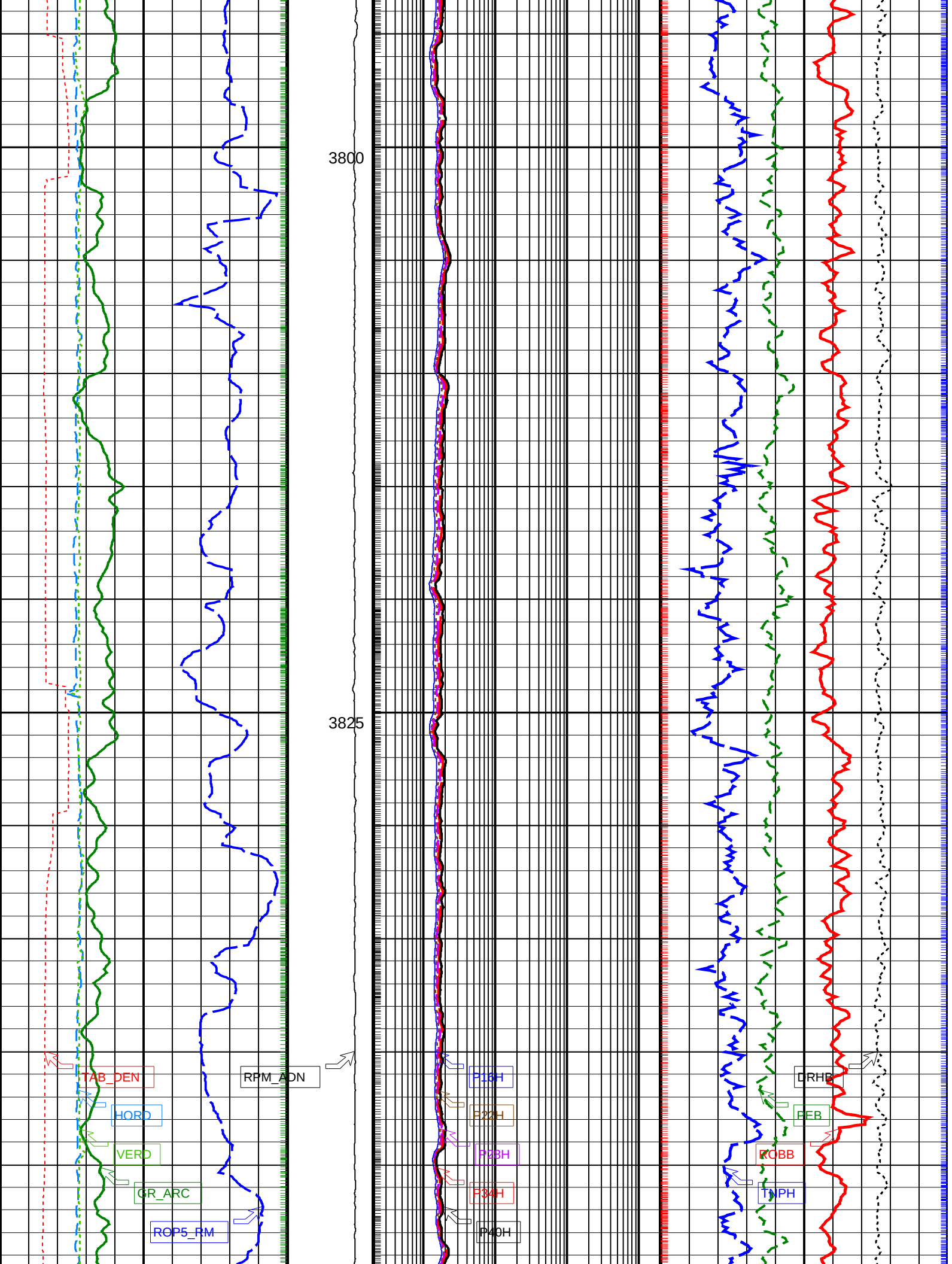
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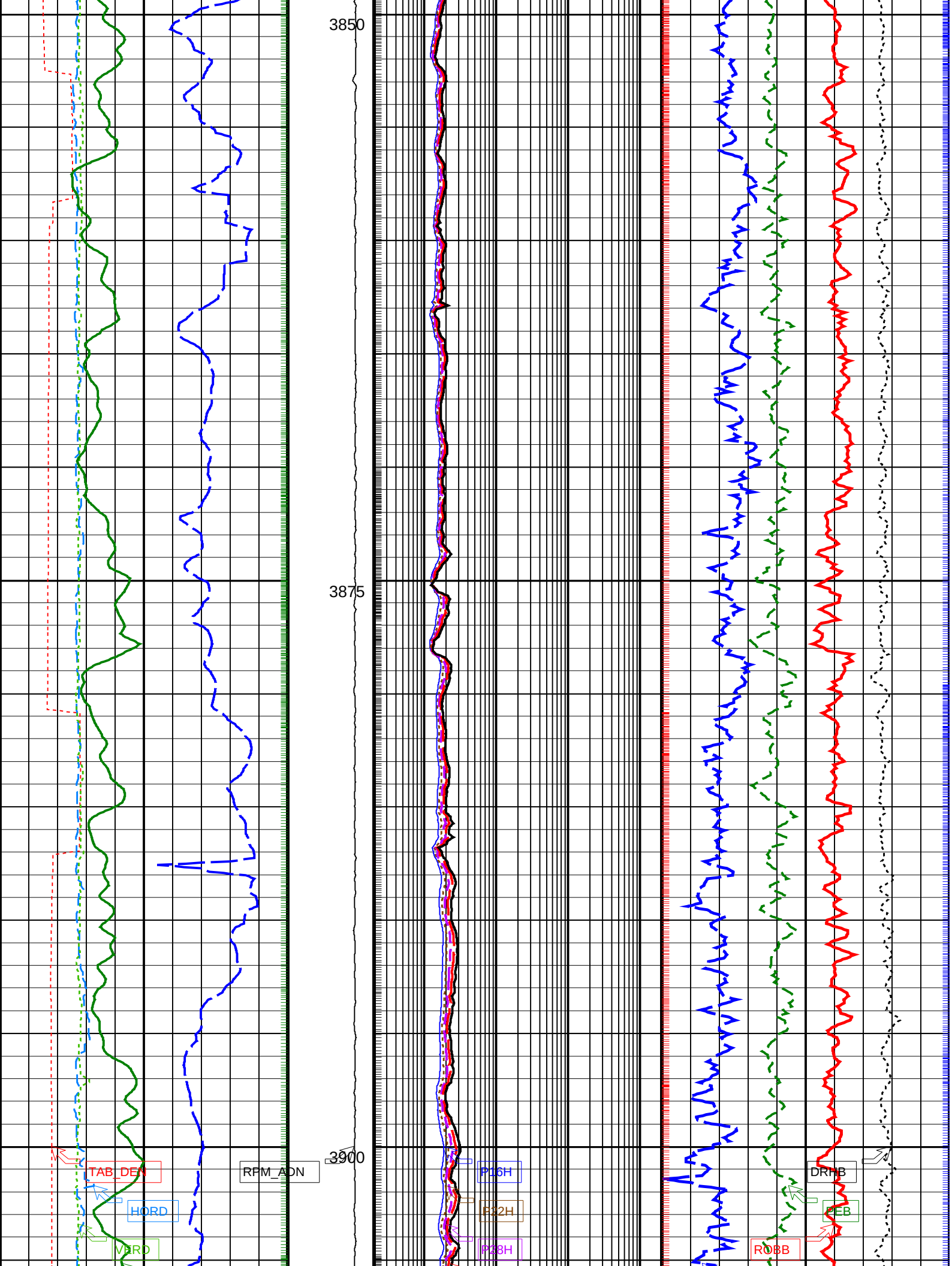
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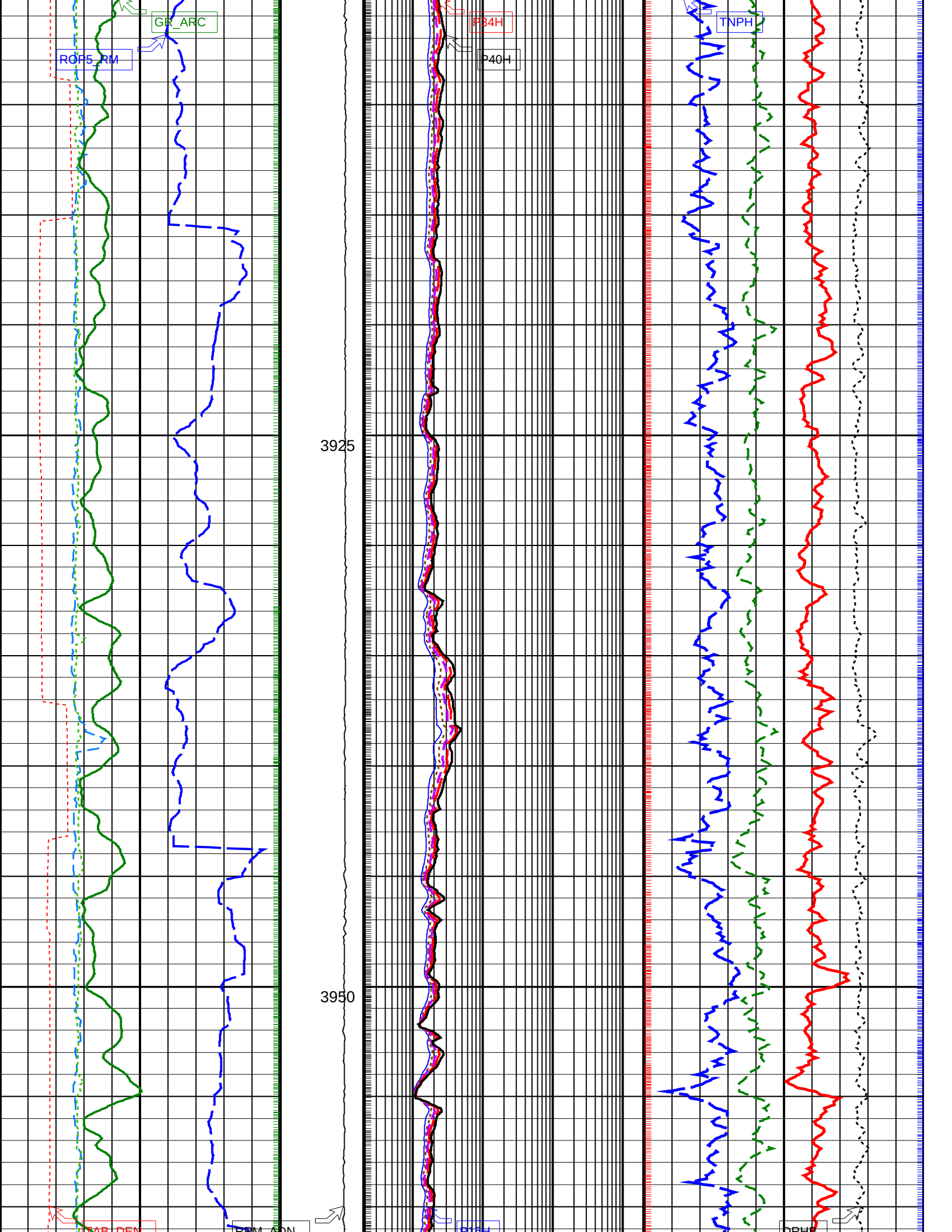
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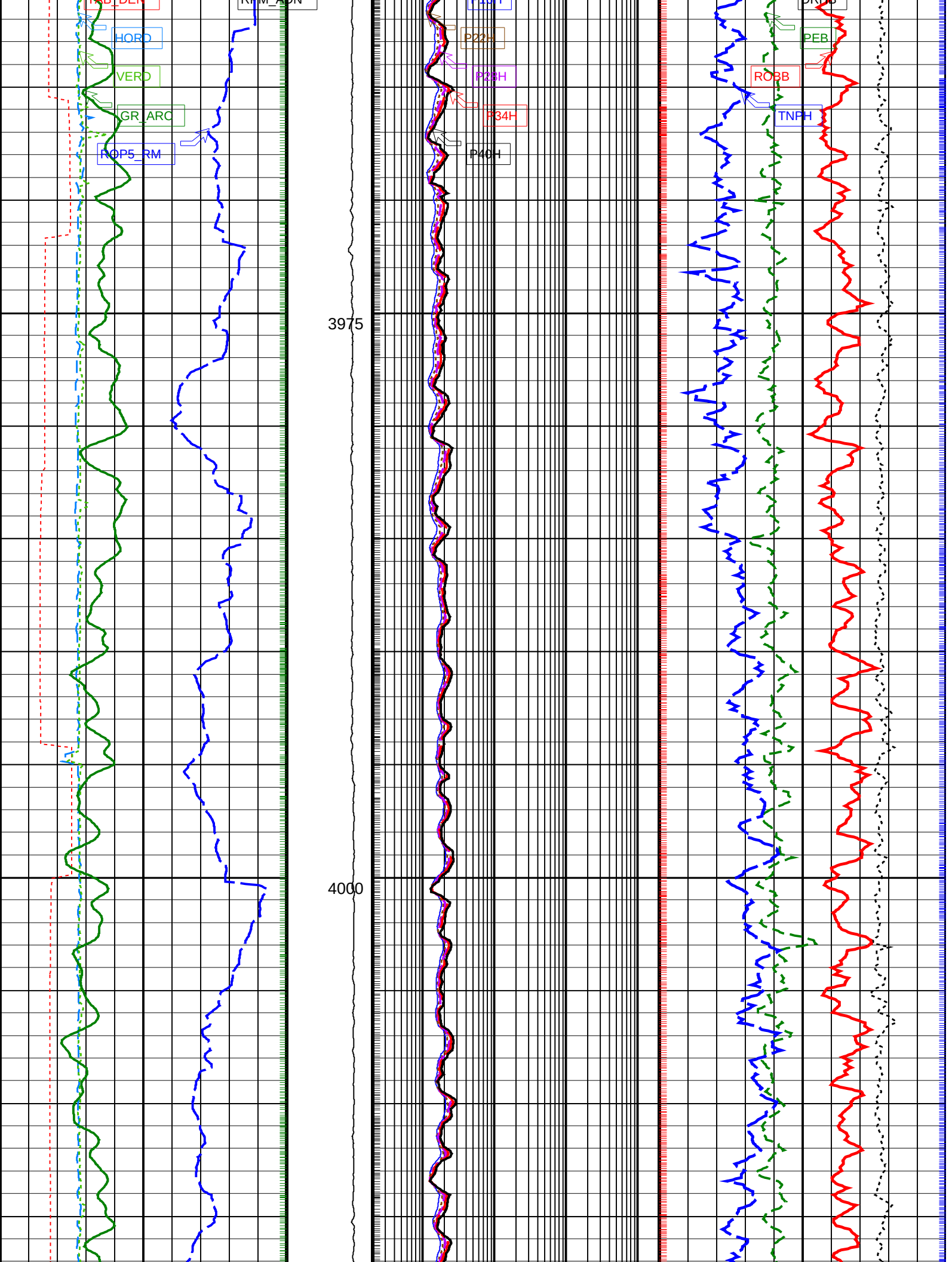
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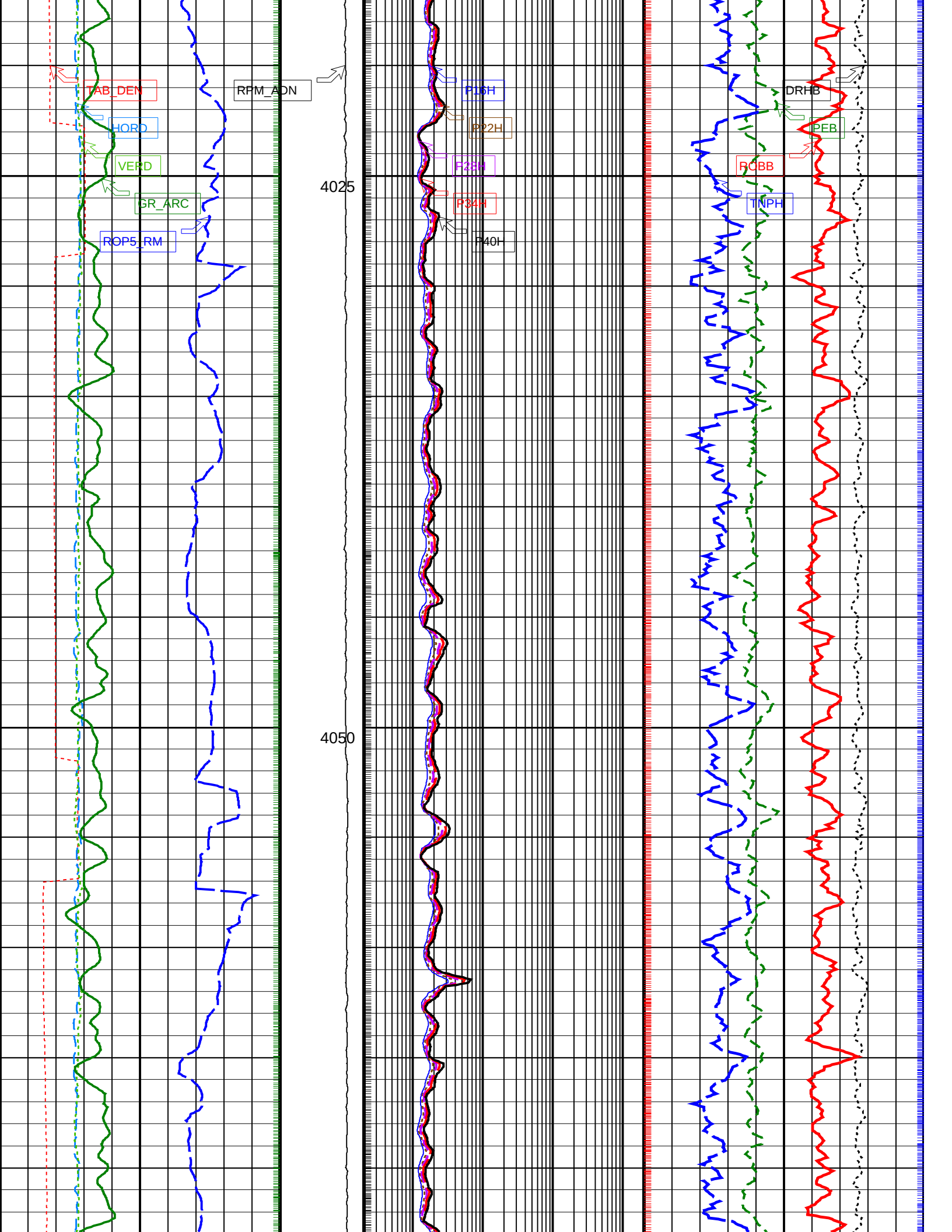
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GR_ARC
ROP5_RM
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P22H
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P40H
DRHB
PEB
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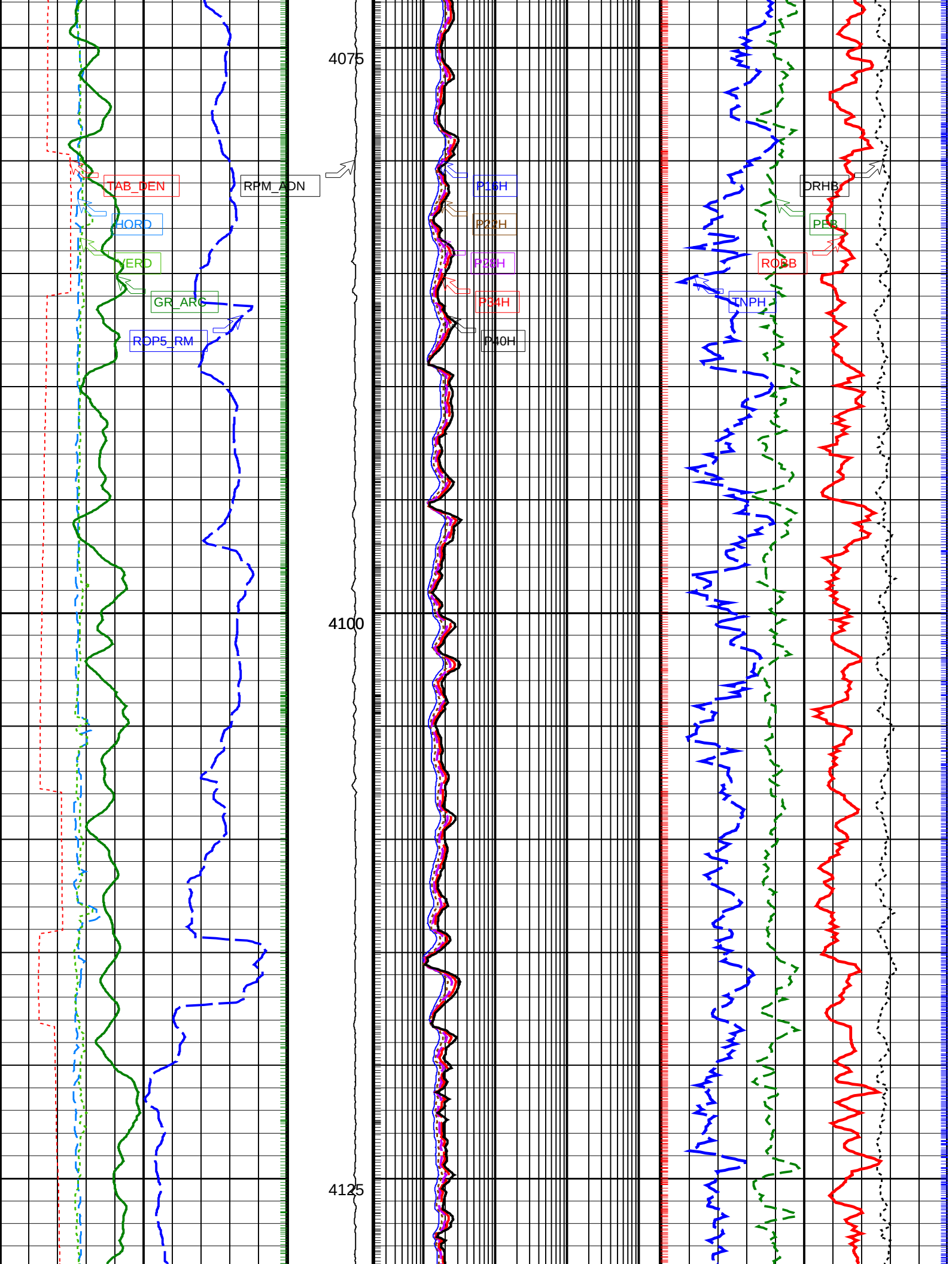
TNPH
4025
4050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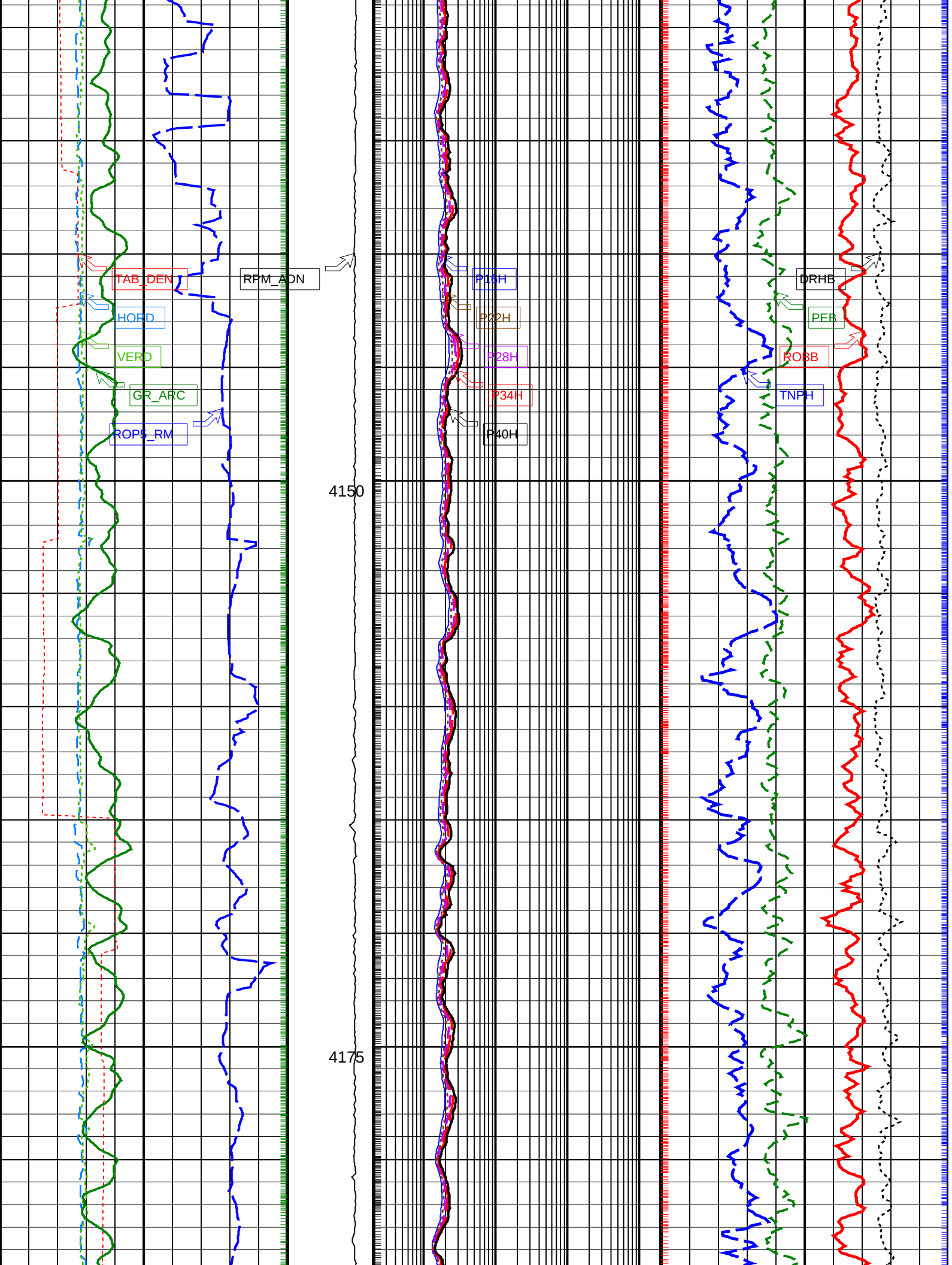
PEB
ROBB
TNPH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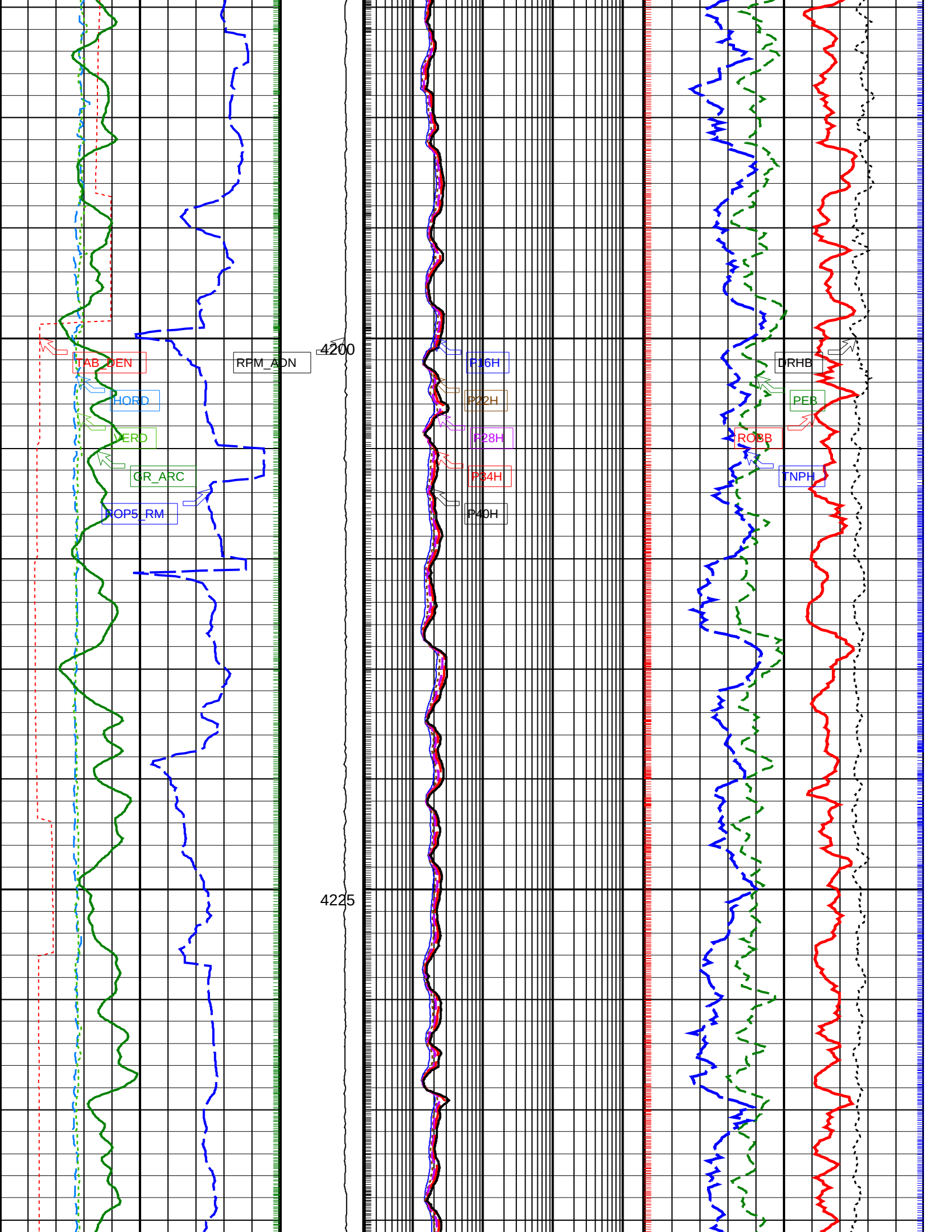
4150
4175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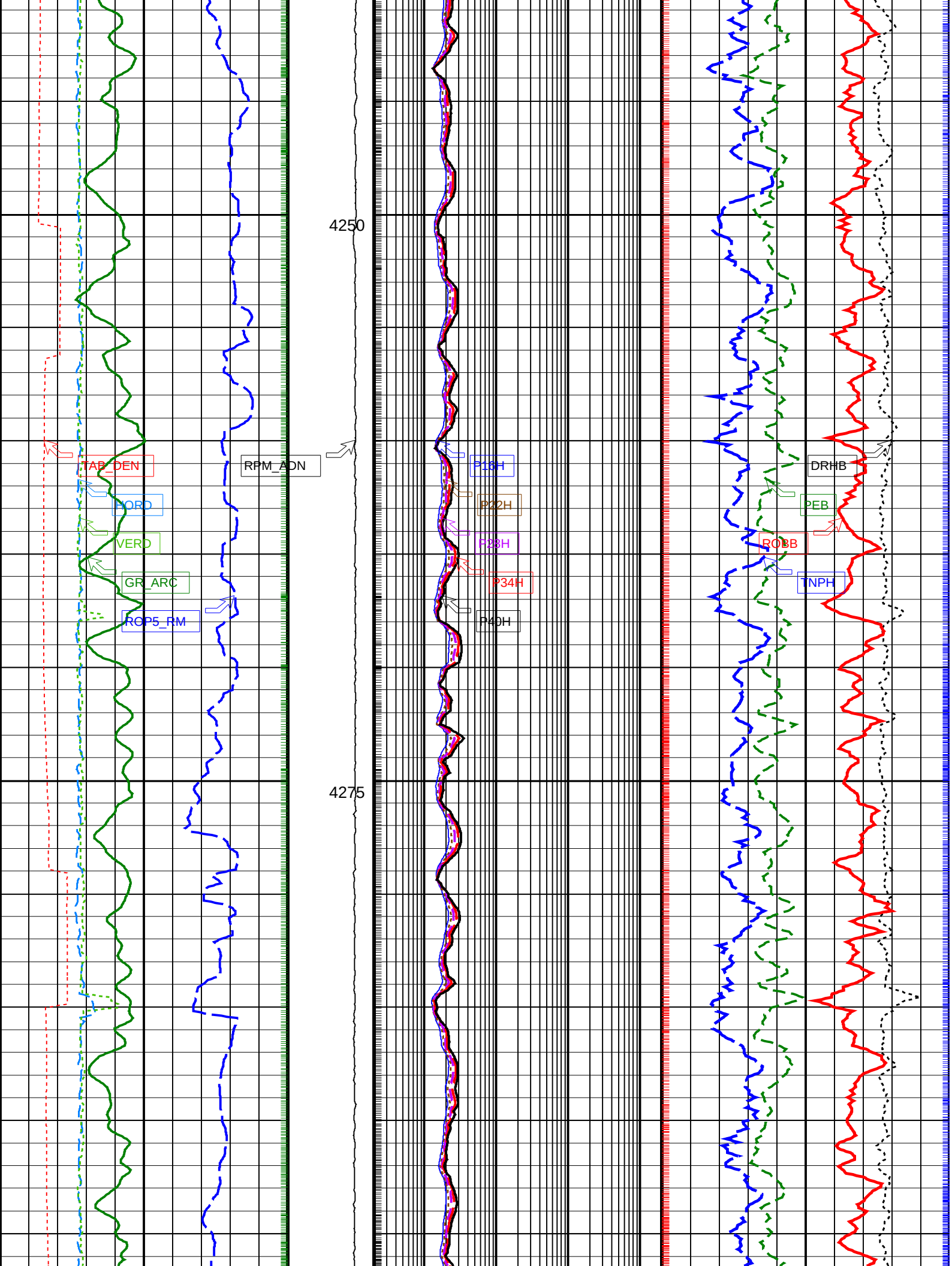
PEB
ROBB
TNPH
4225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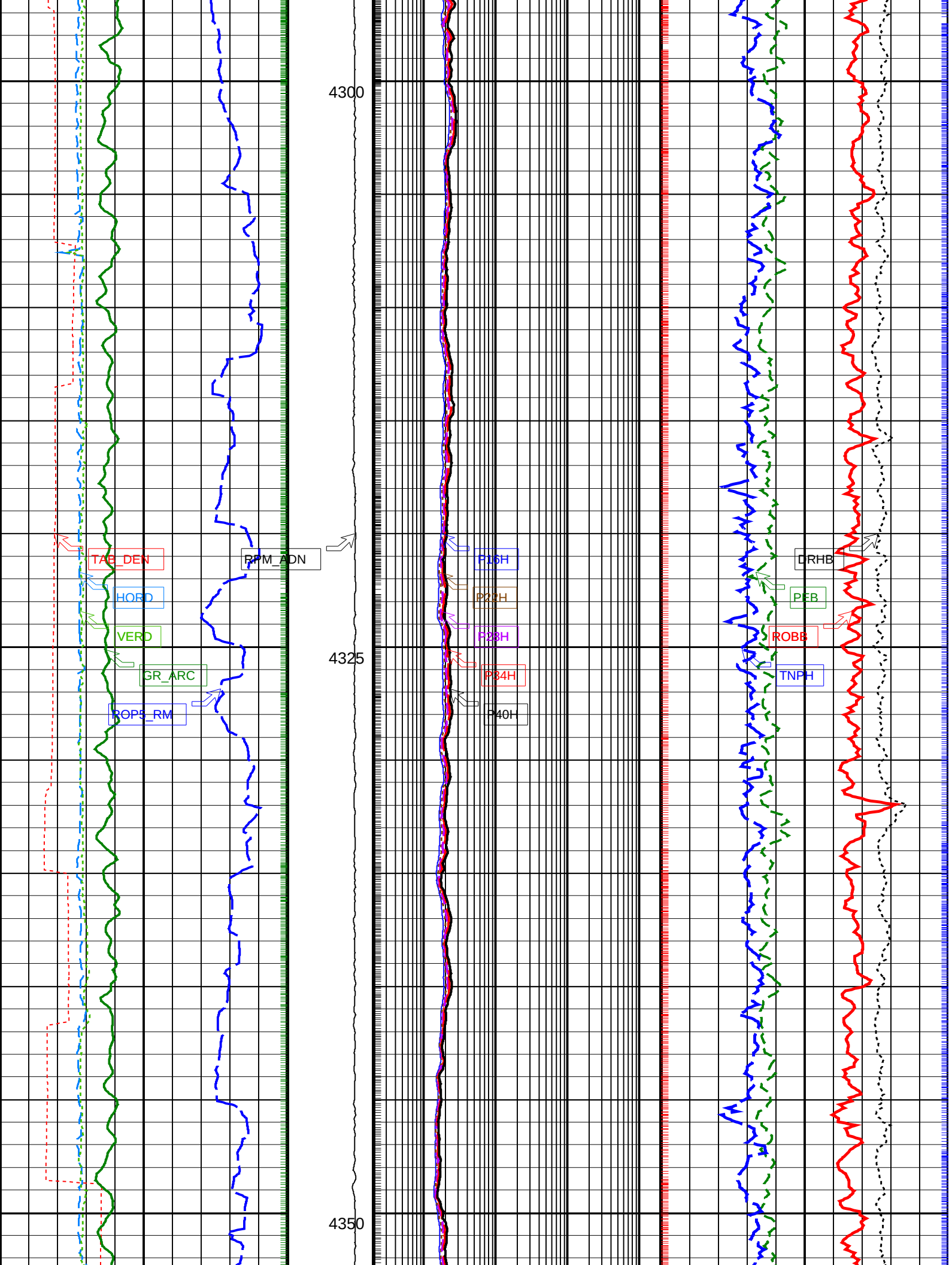
PEB
ROBB
TNPH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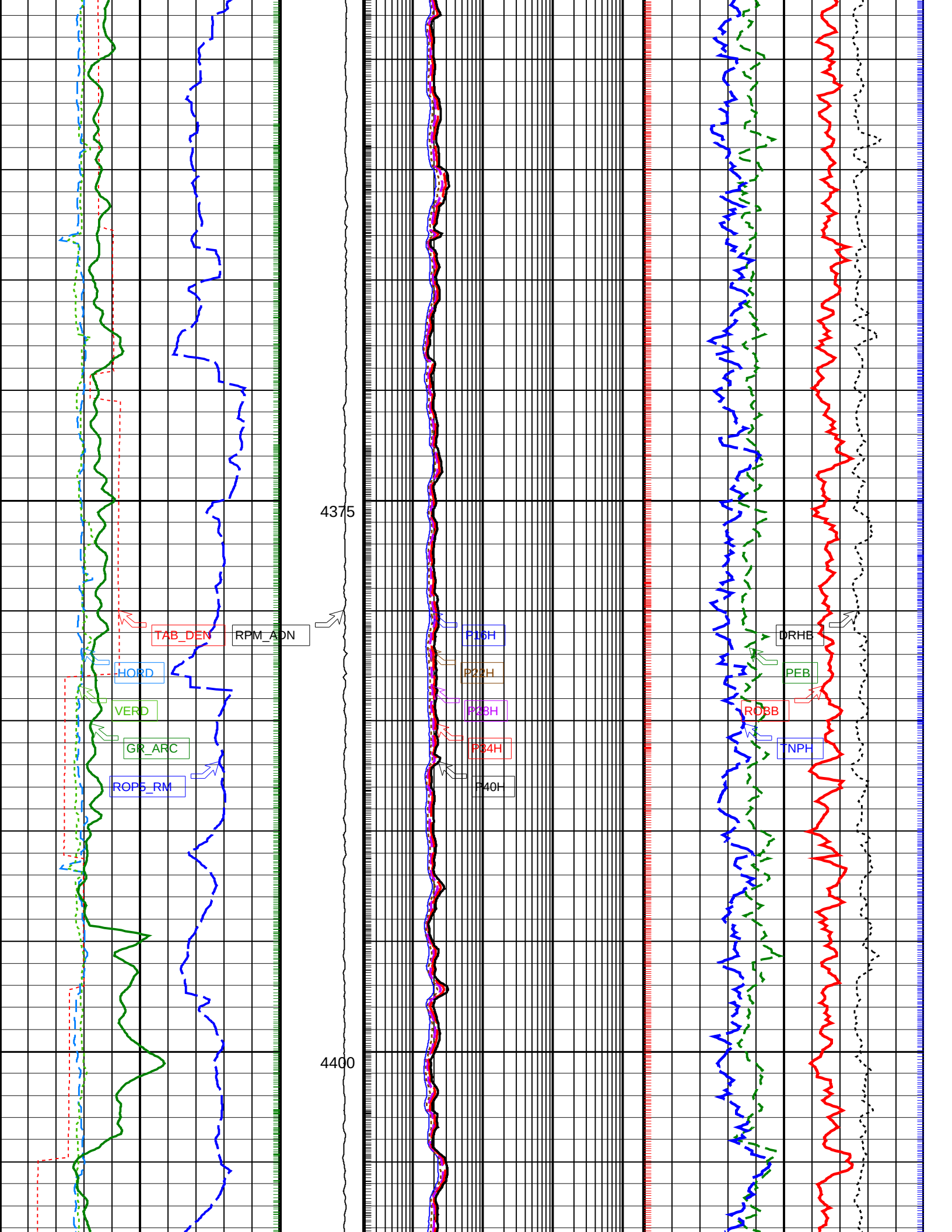
TNPH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PEB
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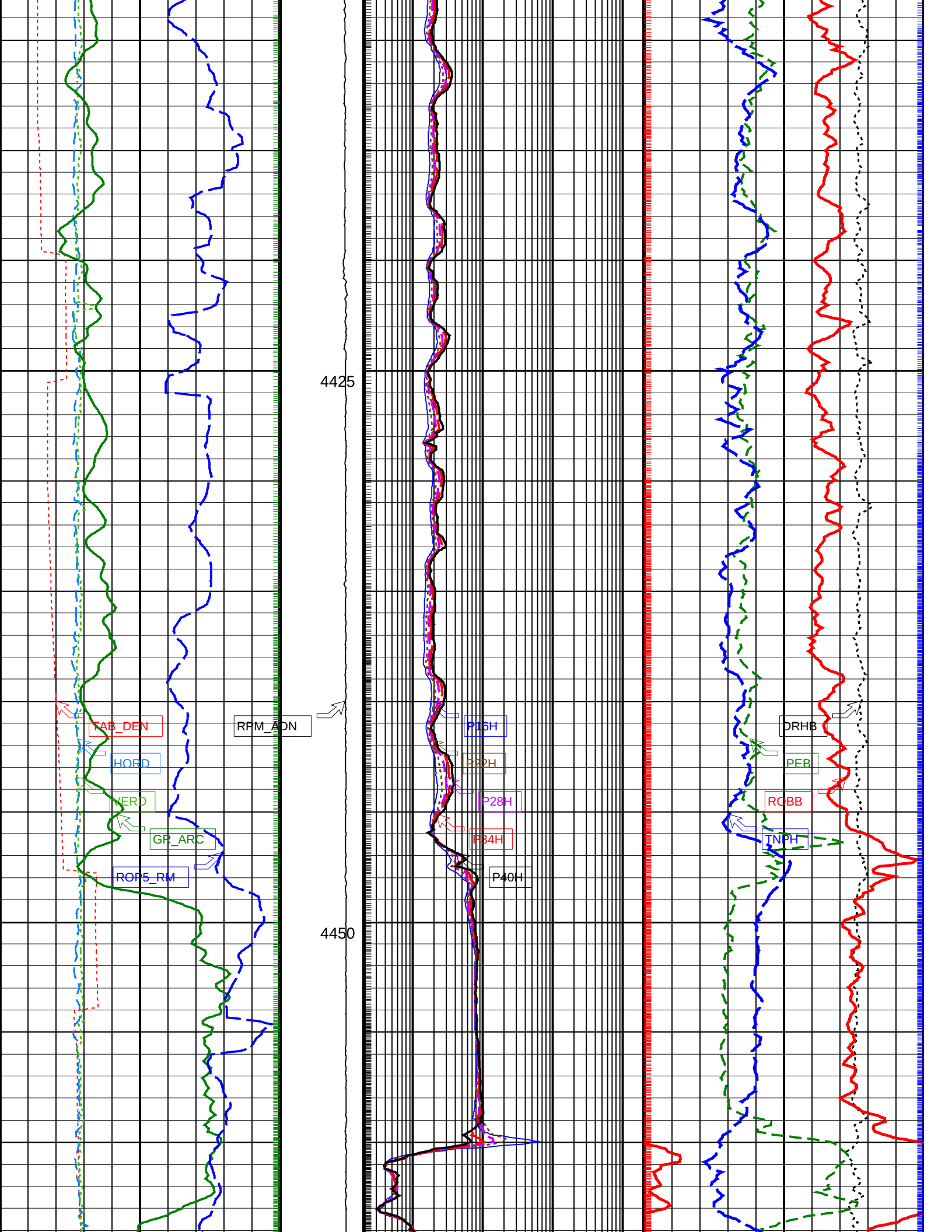
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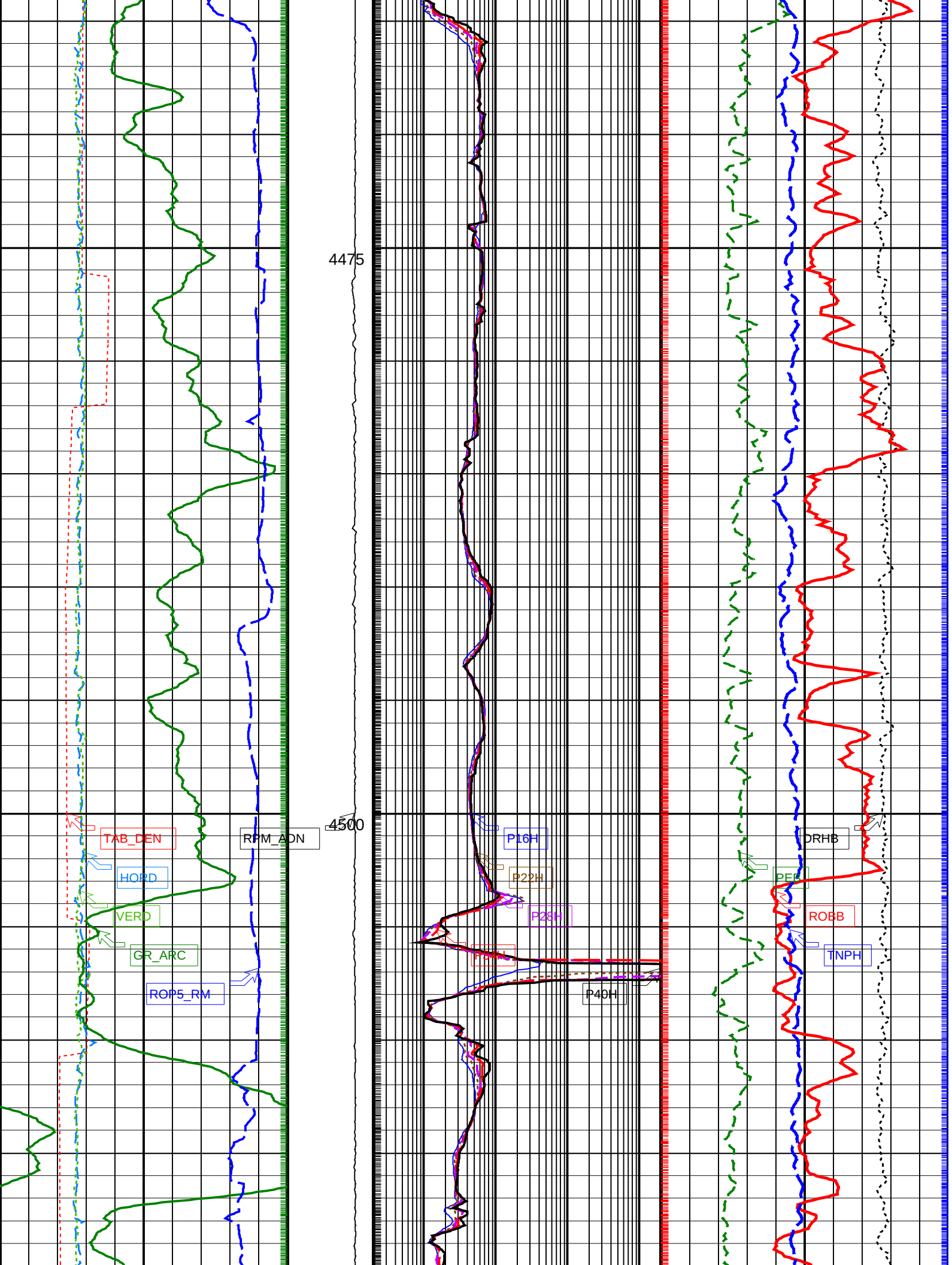
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DRHB
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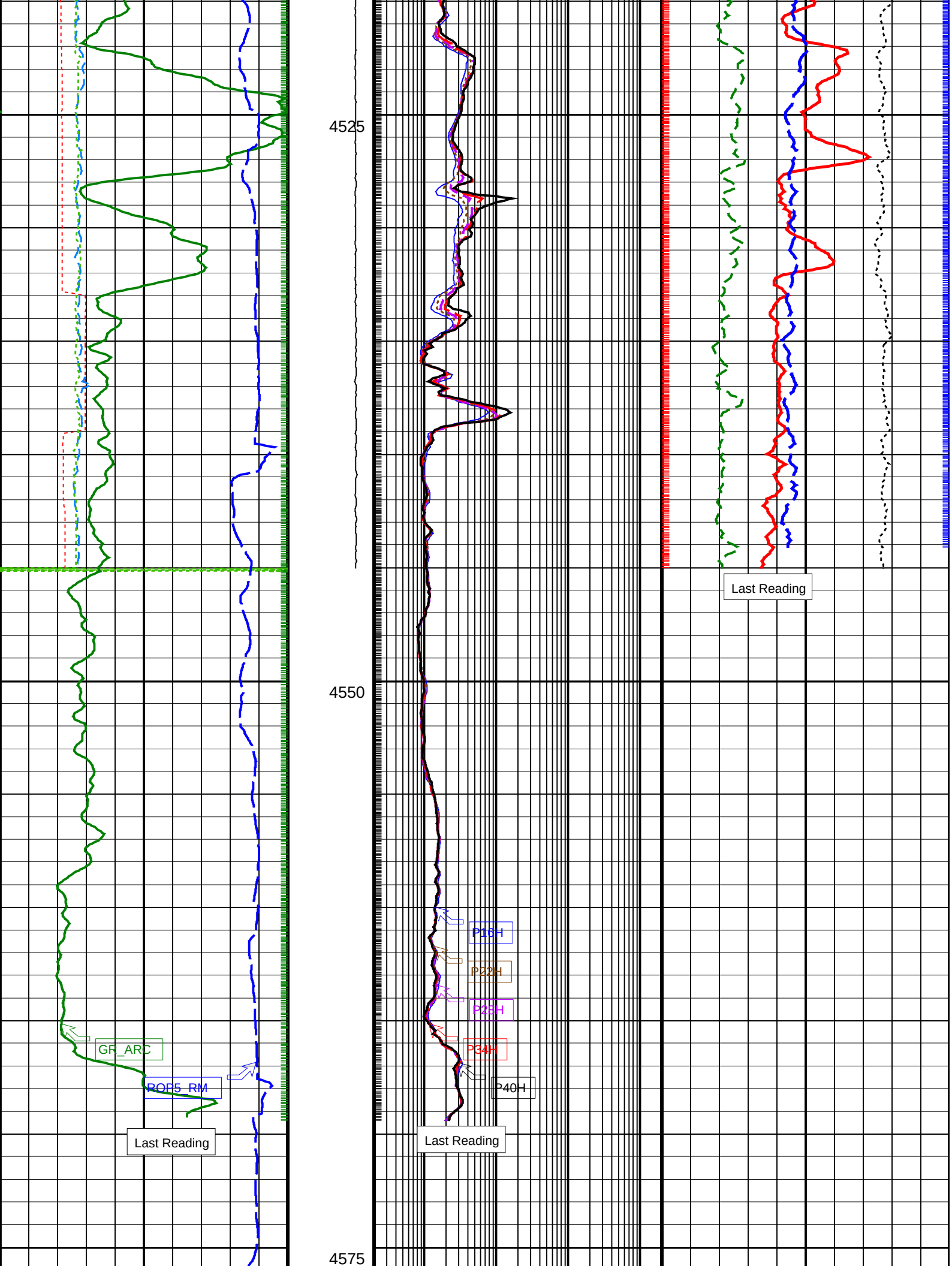
ROBB
TNPH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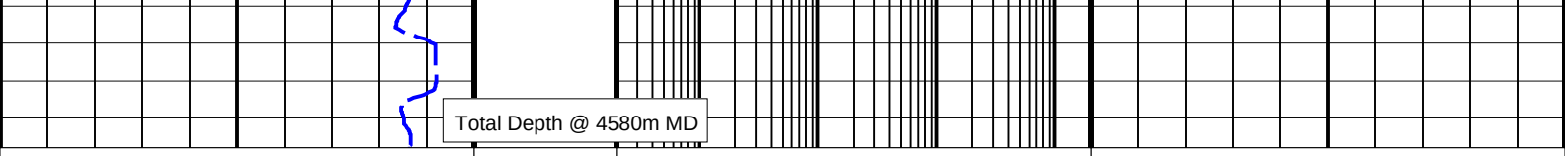
P22H
P23H
P34H
P40H
Last Reading
Last Reading



Density Time After Bit (TAB_DEN) 0 (HR) 10	**ADN Rotational Speed (RPM_ADN) (RPM)** 0 250	**ARC Phase−Shift Resistivity 16−in. at 2 MHz (P16H)** 0.2 (OHMM) 2000
Bulk Density Correction, Bottom (DRHB) −0.75 (G/C3) 0.25		
Horizontal Hole Diameter (HORD) 6 (IN) 16		**ARC Phase−Shift Resistivity 22−in. at 2 MHz (P22H)** 0.2 (OHMM) 2000
Photoelectric Factor, Bottom (PEB) 0 (−−−− 10		
Vertical Hole Diameter (VERD) 6 (IN) 16		**ARC Phase−Shift Resistivity 28−in. at 2 MHz (P28H)** 0.2 (OHMM) 2000
Bulk Density, Bottom (ROBB) 1.85 (G/C3) 2.85		
ARC Gamma Ray (GR_ARC) 0 (GAPI) 200		**ARC Phase−Shift Resistivity 34−in. at 2 MHz (P34H)** 0.2 (OHMM) 2000
Thermal Neutron Porosity (TNPH) 45 (PU) −15		
Rate of Penetration, Averaged over Last 5ft (ROP5_RM) 200 (M/HR) 0		**ARC Phase−Shift Resistivity 40−in. at 2 MHz (P40H)** 0.2 (OHMM) 2000

PIP SUMMARY

Density Samples

Neutron Samples

ARC Gamma Ray Samples

ARC Resistivity Samples

IDEAL Version: ID12_0C_09

IDF

ARC6A−AA	**id12_0c_01**	**ADN**	**id12_0c_01**

6.75−in. Azimuthal Density Neutron / Equipment Identification

Primary Equipment:

Tool Name and Serial Number	ADN6 − CA	373
Collar Type and Serial Number	ADDC − AA	373
Chassis Type and Serial Number	ADSE − EA	373
Stabilizer Type and Serial Number	IBS	373
Neutron Logging Source	NSR − M	181
Density Logging Source	GSR − J/Z	2152
Stabilizer Size	8.25 − in.	
Calibration Status	AUTO −	

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6.75−in. Azimuthal Density Neutron Calibration

Density: Magnesium Block

Phase	LS window 3 − Mg CPS	Value	Phase	SS window 1 − Mg CPS	Value	Phase	SS window 3 − Mg CPS	Value
Master		1170	Master		2995	Master		7150
250.0 (Minimum)	4125 (Nominal) 8000 (Maximum)		700.0 (Minimum)	9350 (Nominal) 18000 (Maximum)		2500 (Minimum)	23750 (Nominal) 45000 (Maximum)	

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6.75−in. Azimuthal Density Neutron Calibration

Density: Aluminum Block

Phase	LS window 3 − Al CPS	Value	Phase	SS window 1 − Al CPS	Value	Phase	SS window 3 − Al CPS	Value
Master		175.1	Master		1510	Master		4474
50.00 (Minimum)	725.0 (Nominal) 1400 (Maximum)		500.0 (Minimum)	4250 (Nominal) 8000 (Maximum)		1500 (Minimum)	15750 (Nominal) 30000 (Maximum)	

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6.75−in. Azimuthal Density Neutron Calibration

Density: Background

Phase	LS window 3 − Background CPS	Value	Phase	SS window 1 − Background CPS	Value	Phase	SS window 3 − Background CPS	Value

Master			50.36	Master			118.4	Master			521.5
15.00 (Minimum)	82.50 (Nominal)	150.0 (Maximum)		40.00 (Minimum)	220.0 (Nominal)	400.0 (Maximum)		150.0 (Minimum)	825.0 (Nominal)	1500 (Maximum)	

Master: 7−Apr−2007 23:15

6.75−in. Azimuthal Density Neutron Calibration

Density: Water Block Check

Phase	Long spacing water density G/C3		Value	Phase	Short spacing water density G/C3		Value
Master			1.034	Master			1.135
1.024 (Minimum)	1.039 (Nominal)	1.054 (Maximum)		1.096 (Minimum)	1.126 (Nominal)	1.156 (Maximum)	

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6.75−in. Azimuthal Density Neutron Calibration

Neutron: 3−Point Calibration

Phase	Far 1 tube 1 Air Point Measure CPS		Value	Phase	Far 1 tube 1 Rod Point Measure CPS		Value	Phase	Far 1 tube 1 H2O Point Measure CPS		Value
Master			17.98	Master			4.352	Master			2.159
13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)		3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)		1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)	
Phase	Far 1 tube 2 Air Point Measure CPS		Value	Phase	Far 1 tube 2 Rod Point Measure CPS		Value	Phase	Far 1 tube 2 H2O Point Measure CPS		Value
Master			18.95	Master			4.568	Master			2.222
13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)		3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)		1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)	
Phase	Far 1 tube 3 Air Point Measure CPS		Value	Phase	Far 1 tube 3 Rod Point Measure CPS		Value	Phase	Far 1 tube 3 H2O Point Measure CPS		Value
Master			17.47	Master			4.318	Master			2.099
13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)		3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)		1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)	
Phase	Far 2 tube 1 Air Point Measure CPS		Value	Phase	Far 2 tube 1 Rod Point Measure CPS		Value	Phase	Far 2 tube 1 H2O Point Measure CPS		Value
Master			17.45	Master			4.605	Master			2.323
13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)		3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)		1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)	
Phase	Far 2 tube 2 Air Point Measure CPS		Value	Phase	Far 2 tube 2 Rod Point Measure CPS		Value	Phase	Far 2 tube 2 H2O Point Measure CPS		Value
Master			18.74	Master			4.641	Master			2.249
13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)		3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)		1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)	
Phase	Far 2 tube 3 Air Point Measure CPS		Value	Phase	Far 2 tube 3 Rod Point Measure CPS		Value	Phase	Far 2 tube 3 H2O Point Measure CPS		Value
Master			17.85	Master			4.363	Master			2.162
13.30 (Minimum)	19.05 (Nominal)	24.70 (Maximum)		3.400 (Minimum)	4.857 (Nominal)	6.200 (Maximum)		1.600 (Minimum)	2.363 (Nominal)	3.100 (Maximum)	
Phase	Near 1 tube 1 Air Point Measure CPS		Value	Phase	Near 1 tube 1 Rod Point Measure CPS		Value	Phase	Near 1 tube 1 H2O Point Measure CPS		Value
Master			484.3	Master			768.4	Master			341.6
345.0 (Minimum)	487.5 (Nominal)	595.0 (Maximum)		535.0 (Minimum)	768.8 (Nominal)	925.0 (Maximum)		230.0 (Minimum)	343.7 (Nominal)	430.0 (Maximum)	
Phase	Near 2 tube 1 Air Point Measure CPS		Value	Phase	Near 2 tube 1 Rod Point Measure CPS		Value	Phase	Near 2 tube 1 H2O Point Measure CPS		Value
Master			493.2	Master			766.0	Master			343.2
345.0 (Minimum)	487.5 (Nominal)	595.0 (Maximum)		535.0 (Minimum)	768.8 (Nominal)	925.0 (Maximum)		230.0 (Minimum)	343.7 (Nominal)	430.0 (Maximum)	

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6.75−in. Azimuthal Density Neutron Calibration

Neutron: Water Block Check

Phase	Far Neutron water porosity PU		Value
Master			93.95
90.00 (Minimum)	100.0 (Nominal)	125.0 (Maximum)	

6.75−in. Array Resistivity Compensated / Equipment Identification

Primary Equipment:

Tool Name and Serial Number	ARC6 − BA 460
ARC675 Calibration Status	AUTO −

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6.75−in. Array Resistivity Compensated Calibration

Resistivity: Air

Phase	Phase−Shift T1	Value
Master		0.9015
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)

Phase	Phase−Shift T2	Value
Master		−0.8477
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)

Phase	Phase−Shift T3	Value
Master		0.8182
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)

Phase	Phase−Shift T4	Value
Master		−0.8919
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)

Phase	Phase−Shift T5	Value
Master		0.8005
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)

Phase	Phase−Shift T1 at 400KHz	Value
Master		−0.3121
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)

Phase	Phase−Shift T2 at 400KHz	Value
Master		0.3061
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)

Phase	Phase−Shift T3 at 400KHz	Value
Master		−0.2984
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)

Phase	Phase−Shift T4 at 400KHz	Value
Master		0.2904
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)

Phase	Phase−Shift T5 at 400KHz	Value
Master		−0.3169
−3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)

Master: 8−Apr−2007 12:47

6.75−in. Array Resistivity Compensated Calibration

Resistivity: Air

Phase	Attenuation T1	Value
Master		9.000
6.500 (Minimum)	8.500 (Nominal)	10.50 (Maximum)

Phase	Attenuation T2	Value
Master		5.945
4.500 (Minimum)	6.500 (Nominal)	8.500 (Maximum)

Phase	Attenuation T3	Value
Master		5.635
2.500 (Minimum)	4.500 (Nominal)	6.500 (Maximum)

Phase	Attenuation T4	Value
Master		3.857
2.600 (Minimum)	4.600 (Nominal)	6.600 (Maximum)

Phase	Attenuation T5	Value
Master		4.191
1.600 (Minimum)	3.600 (Nominal)	5.600 (Maximum)

Phase	Attenuation T1 at 400KHz	Value
Master		8.990
6.500 (Minimum)	8.500 (Nominal)	10.50 (Maximum)

Phase	Attenuation T2 at 400KHz	Value
Master		5.961
4.500 (Minimum)	6.500 (Nominal)	8.500 (Maximum)

Phase	Attenuation T3 at 400KHz	Value
Master		5.614
2.500 (Minimum)	4.500 (Nominal)	6.500 (Maximum)

Phase	Attenuation T4 at 400KHz	Value
Master		3.867
2.600 (Minimum)	4.600 (Nominal)	6.600 (Maximum)

Phase	Attenuation T5 at 400KHz	Value
Master		4.181
1.600 (Minimum)	3.600 (Nominal)	5.600 (Maximum)

Master: 8−Apr−2007 11:56

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		5.041
2.780 (Minimum)	4.800 (Nominal)	6.000 (Maximum)

SCHLUMBERGER

Survey report 25-May-2007 06:52:57 Page 1 of 4

```
Client.....................: ESSO Australia Pty Ltd
Field......................: Fortescue

Well.......................: FTA A10A                          Spud date.................: 14 May 07
Service number.............: 07ASQ0015                         Last survey date..........: 25-May-07
Engineer...................: C Skiba, M, Amarasena, A. Kohli   Total accepted surveys...: 73
                                                               MD of first survey........:  2780.00 m
RIG........................: ISDL 175                          MD of last survey.........:  4580.00 m
STATE:.....................: Victoria

----- Survey calculation methods-------------               ----- Geomagnetic data ----------------------
Method for positions.....: Minimum curvature                 Magnetic model............: BGGM version 2006
Method for DLS...........: Mason & Taylor                    Magnetic date.............: 11-May-2007
                                                             Magnetic field strength..:    1199.27 HCNT
----- Depth reference -----------------------               Magnetic dec (+E/W-).....:      13.21 degrees
Permanent datum..........: Mean Sea Level                    Magnetic dip.............:     -68.87 degrees
Depth reference..........: Driller's Depth
```

GL above permanent.....: -69.00 m
KB above permanent.....: Top Drive
DF above permanent.....: 42.50 m

----- Vertical section origin----------
Latitude (+N/S-).....: -1.90 m
Departure (+E/W-).....: 4.37 m

----- Platform reference point----------
Latitude (+N/S-).....: 5748242.460 m
Departure (+E/W-).....: 611592.480 m

Azimuth from Vsect Origin to target: 348.92 degrees

----- MWD survey Reference Criteria ---------
Reference G.....: 1000.04 mGal
Reference H.....: 1199.27 HCNT
Reference Dip.....: -68.87 degrees
Tolerance of G.....: (+/-) 2.50 mGal
Tolerance of H.....: (+/-) 6.00 HCNT
Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections ----------
Magnetic dec (+E/W-).....: 13.21 degrees
Grid convergence (+E/W-).: -0.79 degrees
Total az corr (+E/W-)....: 14.00 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/ 100f)	Srvy tool type	Tool Corr (deg)
1	2780.00	56.52	353.72	0.00	1766.63	1943.23	1862.19	-588.22	1952.88	342.47	0.00	TIP	None
2	2785.87	57.44	353.32	5.87	1769.83	1948.13	1867.08	-588.78	1957.71	342.50	5.08	GYR	None
3	2790.04	56.64	353.81	4.17	1772.10	1951.62	1870.56	-589.17	1961.15	342.52	6.57	GYR	None
4	2795.49	55.75	354.30	5.45	1775.13	1956.13	1875.06	-589.64	1965.59	342.54	5.47	GYR	None
5	2800.94	54.98	354.40	5.45	1778.23	1960.59	1879.52	-590.08	1969.97	342.57	4.33	GYR	None
6	2805.31	54.77	354.63	4.37	1780.74	1964.15	1883.08	-590.42	1973.47	342.59	1.97	GYR	None
7	2810.46	54.10	354.93	5.15	1783.74	1968.32	1887.25	-590.80	1977.57	342.62	4.22	GYR	None
8	2815.77	53.59	355.29	5.31	1786.87	1972.58	1891.53	-591.17	1981.75	342.64	3.37	GYR	None
9	2821.07	53.11	355.34	5.30	1790.03	1976.81	1895.76	-591.51	1985.90	342.67	2.77	GYR	None
10	2825.27	52.90	354.96	4.20	1792.56	1980.14	1899.11	-591.80	1989.18	342.69	2.68	GYR	None
11	2830.91	53.23	353.95	5.64	1795.95	1984.63	1903.59	-592.23	1993.59	342.72	4.71	GYR	None
12	2866.83	61.07	343.07	35.92	1815.46	2014.71	1933.05	-598.35	2023.53	342.80	10.21	PUP	None
13	2894.54	64.27	342.93	27.71	1828.18	2039.19	1956.58	-605.55	2048.15	342.80	3.52	PUP	None
14	2922.46	67.48	343.91	27.92	1839.59	2064.55	1981.00	-612.81	2073.62	342.81	3.64	PUP	None
15	2950.73	68.11	344.23	28.27	1850.28	2090.63	2006.17	-620.00	2099.79	342.83	0.75	PUP	None
16	2984.46	68.21	344.36	33.73	1862.82	2121.84	2036.31	-628.47	2131.09	342.85	0.14	PUP	None
17	3011.96	69.00	344.32	27.50	1872.85	2147.36	2060.96	-635.38	2156.68	342.87	0.88	PUP	None
18	3042.19	69.53	344.34	30.23	1883.56	2175.54	2088.19	-643.02	2184.95	342.88	0.53	PUP	None
19	3070.71	67.55	343.77	28.52	1893.99	2201.99	2113.71	-650.31	2211.48	342.90	2.19	PUP	None
20	3100.14	66.17	343.57	29.43	1905.56	2228.94	2139.68	-657.92	2238.54	342.91	1.44	PUP	None
21	3126.67	66.38	343.75	26.53	1916.23	2253.12	2162.98	-664.75	2262.83	342.92	0.31	PUP	None
22	3154.91	66.97	344.07	28.24	1927.41	2278.95	2187.90	-671.94	2288.76	342.93	0.71	PUP	None
23	3183.32	68.15	344.55	28.41	1938.26	2305.13	2213.18	-679.04	2315.01	342.94	1.35	PUP	None
24	3212.20	68.53	344.93	28.88	1948.92	2331.90	2239.07	-686.10	2341.83	342.96	0.55	PUP	None
25	3240.80	68.38	346.27	28.60	1959.42	2358.45	2264.84	-692.72	2368.41	342.99	1.34	PUP	None
26	3269.29	68.43	347.11	28.49	1969.91	2384.92	2290.62	-698.82	2394.84	343.03	0.84	PUP	None
27	3298.35	68.69	347.50	29.06	1980.53	2411.96	2317.00	-704.76	2421.82	343.08	0.47	PUP	None
28	3326.72	68.34	346.77	28.37	1990.92	2438.35	2342.74	-710.64	2448.15	343.13	0.82	PUP	None
29	3355.12	67.76	345.85	28.40	2001.53	2464.66	2368.33	-716.87	2474.45	343.16	1.11	PUP	None
30	3383.58	67.62	344.60	28.46	2012.34	2490.93	2393.79	-723.59	2500.76	343.18	1.25	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/ 100f)	Srvy tool type	Tool Corr (deg)
31	3412.44	67.47	343.90	28.86	2023.36	2517.52	2419.46	-730.83	2527.43	343.19	0.70	PUP	None
32	3440.90	66.79	344.52	28.46	2034.42	2543.65	2444.69	-737.96	2553.65	343.20	0.95	PUP	None
33	3469.55	67.26	345.10	28.65	2045.61	2569.96	2470.15	-744.87	2580.02	343.22	0.76	PUP	None
34	3499.43	67.07	345.46	29.88	2057.20	2597.44	2496.78	-751.87	2607.54	343.24	0.39	PUP	None
35	3526.78	67.16	345.13	27.35	2067.84	2622.59	2521.16	-758.27	2632.72	343.26	0.35	PUP	None
36	3555.13	67.62	345.50	28.35	2078.74	2648.71	2546.47	-764.90	2658.87	343.28	0.62	PUP	None
37	3583.51	67.55	345.44	28.38	2089.56	2674.90	2571.87	-771.48	2685.09	343.30	0.10	PUP	None
38	3611.22	67.31	345.47	27.71	2100.19	2700.44	2596.64	-777.91	2710.66	343.32	0.27	PUP	None
39	3640.04	67.11	345.35	28.82	2111.36	2726.96	2622.35	-784.60	2737.21	343.34	0.24	PUP	None
40	3668.32	66.82	346.42	28.28	2122.42	2752.95	2647.59	-790.95	2763.21	343.37	1.11	PUP	None
41	3696.32	67.04	345.72	28.00	2133.40	2778.67	2672.59	-797.15	2788.94	343.39	0.74	PUP	None
42	3724.99	66.54	345.28	28.67	2144.69	2804.98	2698.10	-803.75	2815.27	343.41	0.68	PUP	None
43	3753.45	67.09	345.21	28.46	2155.90	2831.08	2723.40	-810.41	2841.42	343.43	0.59	PUP	None
44	3782.10	66.77	345.59	28.65	2167.13	2857.39	2748.91	-817.06	2867.76	343.45	0.50	PUP	None
45	3810.09	66.76	344.83	27.99	2178.17	2883.06	2773.78	-823.62	2893.47	343.46	0.76	PUP	None
46	3838.47	66.75	344.00	28.38	2189.37	2909.05	2798.89	-830.63	2919.54	343.47	0.82	PUP	None
47	3866.91	66.77	344.37	28.44	2200.59	2935.10	2824.04	-837.75	2945.67	343.48	0.37	PUP	None
48	3895.62	66.51	347.70	28.71	2211.98	2961.42	2849.61	-844.11	2972.00	343.50	3.26	PUP	None
49	3923.79	65.63	352.99	28.17	2223.41	2987.14	2874.98	-848.43	2997.56	343.56	5.32	PUP	None
50	3951.86	65.12	355.63	28.07	2235.11	3012.55	2900.37	-850.96	3022.63	343.65	2.66	PUP	None
51	3980.40	64.78	357.54	28.54	2247.19	3038.17	2926.17	-852.50	3047.83	343.76	1.88	PUP	None
52	4009.16	64.88	357.96	28.76	2259.42	3063.89	2952.18	-853.52	3073.09	343.87	0.42	PUP	None
53	4037.62	64.96	358.43	28.46	2271.49	3089.33	2977.95	-854.33	3098.07	343.99	0.46	PUP	None
54	4065.82	64.90	0.26	28.20	2283.44	3114.45	3003.49	-854.63	3122.71	344.12	1.79	PUP	None
55	4094.12	64.83	2.91	28.30	2295.46	3139.44	3029.10	-853.92	3147.16	344.26	2.58	PUP	None
56	4122.42	65.58	6.86	28.30	2307.33	3164.14	3054.69	-851.73	3171.21	344.42	3.95	PUP	None
57	4150.93	66.57	11.63	28.51	2318.90	3188.56	3080.40	-847.54	3194.87	344.62	4.78	PUP	None

58	4179.39	67.57	16.45	28.46	2329.99	3212.28	3105.81	-841.18	3217.71	344.85	4.87	PUP	None
59	4208.03	68.53	20.57	28.64	2340.70	3235.37	3131.00	-832.75	3239.85	345.11	4.19	PUP	None
60	4236.68	68.85	23.79	28.65	2351.12	3257.69	3155.71	-822.67	3261.18	345.39	3.21	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/ 100f)	Srvy tool type	Tool Corr (deg)
61	4265.27	69.16	26.19	28.59	2361.36	3279.26	3179.90	-811.39	3281.78	345.69	2.41	PUP	None
62	4293.61	69.31	29.08	28.34	2371.41	3299.93	3203.37	-799.10	3301.54	345.99	2.91	PUP	None
63	4321.72	69.41	29.42	28.11	2381.32	3319.99	3226.32	-786.25	3320.74	346.30	0.36	PUP	None
64	4349.58	67.22	30.18	27.86	2391.61	3339.56	3248.79	-773.39	3339.57	346.61	2.52	PUP	None
65	4377.46	67.33	35.11	27.88	2402.39	3358.14	3270.43	-759.52	3357.47	346.93	4.97	PUP	None
66	4405.57	67.49	42.82	28.11	2413.20	3374.79	3290.59	-743.21	3373.48	347.27	7.72	PUP	None
67	4434.47	67.63	40.50	28.90	2424.23	3390.96	3310.54	-725.46	3389.10	347.64	2.27	PUP	None
68	4462.71	67.99	38.51	28.24	2434.90	3407.56	3330.72	-708.83	3405.31	347.99	2.03	PUP	None
69	4490.76	68.72	37.04	28.05	2445.25	3424.71	3351.33	-692.86	3422.20	348.32	1.68	PUP	None
70	4518.77	69.55	35.16	28.01	2455.22	3442.50	3372.47	-677.44	3439.84	348.64	2.11	PUP	None
71	4547.89	70.28	33.00	29.12	2465.23	3461.79	3395.12	-662.12	3459.08	348.96	2.26	PUP	None
72	4559.65	70.53	32.03	11.76	2469.17	3469.81	3404.47	-656.16	3467.12	349.09	2.46	PUP	None
73	4580.00	70.75	30.51	20.35	2475.92	3484.00	3420.88	-646.20	3481.37	349.30	2.17	Proj. to TD	

Company: **ESSO Australia Pty Ltd**

Schlumberger

Well: **FTA A10A**

Field: **Fortescue**

Rig: **ISDL 175**

8.5 in. Section

State: **Victoria**

VISION Service
1:200 Measured Depth
Recorded Mode Log