

Potassium	%	n.a									
Environmental data											
GR											
Mud weight	ppg	11.50									
Bit size	in	9.875									
Resistivity											
Neutron porosity											
Hole Size	in	9.875									
Mud weight	ppg	11.50									
Temperature	°C	20									
Mud salinity	ppk	61.350									
Formation salinity		n.a									
Recording rate 1	SEC	6 (arc)									
Recording rate 2	SEC	10 (sonic)									
Filtering GR		3 pts.									
Filtering density		3 pts.									
Filtering Neutron		3 pts.									
Company representative		A. Choy	D. Daniels	M. Calicutt							
D&M personnel		M. Sihite	D. Perkins	W. Chehabi	C. Soper	D.B. Khanh					

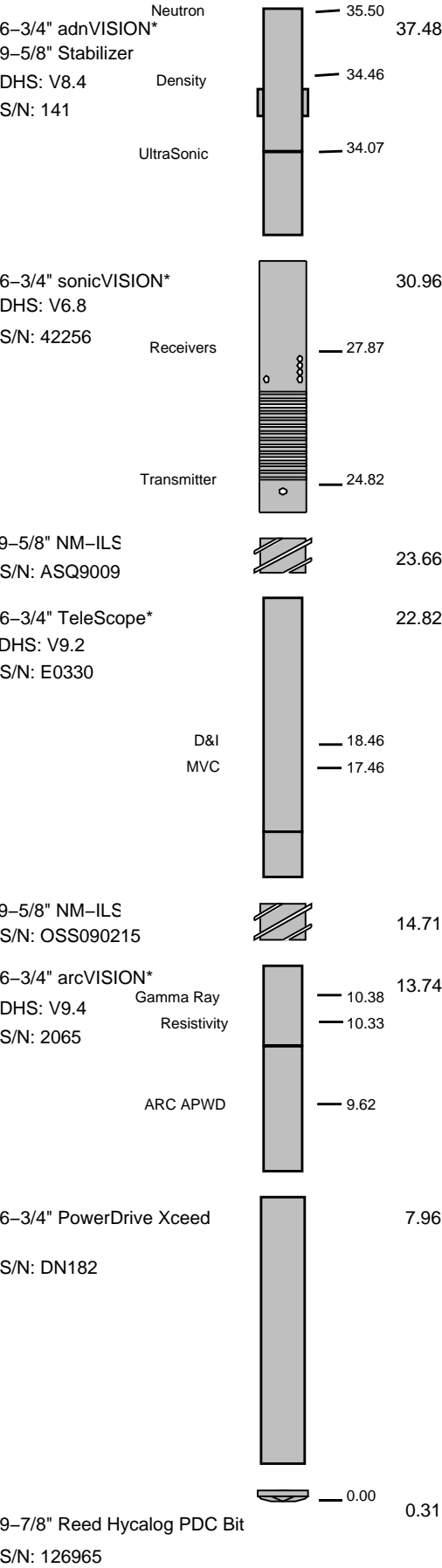
DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

OTHER SERVICES FOR RUN1 Directional Drilling Directional Surveys Annular Pressure & Temperature Shock & Vibrations		
REMARKS: RUN NUMBER 1 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 ADN was run with 9-5/8" clamp on stabilizer Delta-T is borehole compensated Ultrasonic sensor failure Density caliper presented instead POOH upon reaching TD of WKF W12A		

EQUIPMENT DESCRIPTION		
RUN1		
DOWNHOLE EQUIPMENT		

DOWNHOLE EQUIPMENT



Maximum string diameter 9.88 in.
All lengths in Meters

Variable Name	Variable Description	Run Name & Value	
	Run Number		1
	General Information		
BHT_RM	Bottom Hole Temperature (RM)	DEGC	91.000
BSAL_RM	Mud Salinity (RM)	PPK	61.350
BS_RM	Bit Size (RM)	IN	9.875
COEF_M	User Defined FEXP in Clean Sand	----	1.650
C_WS	Overpressure correction to Sw and M	----	1.000
FEXP	Formation Factor Exponent (RM)	----	2.000
FNUM	Formation Factor Enumerator (RM)	----	1.000
FPHI_RM	Formation Factor Porosity Source (RM)	----	XPLOT
MST_RM	Mud Sample temperature (RM)	DEGC	20.000
MW_RM	Mud Weight (RM)	LB/G	11.500
OBMF_RM	Oil Based Mud (RM)	----	YES
RHOF_RM	Mud Filtrate Density (RM)	G/C3	1.000
RHOM_RM	Matrix density (RM)	G/C3	2.710
RMS_RM	Resistivity of Mud Sample (RM)	OHMM	1000.000
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
SHT_RM	Ground Level Temperature (Mud-Line When Offshore) (RM)	DEGC	10.000
TD_RM	Total Measured Depth (RM)	M	2440.000
TWS_RM	Temperature of Connate Water (RM)	DEGC	23.889
VF_ILLI	Fraction of illite in shales	----	0.500
VF_KAOL	Fraction of kaolinite in shales	----	0.500
VF_MONT	Fraction of montmorillonite in shales	----	0.000
XPDM_RM	Cross plot density porosity multiplier	----	0.675
XPNM_RM	Cross plot neutron porosity multiplier	----	0.325
	ARC		
A12A	ARC Air Cal Attenuation From T1 at 2 MHz	DB	8.342
A14A	ARC Air Cal Attenuation From T1 at 400 KHz	DB	8.321
A22A	ARC Air Cal Attenuation From T2 at 2 MHz	DB	6.600
A24A	ARC Air Cal Attenuation From T2 at 400 KHz	DB	6.628
A32A	ARC Air Cal Attenuation From T3 at 2 MHz	DB	4.967
A34A	ARC Air Cal Attenuation From T3 at 400 KHz	DB	4.939
A42A	ARC Air Cal Attenuation From T4 at 2 MHz	DB	4.506
A44A	ARC Air Cal Attenuation From T4 at 400 KHz	DB	4.530
A52A	ARC Air Cal Attenuation From T5 at 2 MHz	DB	3.519
A54A	ARC Air Cal Attenuation From T5 at 400 KHz	DB	3.500
ABNT	Abnormal Transmitter Indicator	----	No_Tx_Failed
ADHS	ARC Down Hole Software Version	----	9.4
AM2A	ARC Air Cal Amplitude Offset at 2 MHz	----	-50000.000
ANISO_COMPUTE	Anisotropy Computation Option	----	YES
APICG	ARC5 Gamma Ray Gain Factor	----	1.027
APIG	ARC Gamma Ray API Gain Factor	----	-1.000
ARC_DATA_FIX	ARC: Create A Corrected ARC Time Data File	----	NO
ARC_DATA_LTB	ARC: Create An ARC LTB Data File	----	NO
ATMP_ARC	ARC Select Temperature Channel	----	Annulus_Temp
ATRN	ARC Tool Run Number	----	1
ATSN	ARC Tool Serial Number	----	2065
AZMF	Formation DIP Azimuth	DEG	0.000
BH_COMPUTE	Borehole Inversion Computation Option	----	YES
CALG	ARC Gamma Ray Cal Gain Factor	----	1.027
CALI_SLCT_ARC	ARC Caliper Selection	----	BITSIZE
CDPTH_ARC	Process Start Depth	M	30.480
DIELEC_COMPUTE	Dielectric Computation Option	----	YES
DIPF	Formation DIP Angle	DEG	0.000
ERRCT	Percentage Error Cutoff	----	4.500
GRSH	GR Shale (Invasion Computation Cutoff)	GAPI	1000.000
HIGH_BLEND	High Resistivity Threshold for Blending	OHMM	2.000
INCLIN_B0	ARC Bias Constant (mg)	----	0.000
INCLIN_B1	ARC Bias First-order Coefficient (mg/degC)	----	0.000
INCLIN_B2	ARC Bias Secod-order Coeeficient (mg/degC)	----	0.000
INCLIN_B3	ARC Bias Third-order Coeeficient (mg/degC)	----	0.000
INCLIN_C0	ARC Current Scale Factor Constant (mA/g)	----	1.000
INCLIN_C1	ARC Scale First-order Coeeficient (mA/g/degC)	----	0.000
INCLIN_C2	ARC Scale Second-order Coeeficient (mA/g/degC)	----	0.000
INCLIN_C3	ARC Scale Third-order Coeeficient (mA/g/degC)	----	0.000
INVAS_COMPUTE	Invasion Computation Option	----	YES
JSD_ARC	ARC Acquisition start date	----	21-NOV-09
KPER	Potassium Concentration (RM)	----	0.000
LOW_BLEND	Low Resistivity Threshold for Blending	OHMM	1.000
MSWS	ARC Wizard Model Switch Window	M	1.524
MULTIEFFECT_COM	Multi Effect Option	----	YES
P11AC_RM	ARC: Air Calibration For Phase T1 to R1	DEG	-999.250
P12A	ARC Air Cal Phase-Shift From T1 at 2 MHz	DEG	1.783
P14A	ARC Air Cal Phase-Shift From T1 at 400 KHz	DEG	-0.414
P22A	ARC Air Cal Phase-Shift From T2 at 2 MHz	DEG	-1.661
P24A	ARC Air Cal Phase-Shift From T2 at 400 KHz	DEG	0.291
P32A	ARC Air Cal Phase-Shift From T3 at 2 MHz	DEG	1.696
P34A	ARC Air Cal Phase-Shift From T3 at 400 KHz	DEG	-0.373
P42A	ARC Air Cal Phase-Shift From T4 at 2 MHz	DEG	-1.703
P44A	ARC Air Cal Phase-Shift From T4 at 400 KHz	DEG	0.290
P52A	ARC Air Cal Phase-Shift From T5 at 2 MHz	DEG	1.660
P54A	ARC Air Cal Phase-Shift From T5 at 400 KHz	DEG	-0.378

POFFSET_ARC	ARC: Pressure Offset	PSI	0.000
PRTD	Preferred Resistivity Log for Rt Display while Multi-Effects	----	P34B
PSOF_ADJ_T1	ARC: User Input Phase offset	DEG	0.000
RESTIK	ARC resistivity tick source	----	Phase
RSD	LWD run start date dd-mmm-yy	----	21-NOV-09
RWA_COMP_MOD	Rwa computation model	----	BASIC
RWA_DEN_ADN	Rwa Density Input	----	RHOB
RWA_DEN_CDN	Rwa Density Input	----	RHOB
RWA_DEN_INPUT	Rwa Density Input	----	RHOB
RWA_FORM_MOD	Rwa computation formation model	----	CLASTIC
RWA_RES_INPUT	Rwa computation resistivity input	----	RT
SHIG	ARC High Shock Risk Level	CPS	0.500
SMED	ARC Medium Shock Risk Level	CPS	0.330
SMIN	ARC Minimum Shock Risk Level	CPS	0.160
SUPD	ARC Real Time Shock Update Rate	S	30.000
TCODE_ARC	ARC Tool File Code	S	30.000
TSIZ_ARC	ARC Tool Size	IN	6.750
UNIFORM_COMPUTE	Uniform Rock Option	----	YES
VERS_ARC	ARC Down hole software version Number	----	9.400
WRK	to Report Potassium Concentration (RM)	----	K_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_ORIENTATION	ADN Image Orientation	----	TOH
ADN_STAB_STR	ADN Stabilizer Type String	----	TOH
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	----	YES
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	6.930
DTIK_SEL	ADN: Density Tick Channel Name	----	LSAZ
DTMUD	Delta-T for Mud	US/F	207.909
DYN_IMG_COMPUTE	Generate Dynamic Normalized Image?	----	YES
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	7.000
GCSE	Generalized Caliper Selection	----	BS
HPS	ADSE-EB (High Pressure Inconel Chassis)?	----	NO
IBS	Integral Blade Stabilizer Collar?	----	NO
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	G/C3	2.050
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	9.480
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	----	8.400
WSDI	Window Size of Dynamic Normalization Image	M	15.240

Schlumberger Drilling & Measurements

ID13 Parameter Insert Header Software vers:

WKF W12A LWD VISION SERVICE 200MD


ARC6A-AA Id14_0c_25 ADN Id14_0c_25

Format: VISION Service RM Log Vertical Scale: 1:200 Graphics File Created: 25-Nov-2009 09:43

PIP SUMMARY

Density Samples 

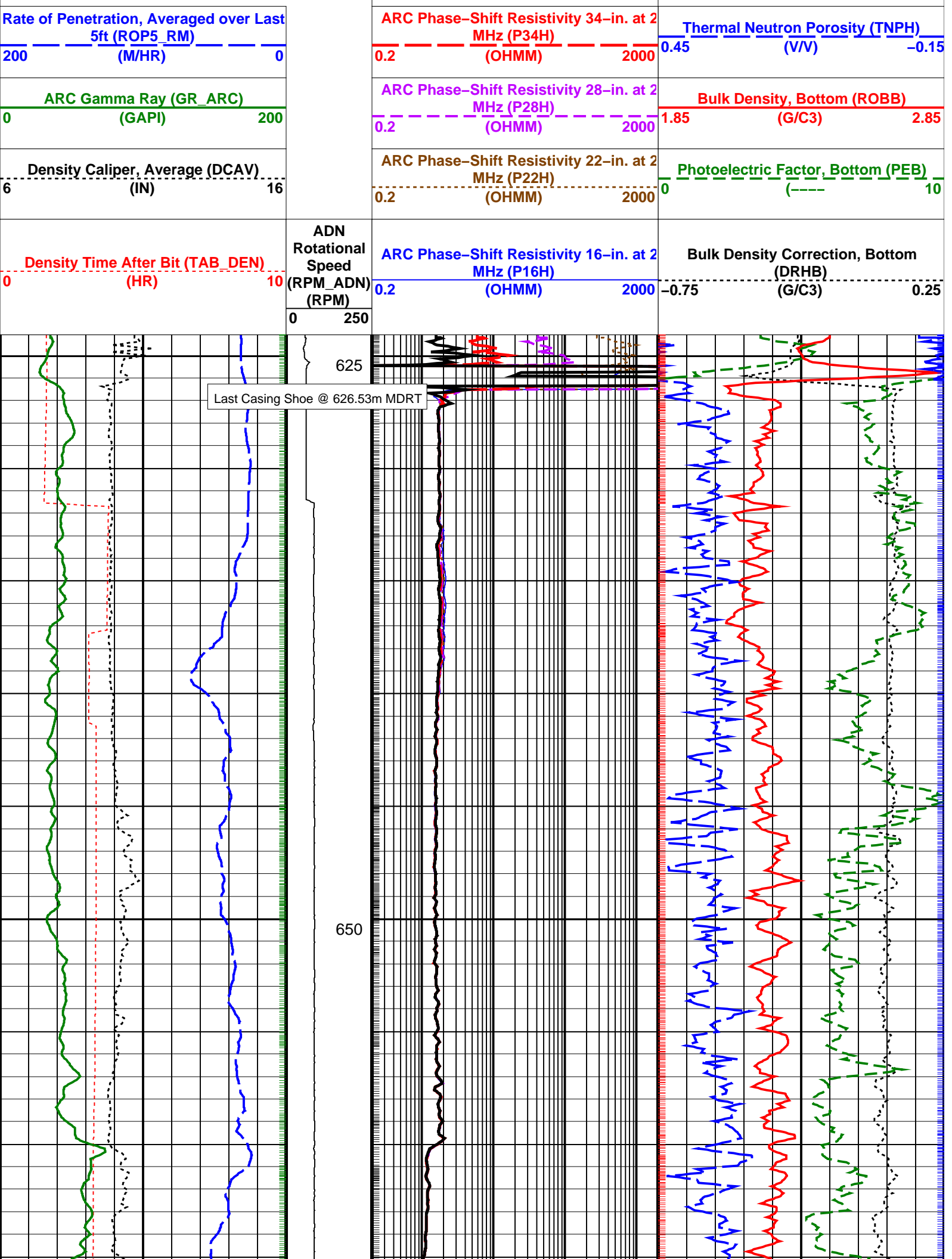
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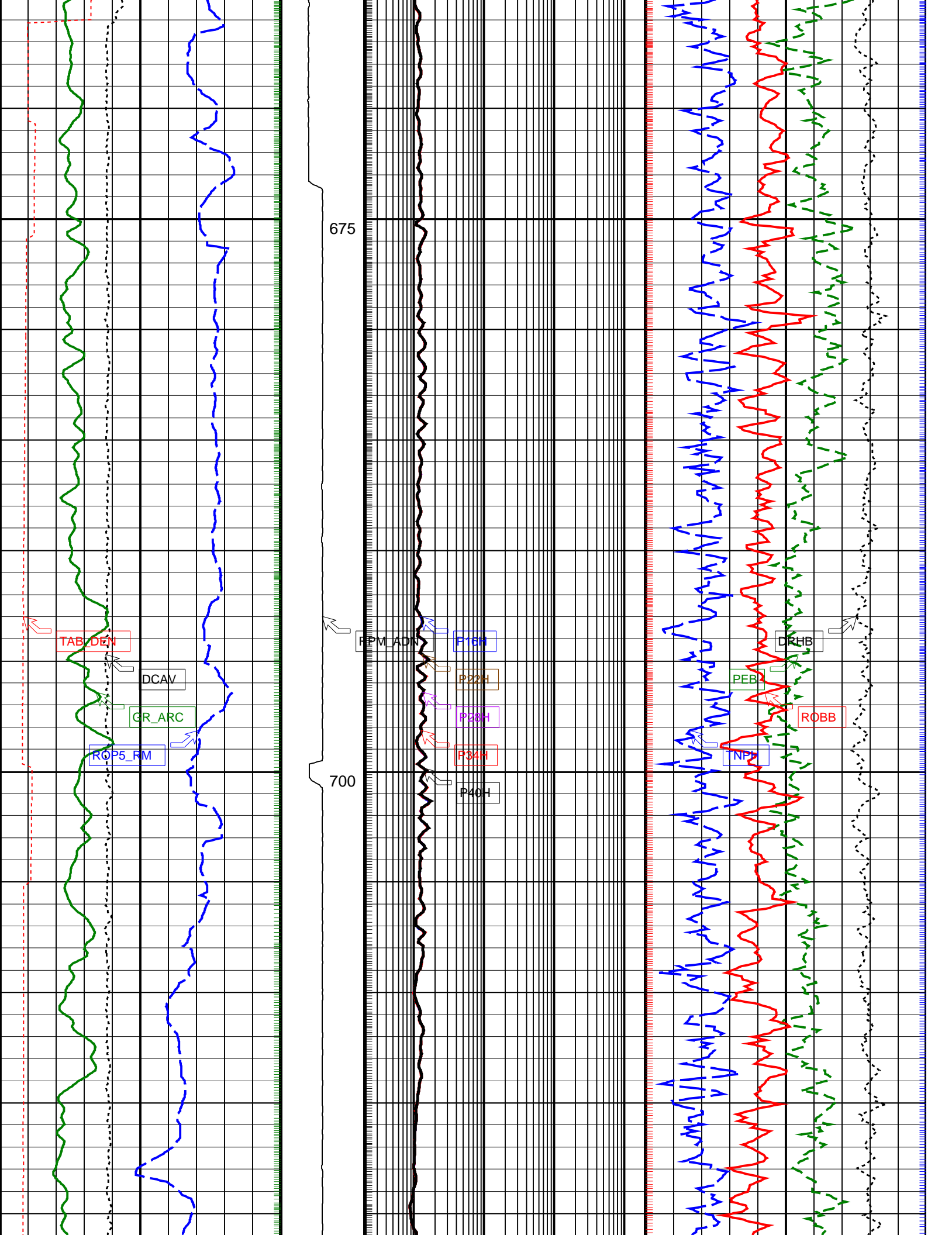
 ARC Gamma Ray Samples

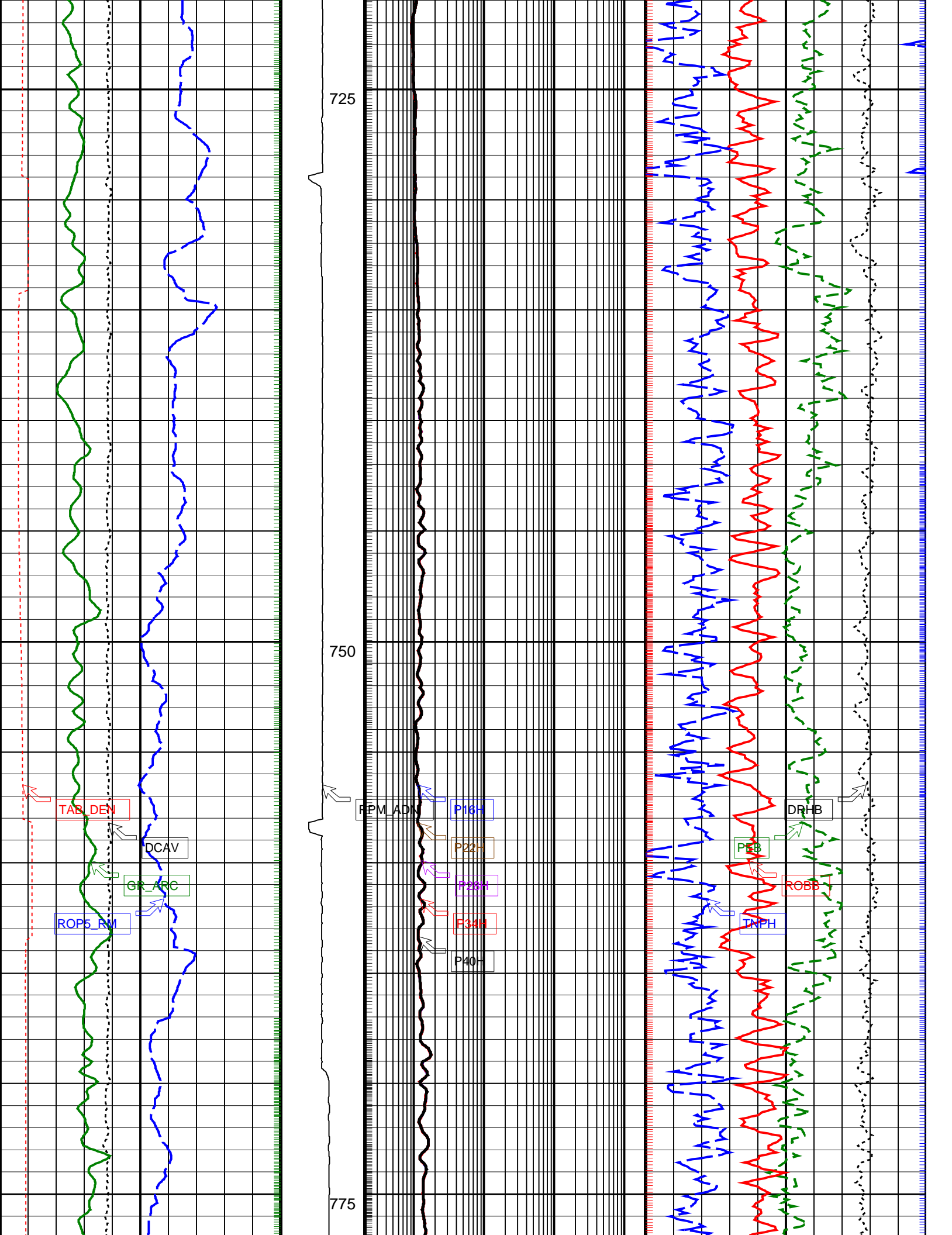
 ARC Resistivity Samples

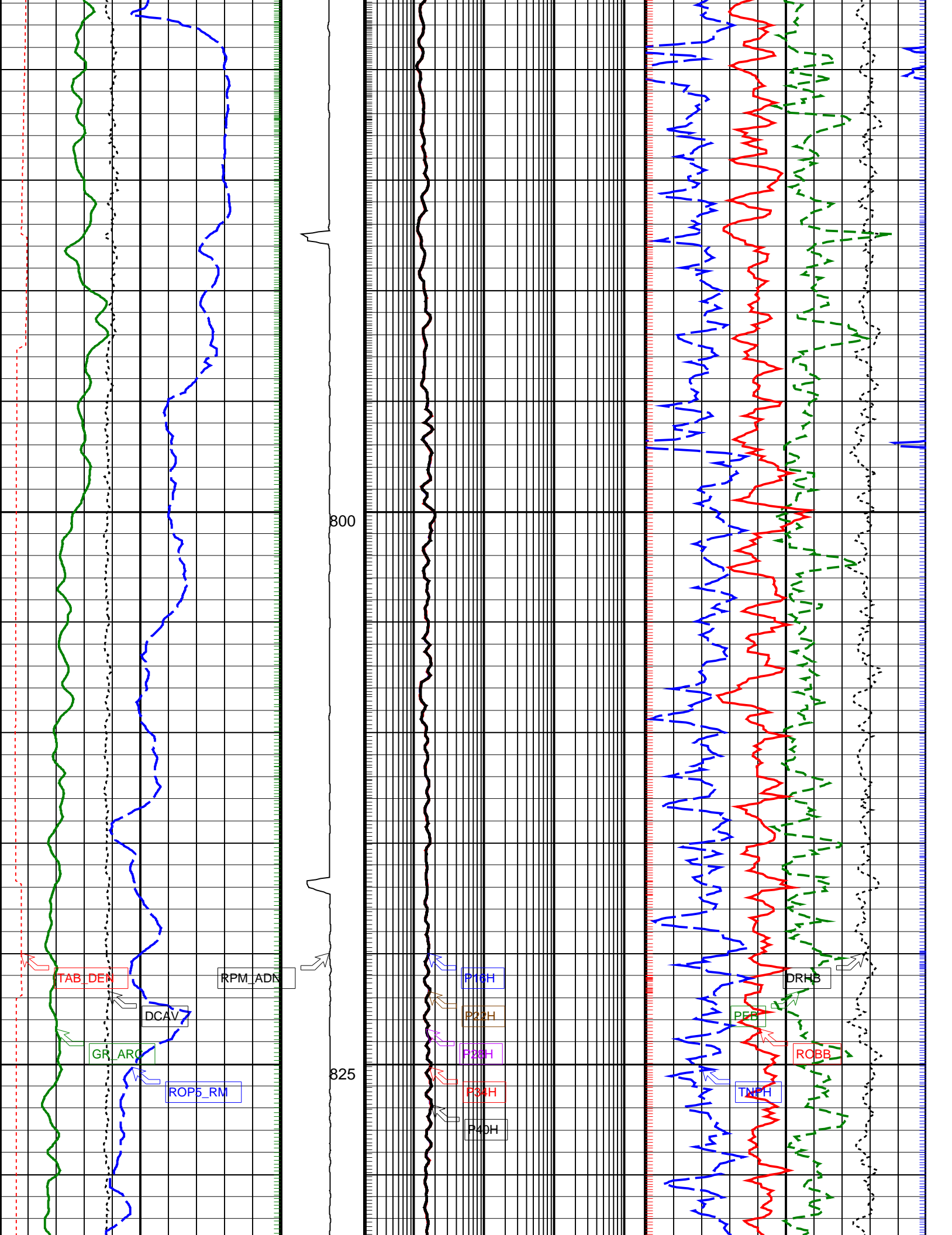
ARC Phase-Shift Resistivity 40-in. at 2
MHz (P40H)

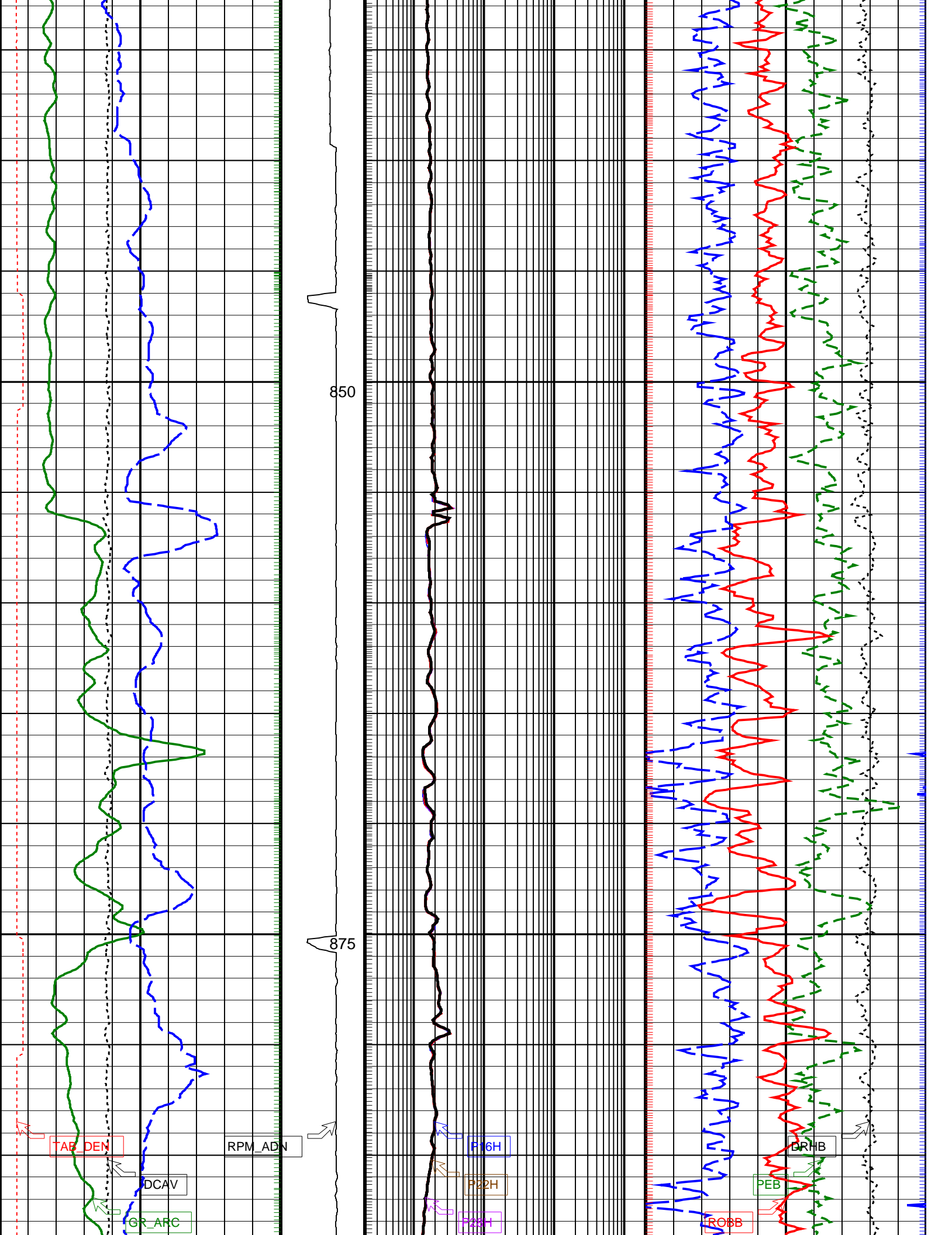
0.2 (OHMM) 2000

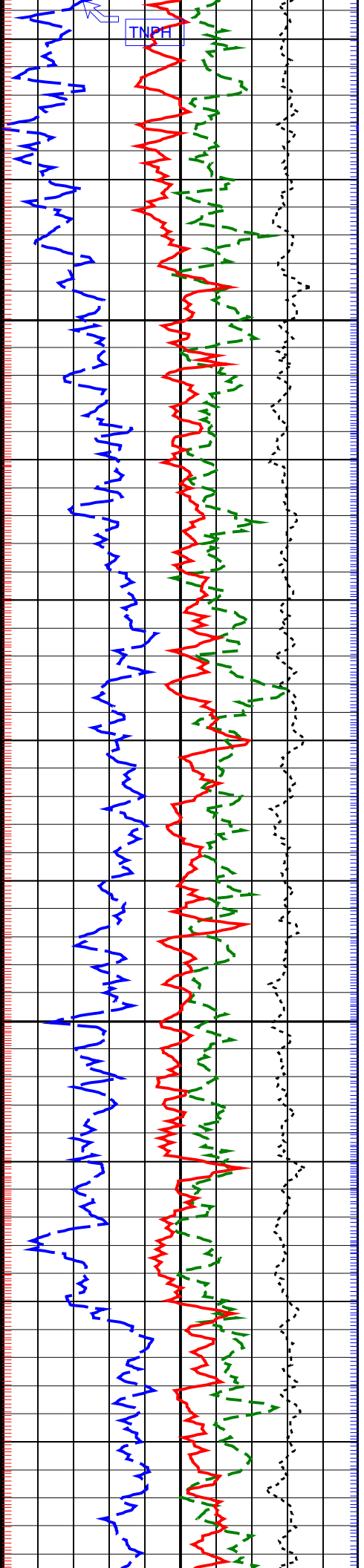
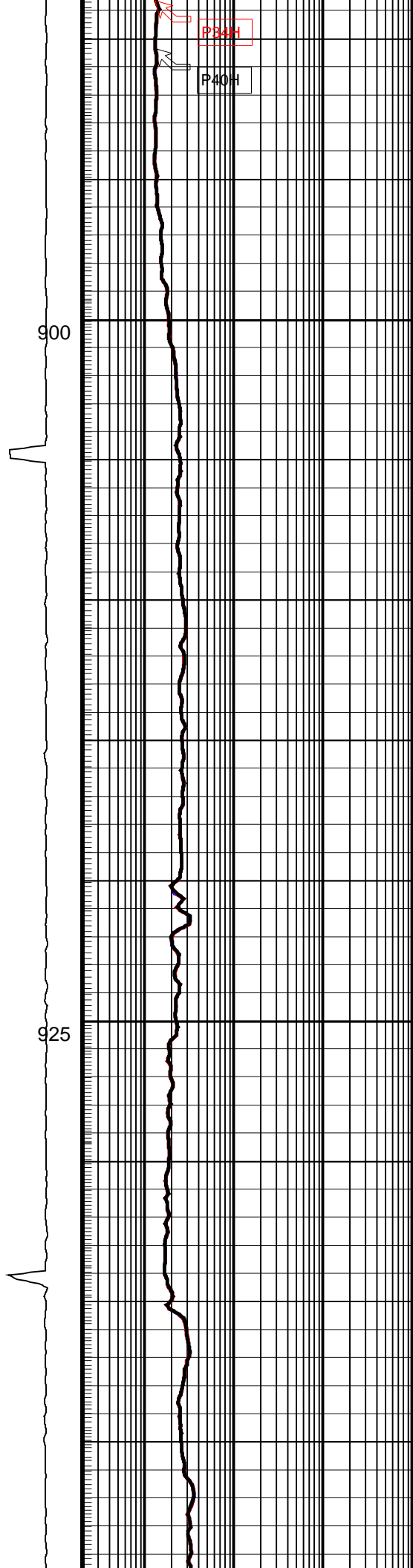
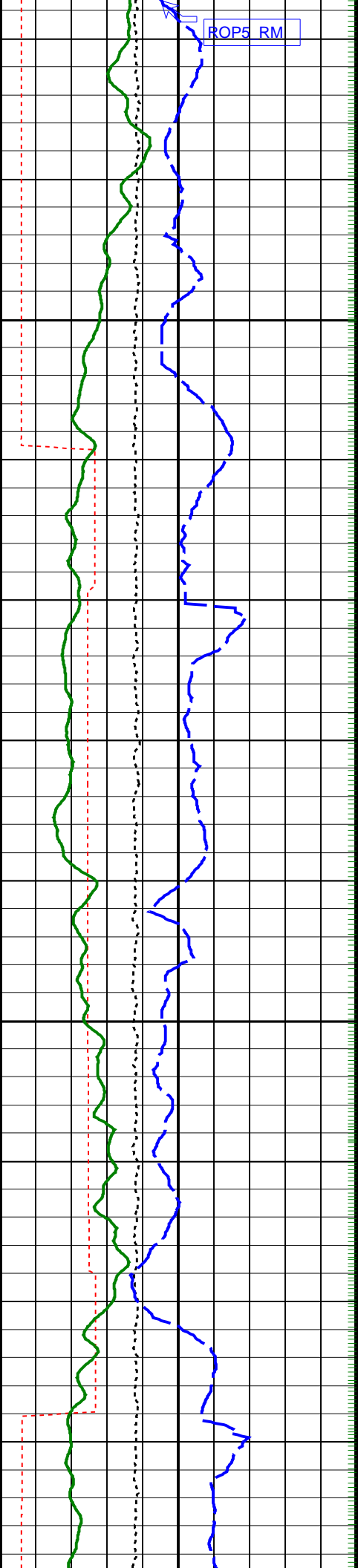


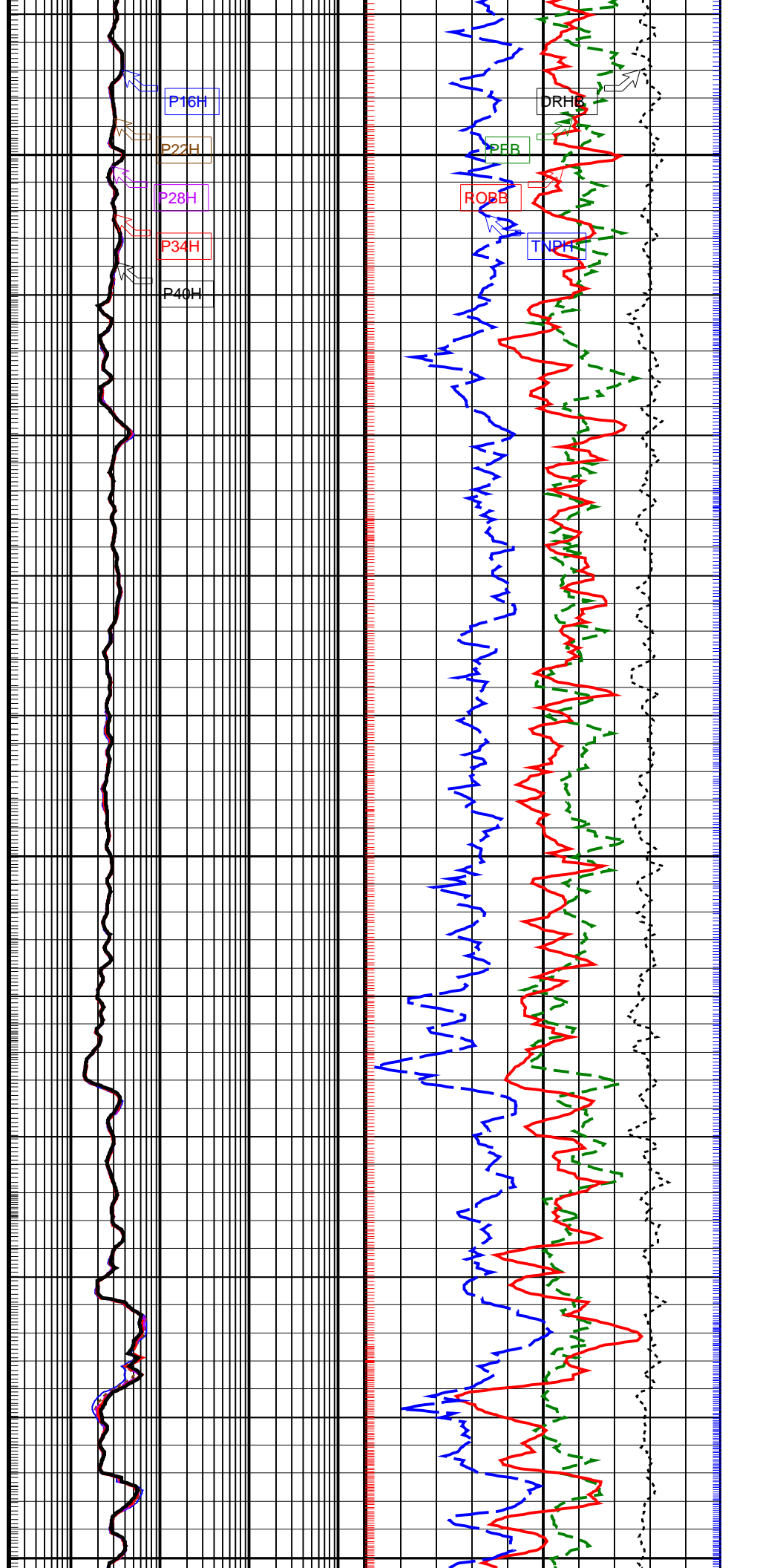
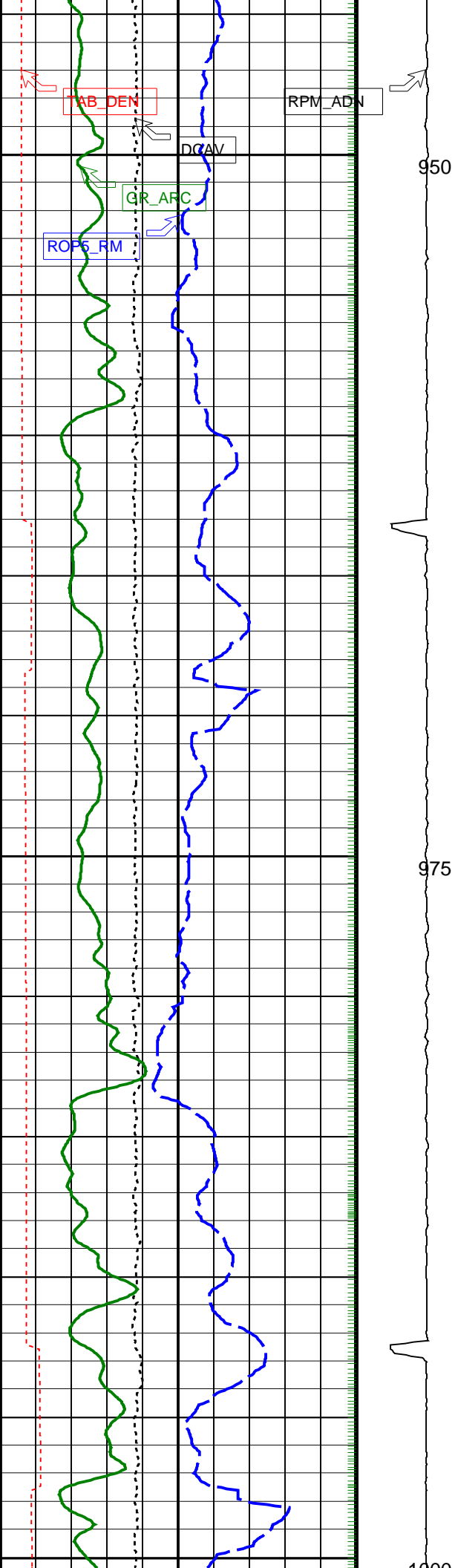


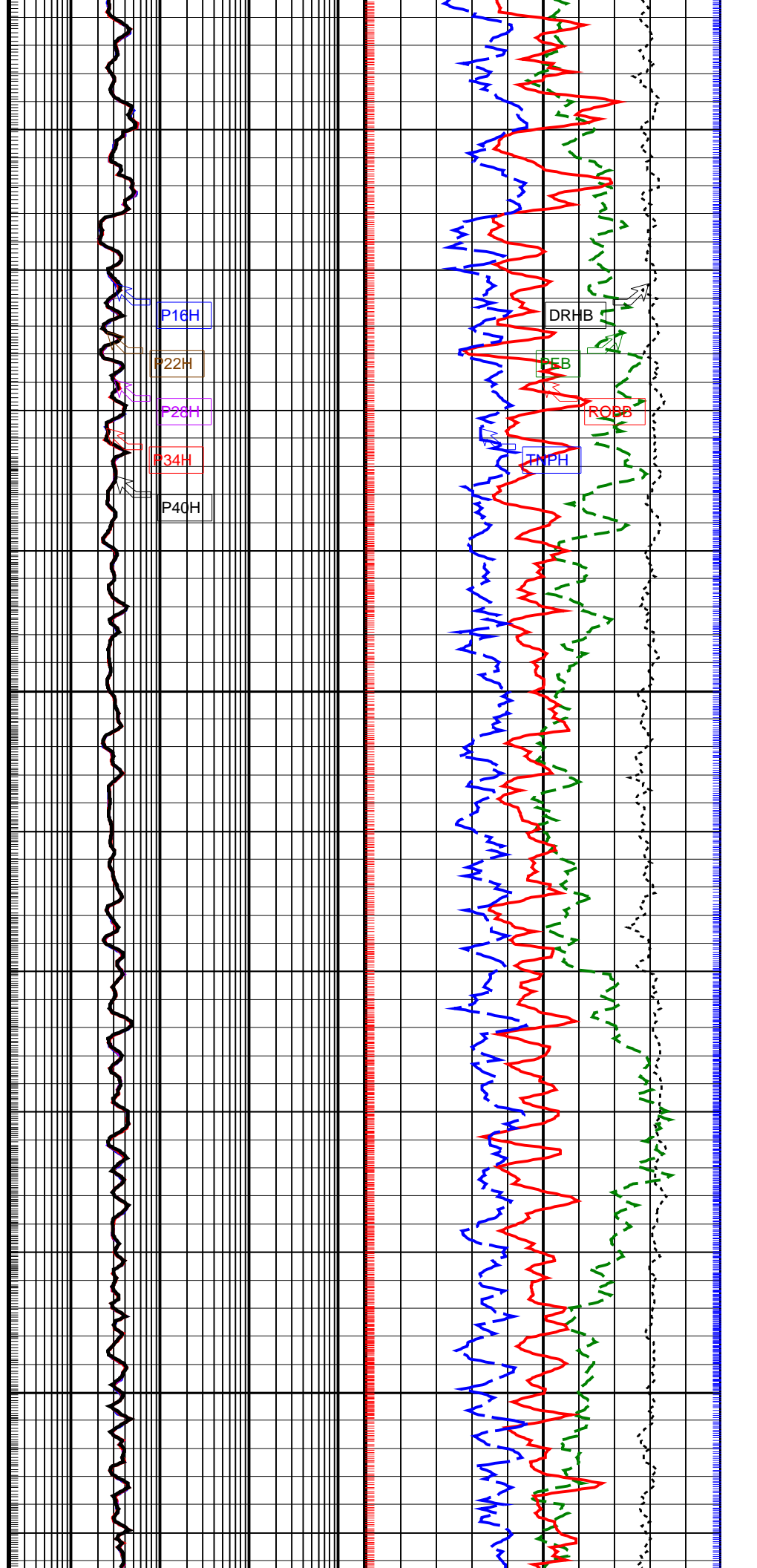
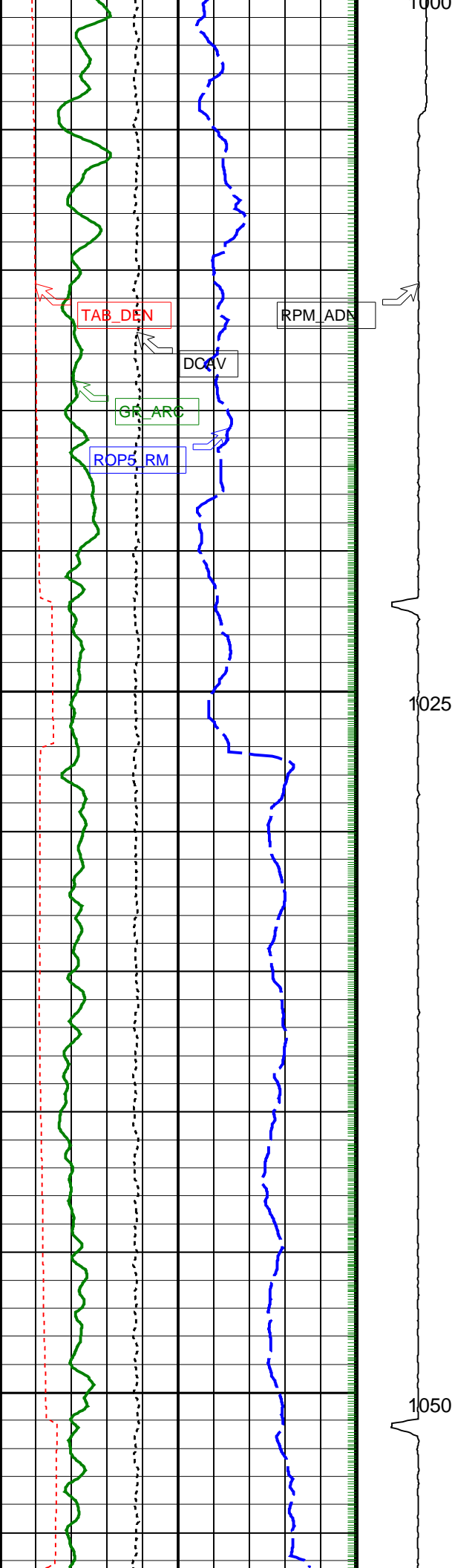


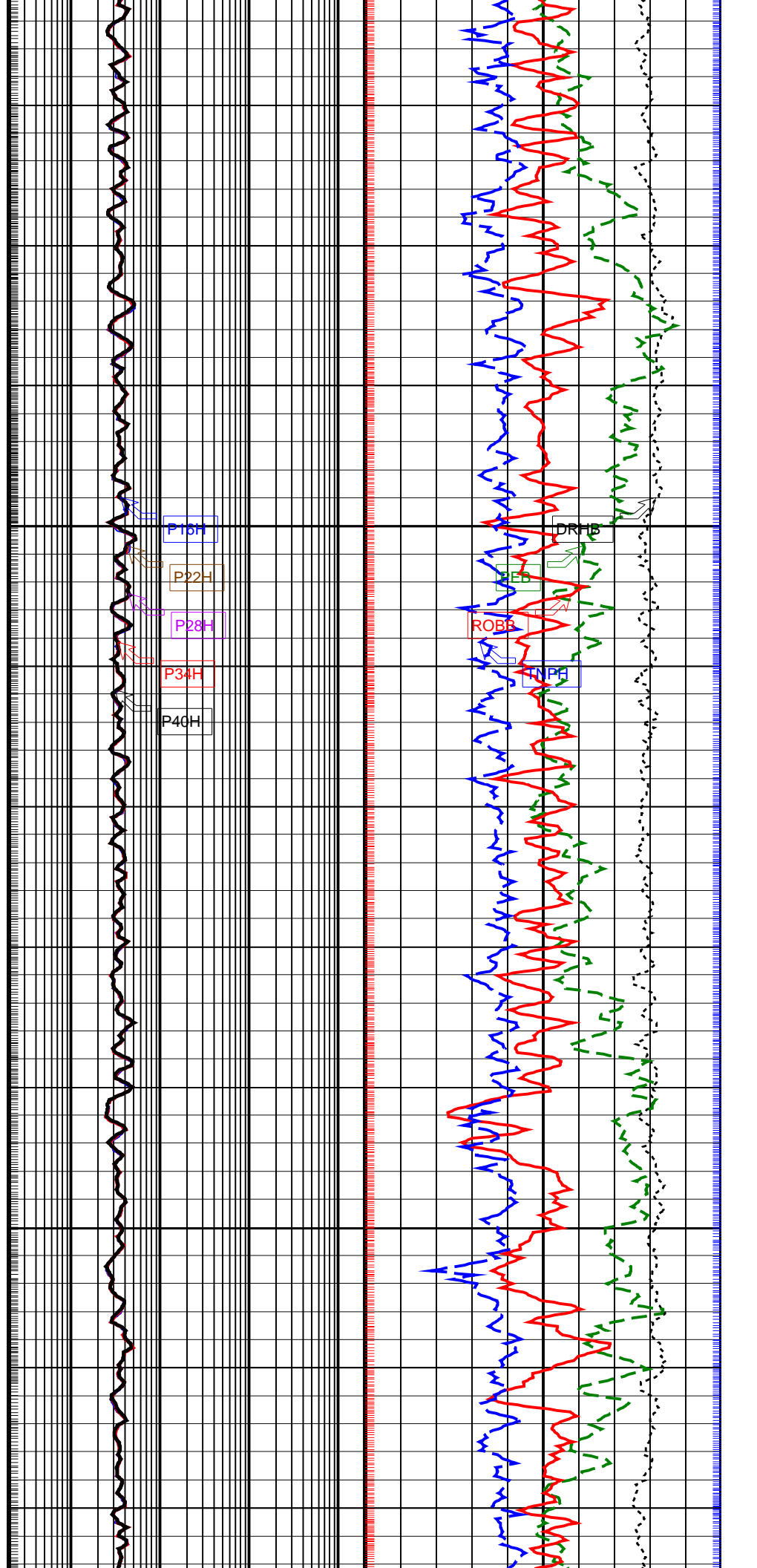
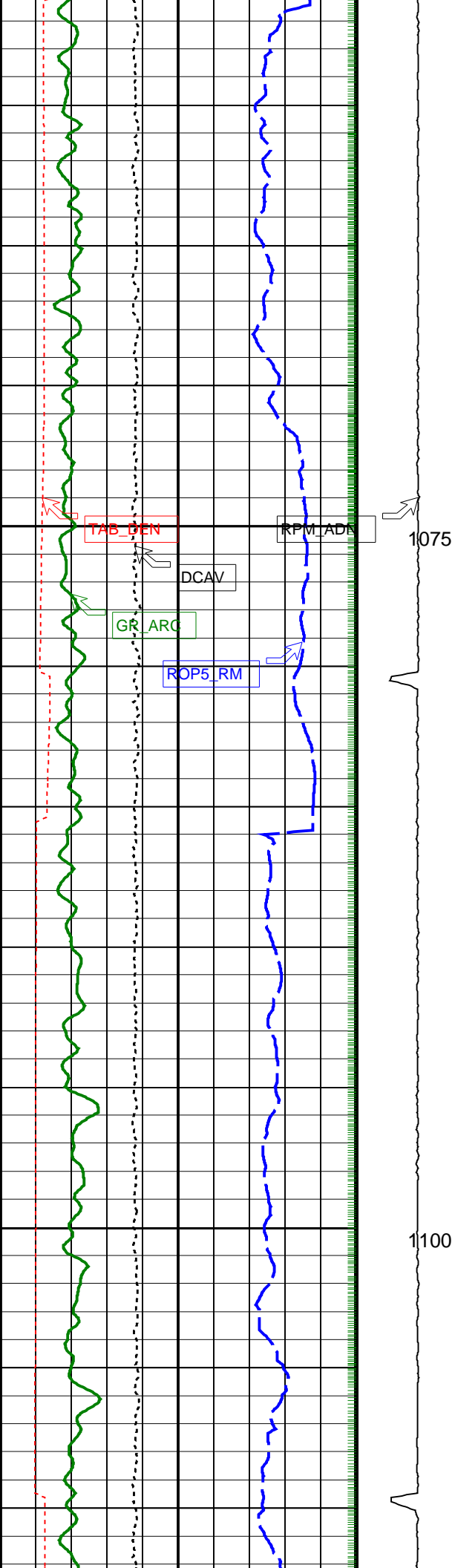


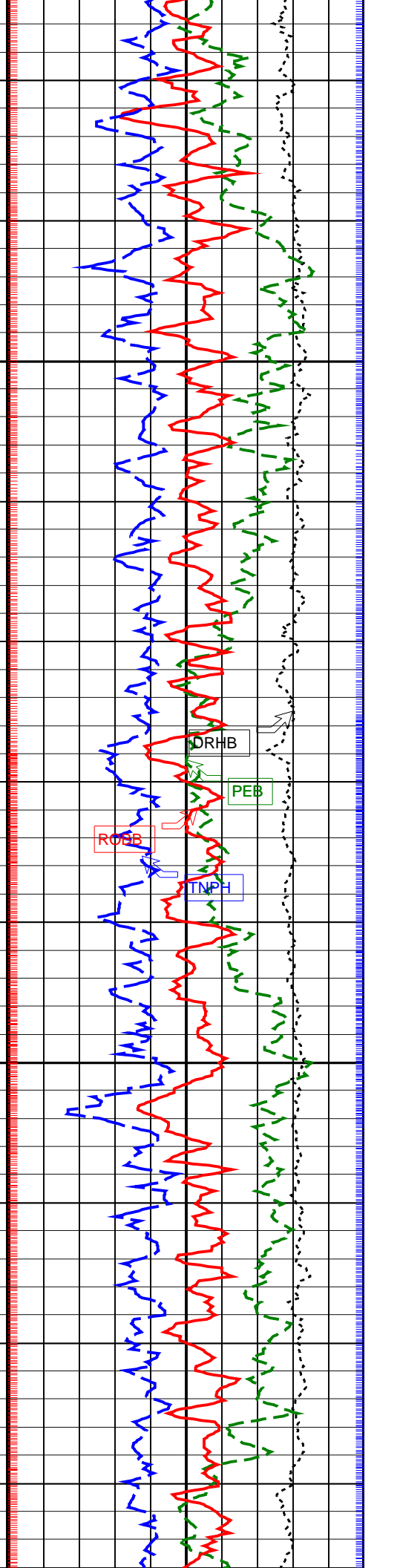
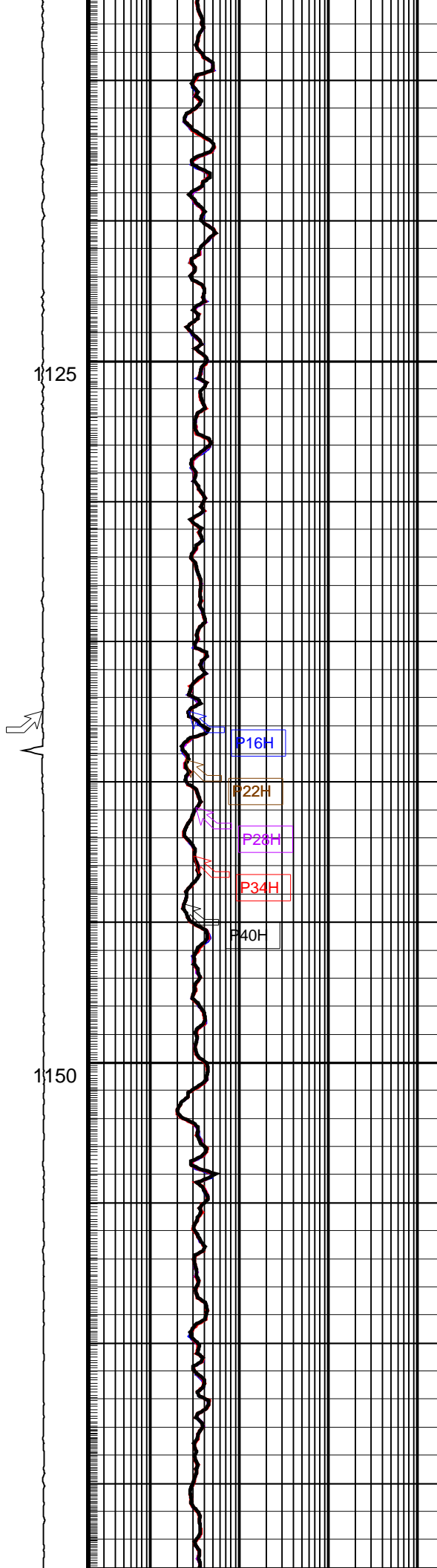
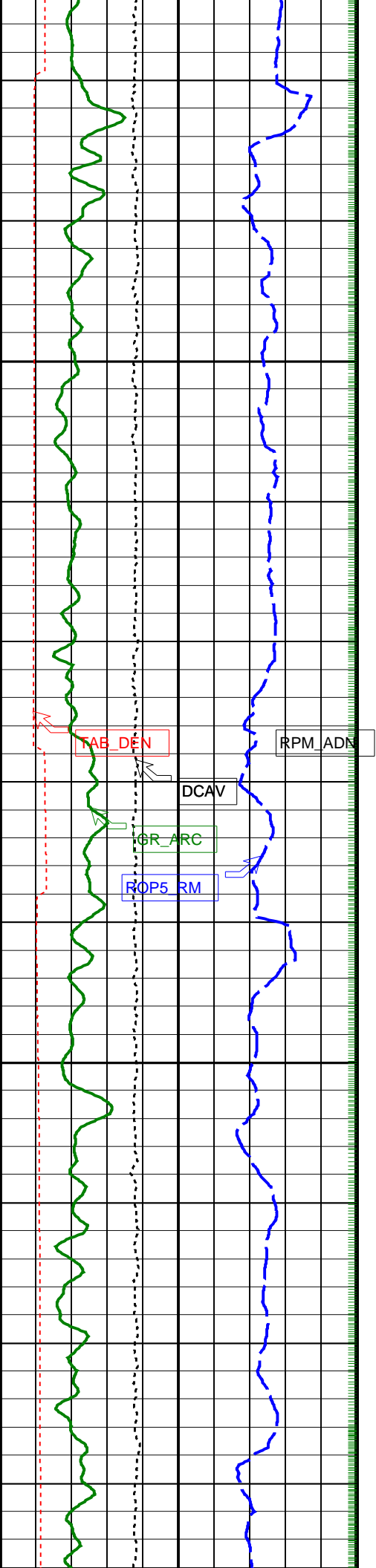


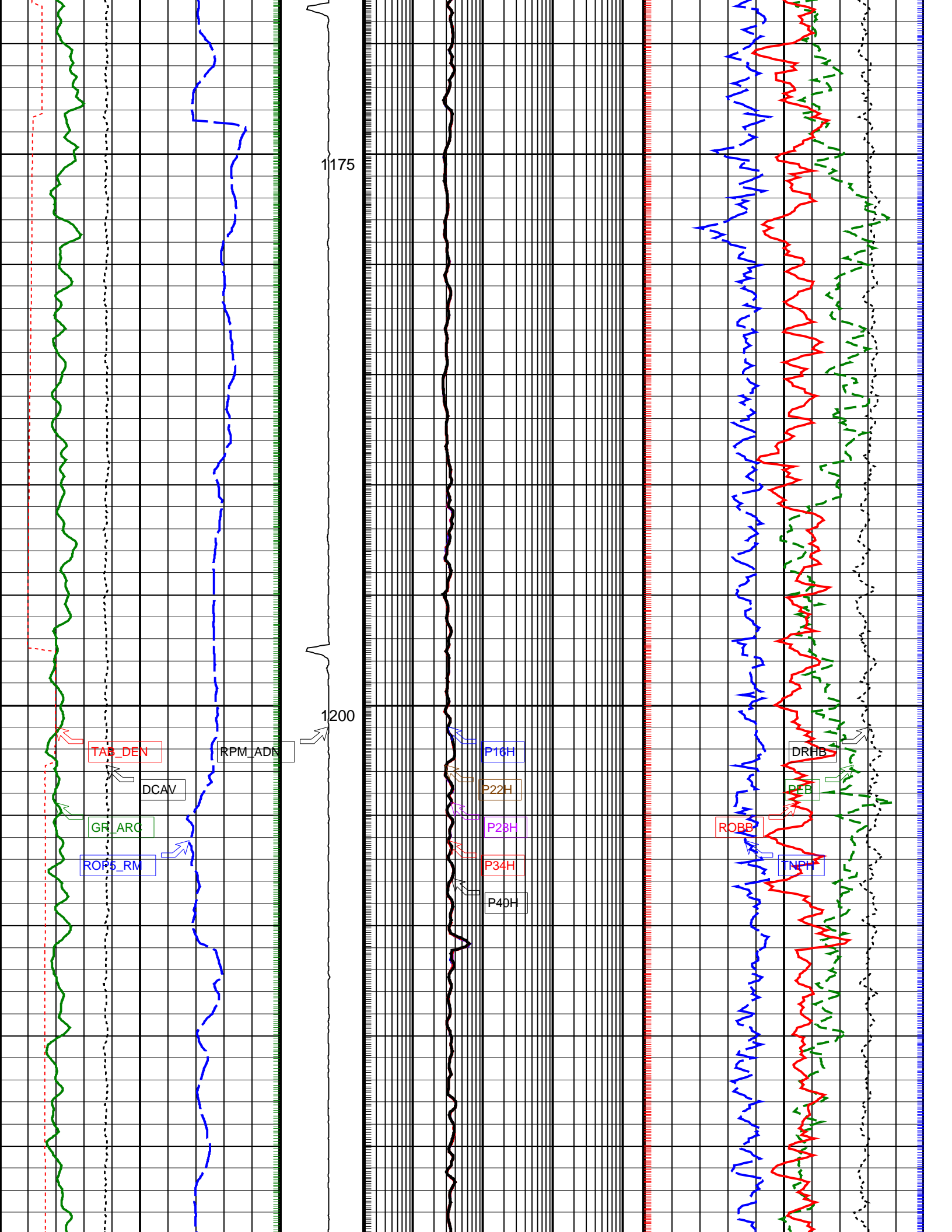


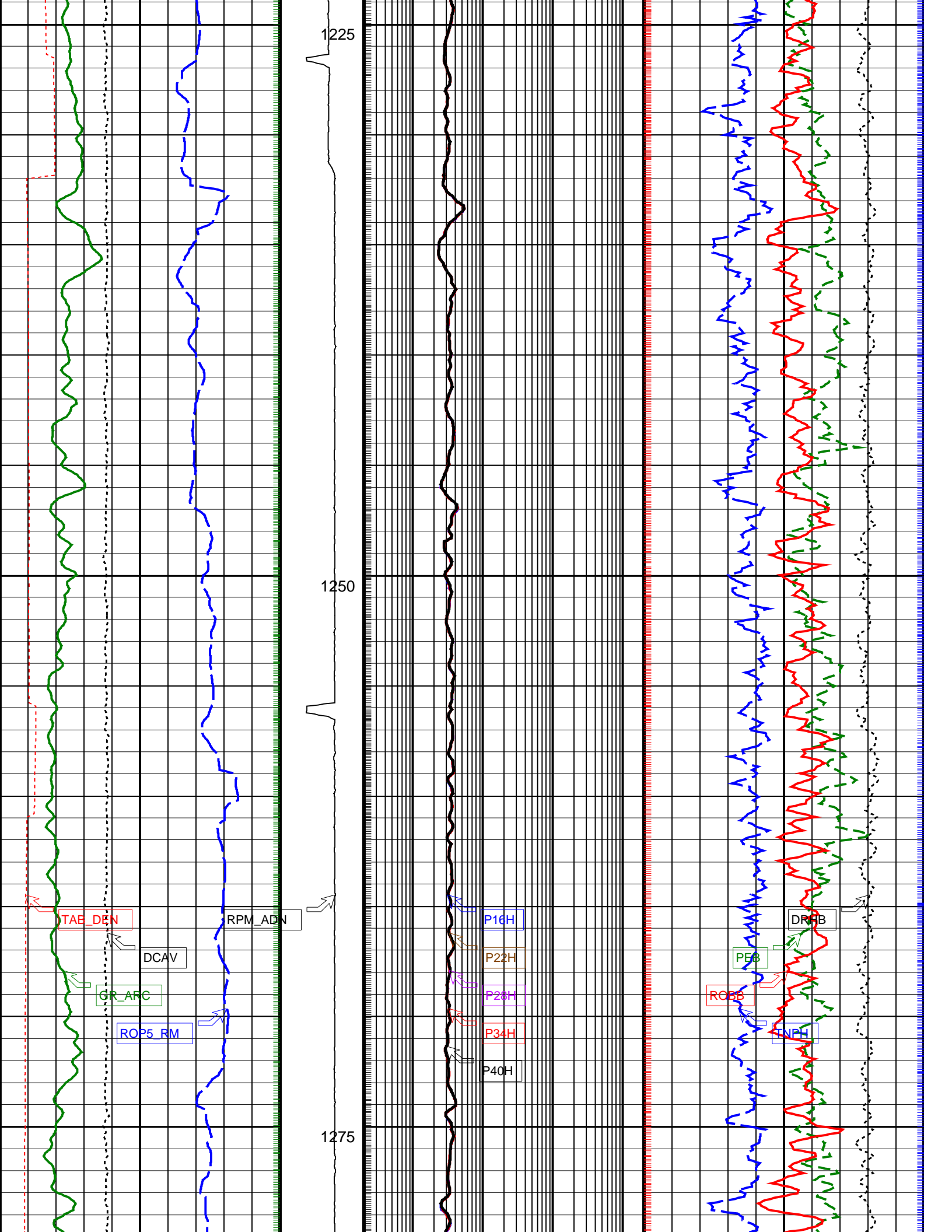


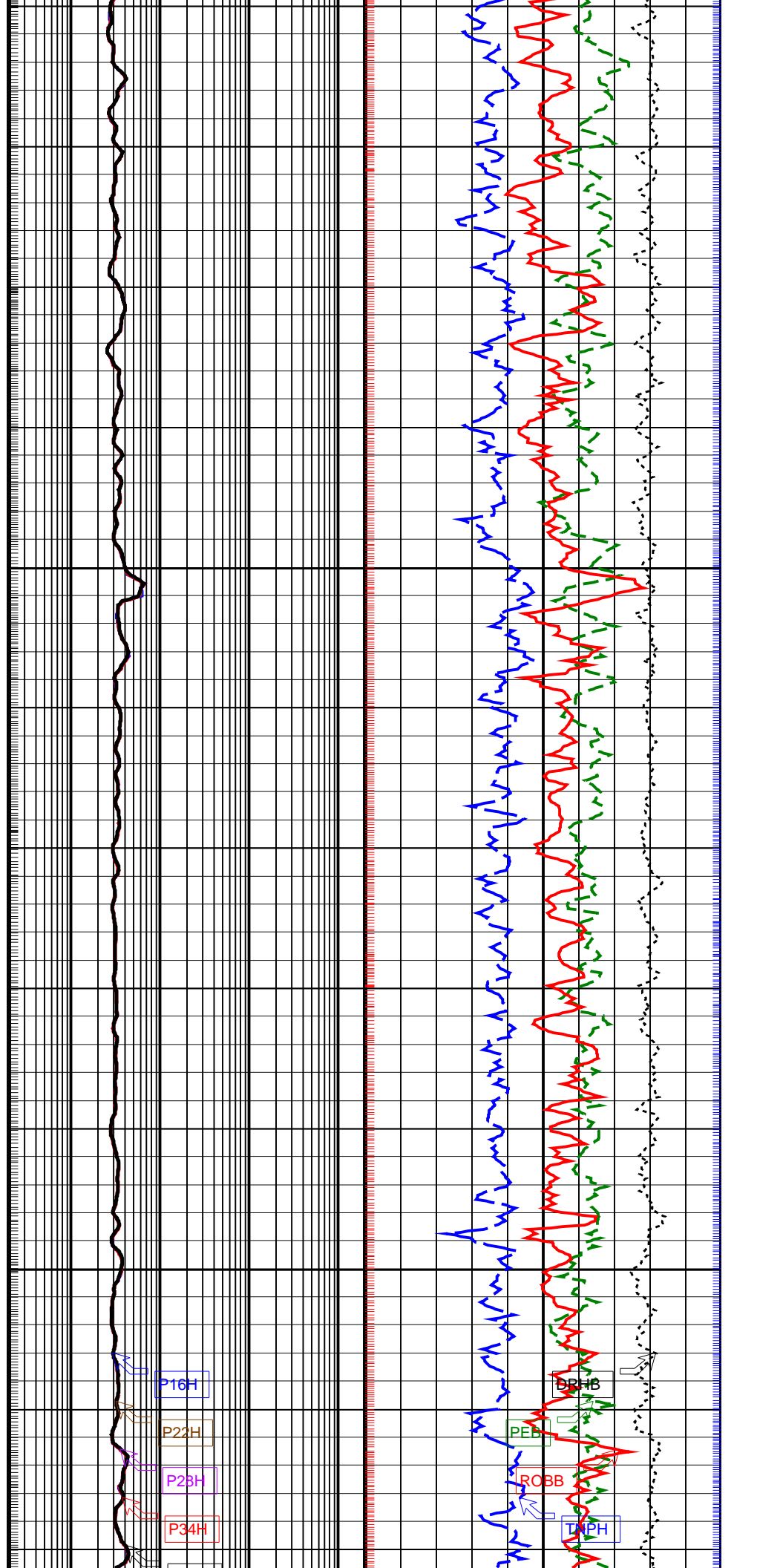
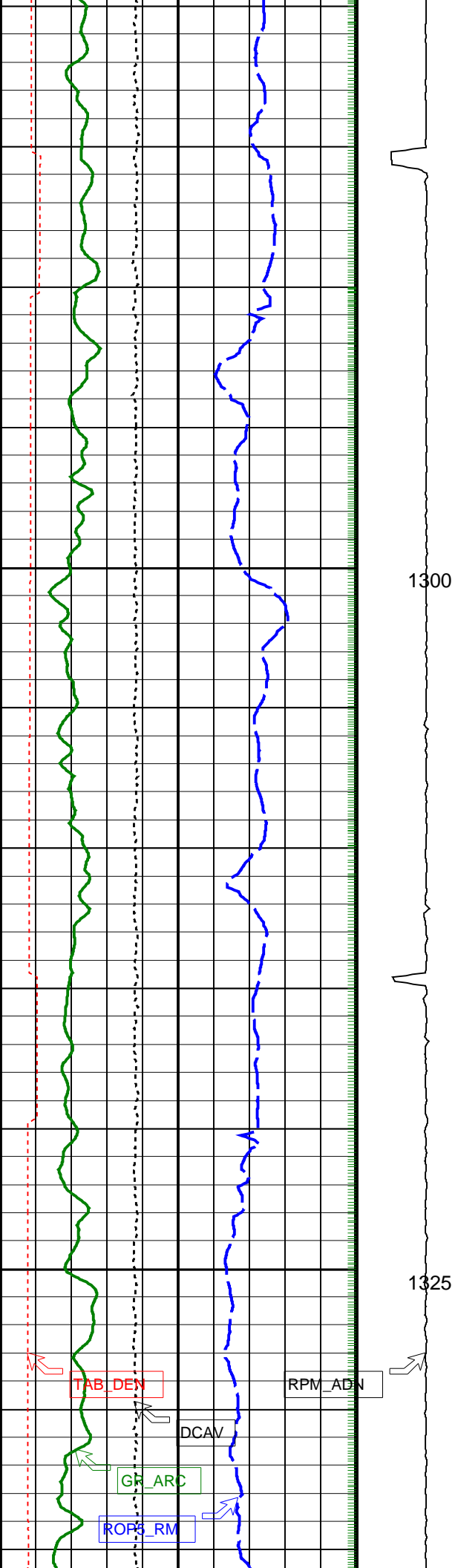


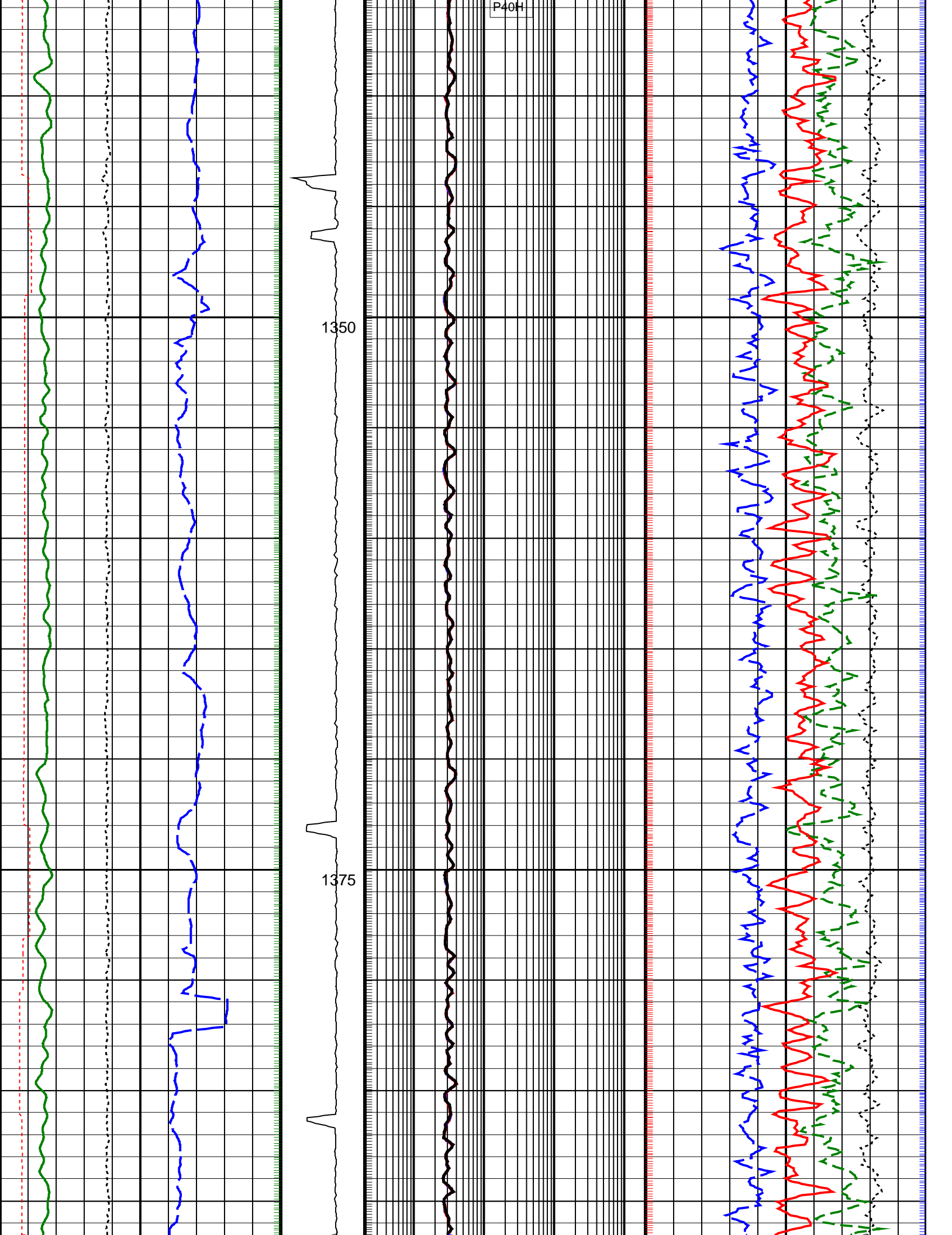


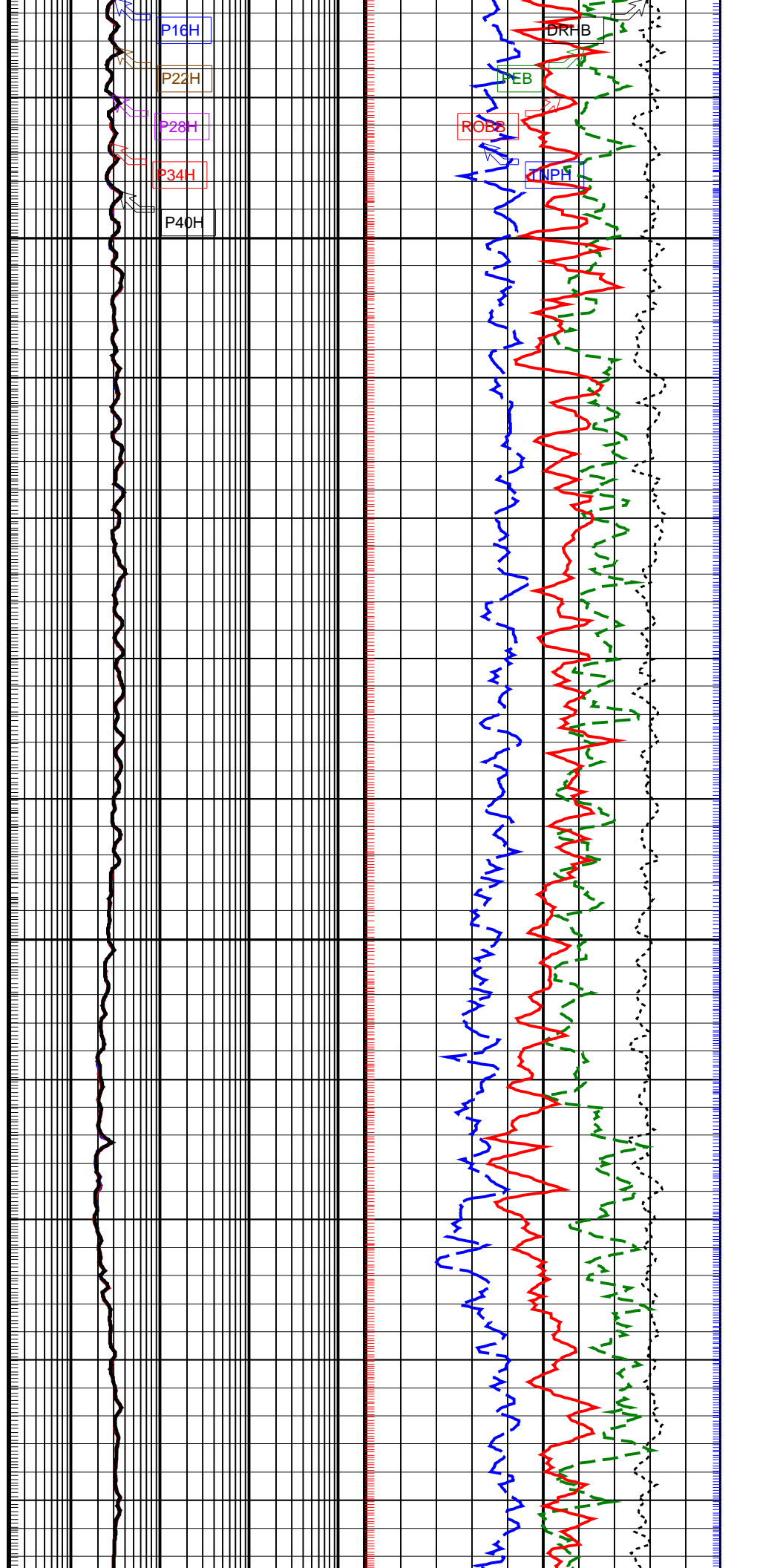
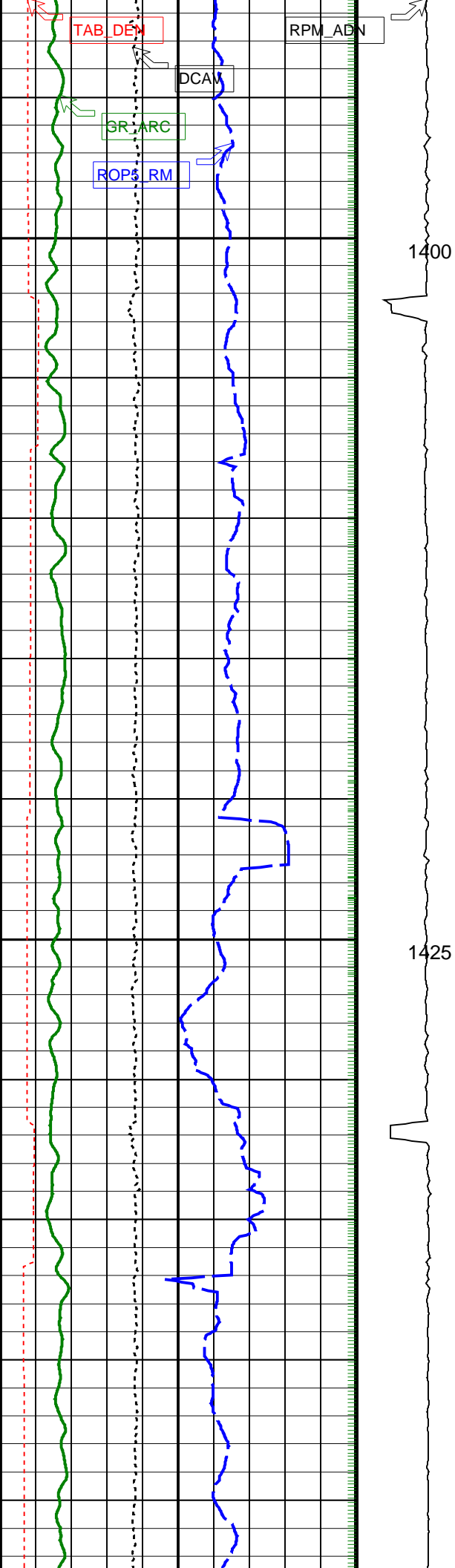


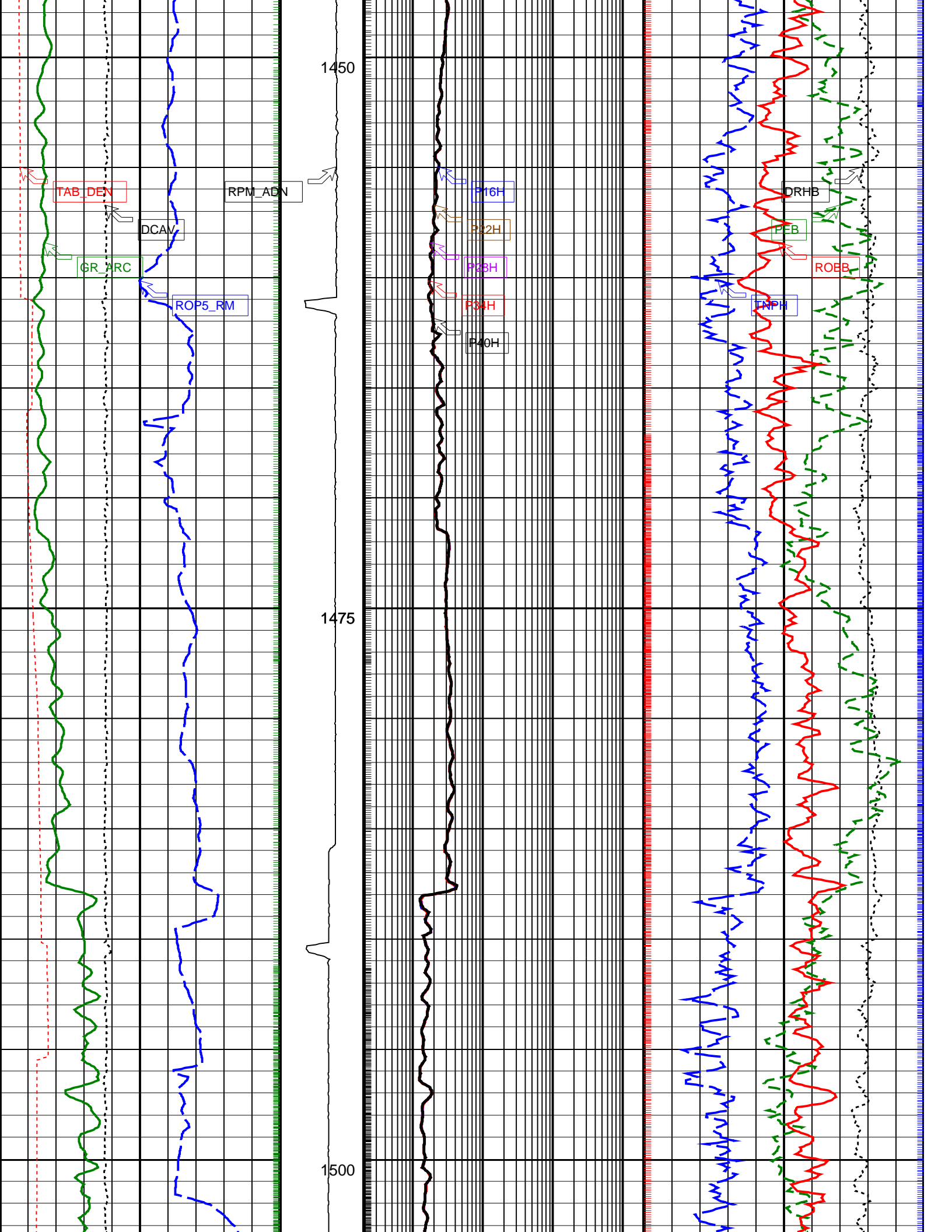


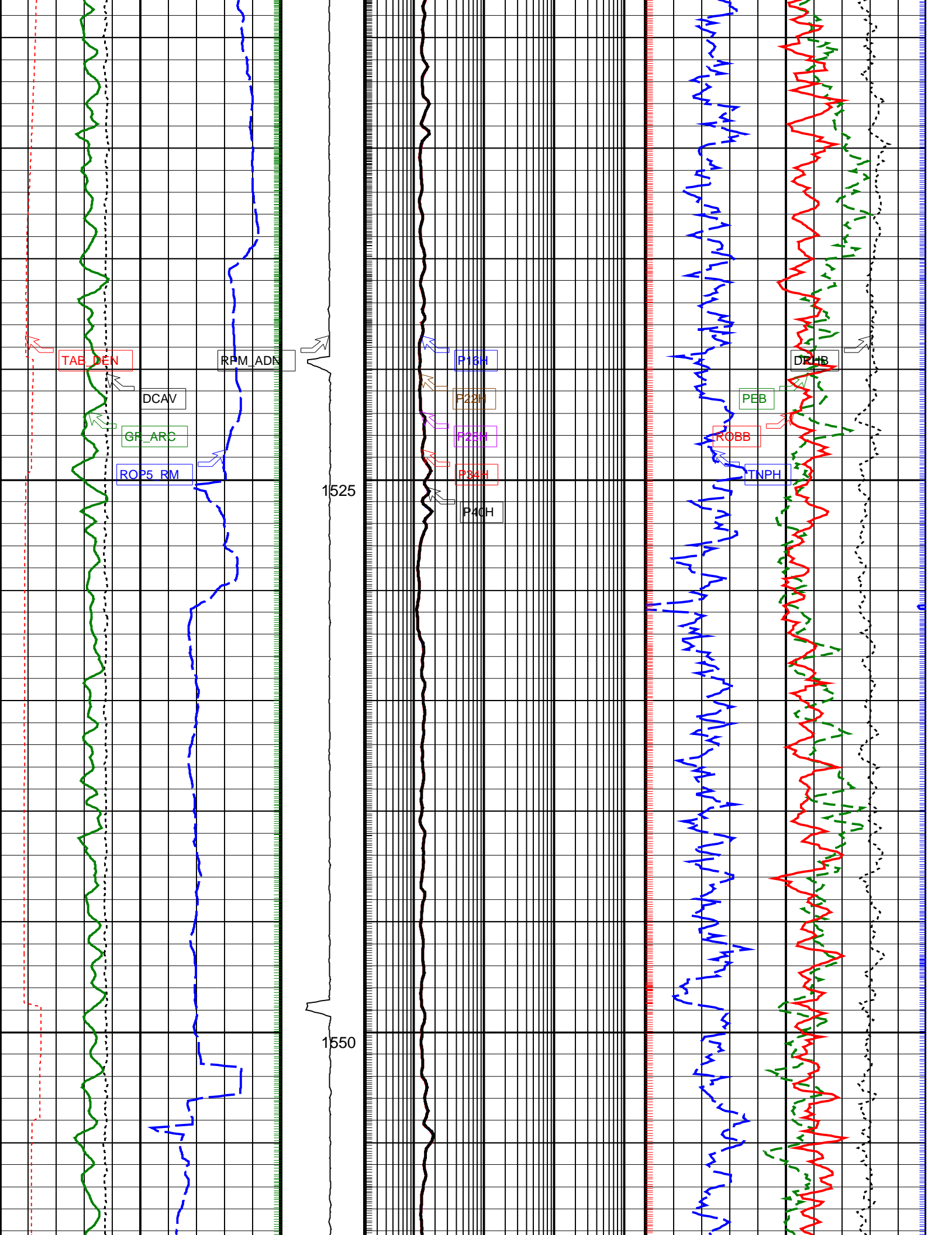


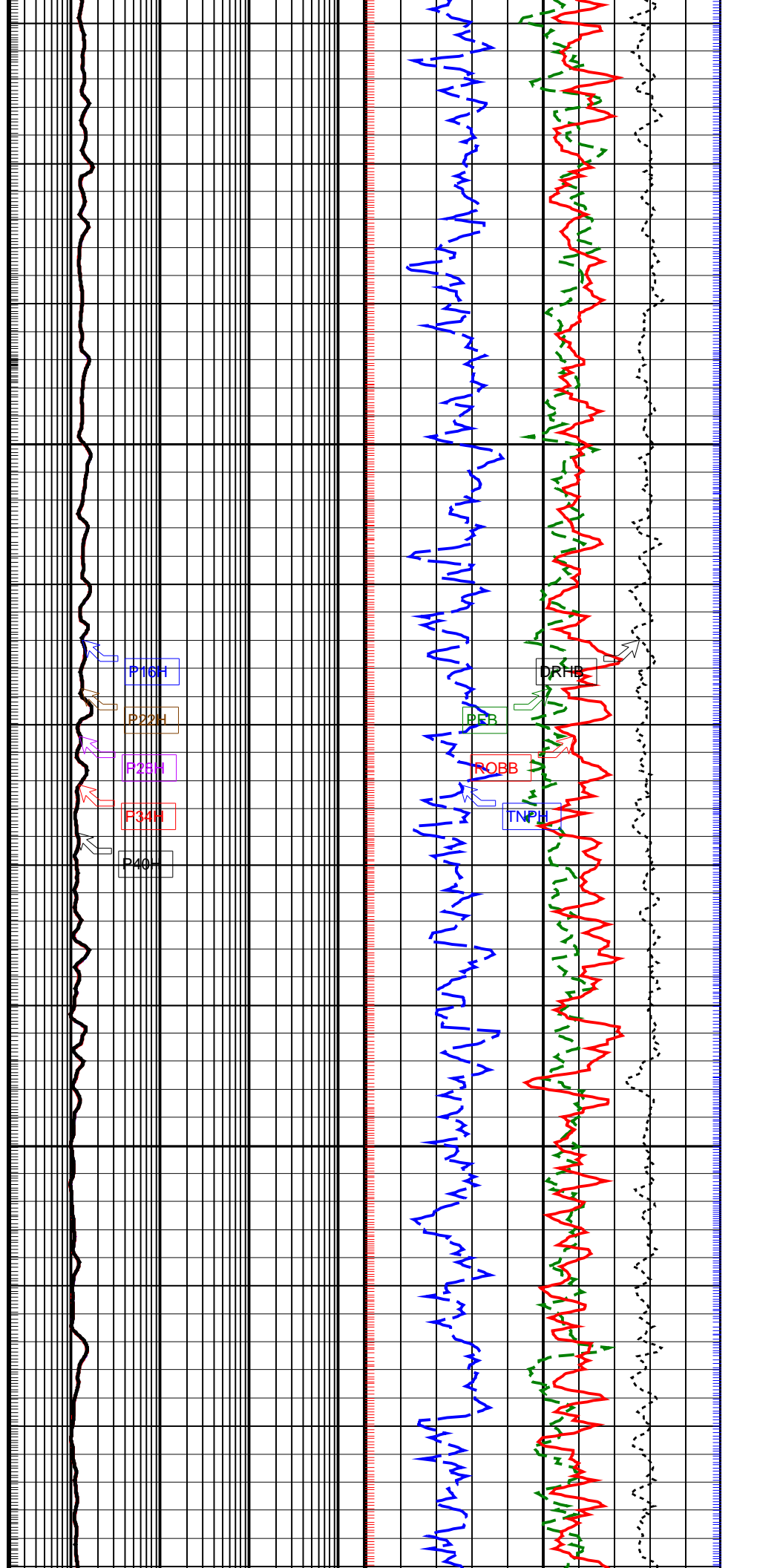
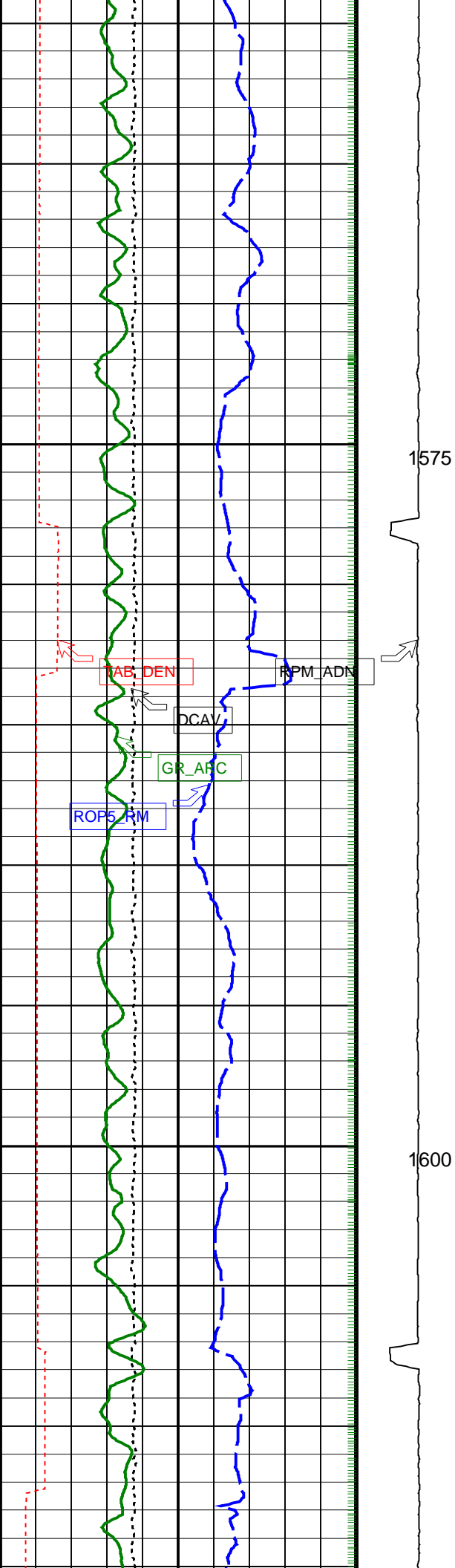


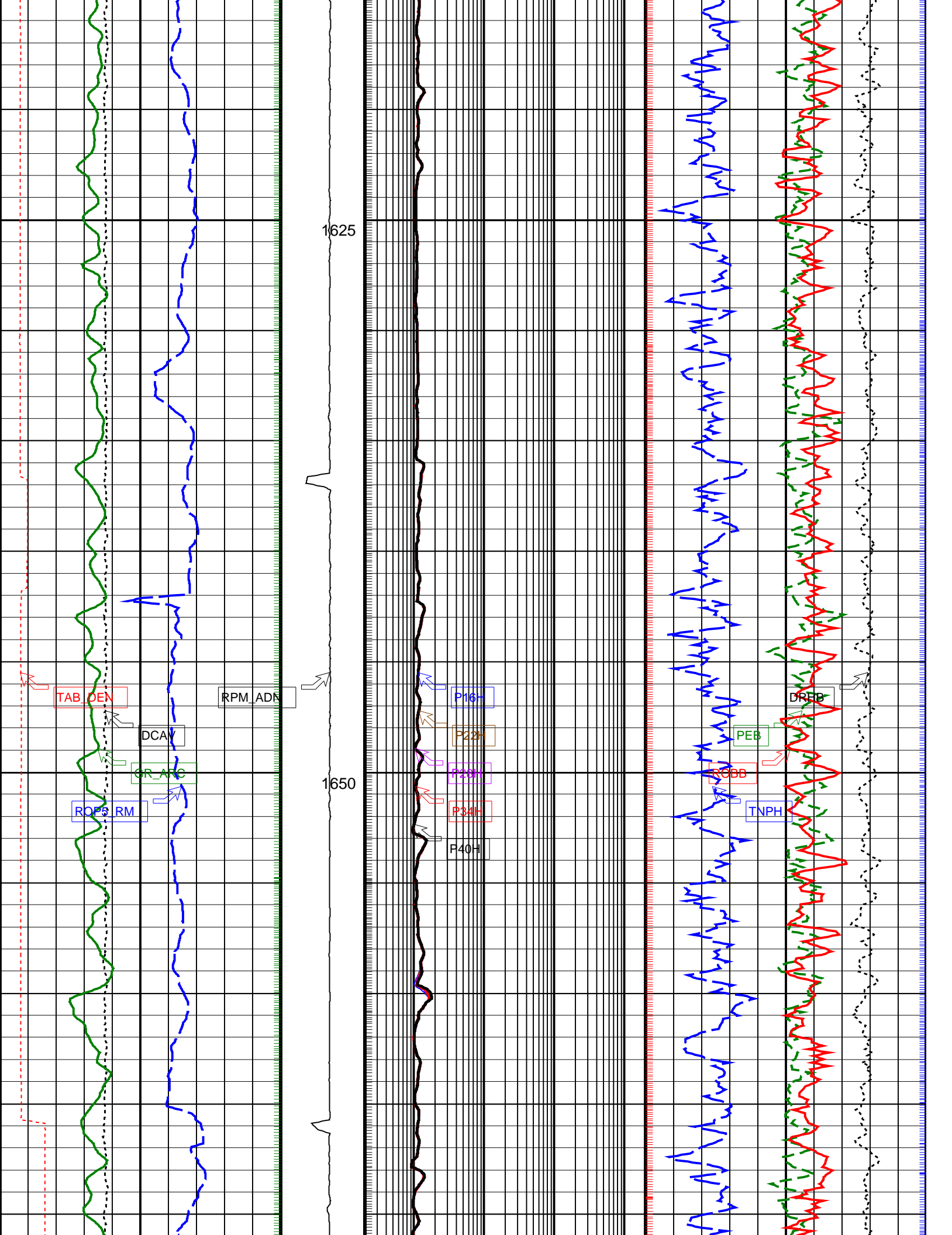


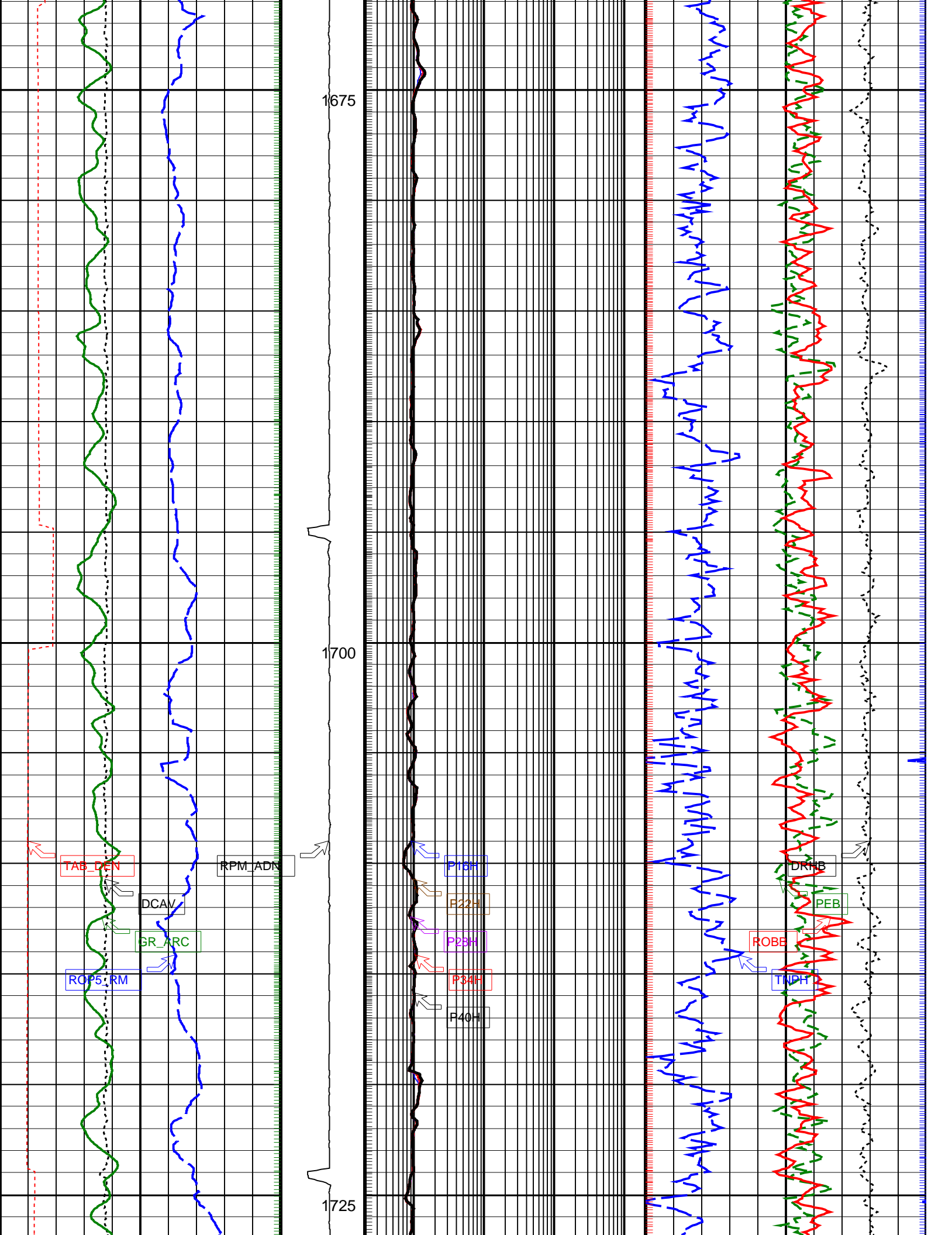


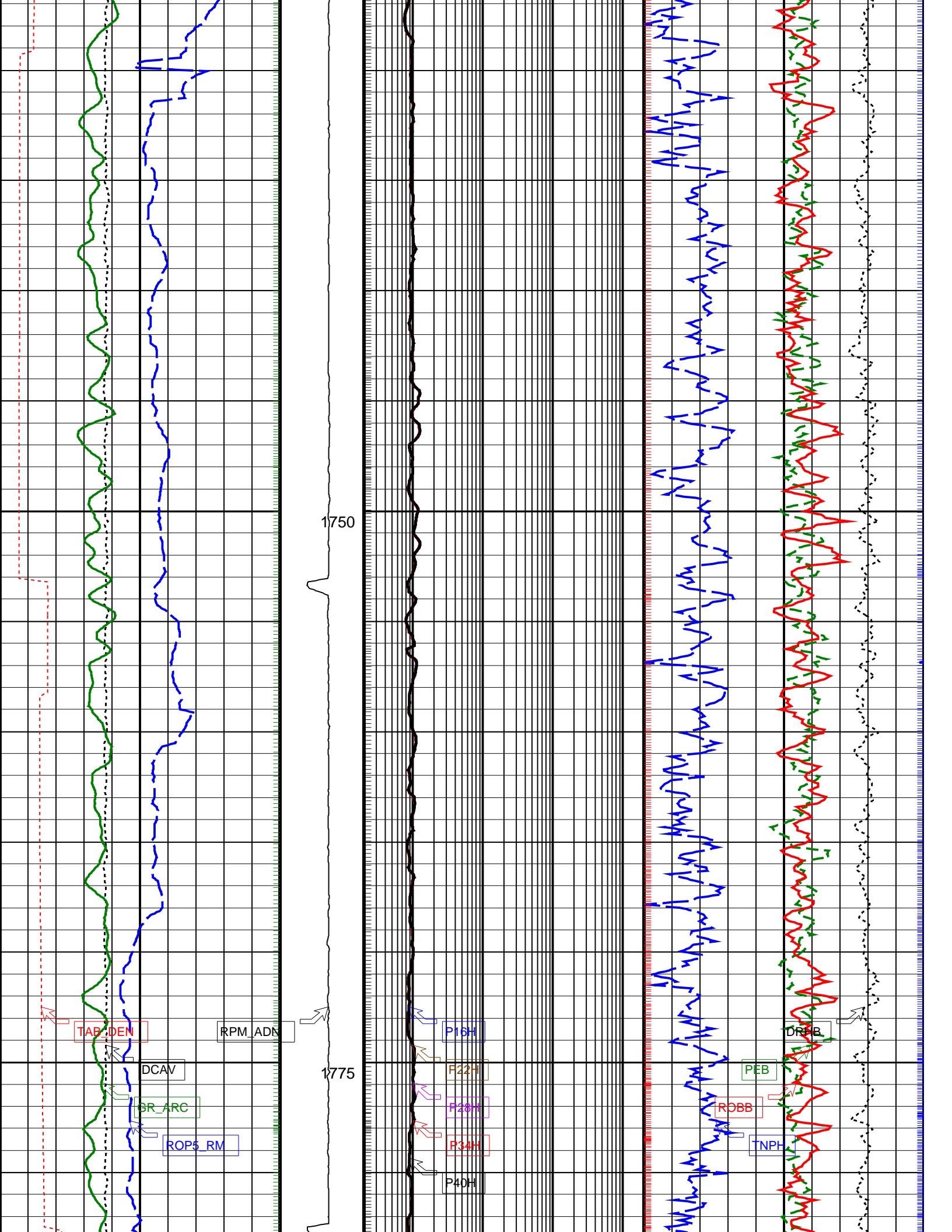


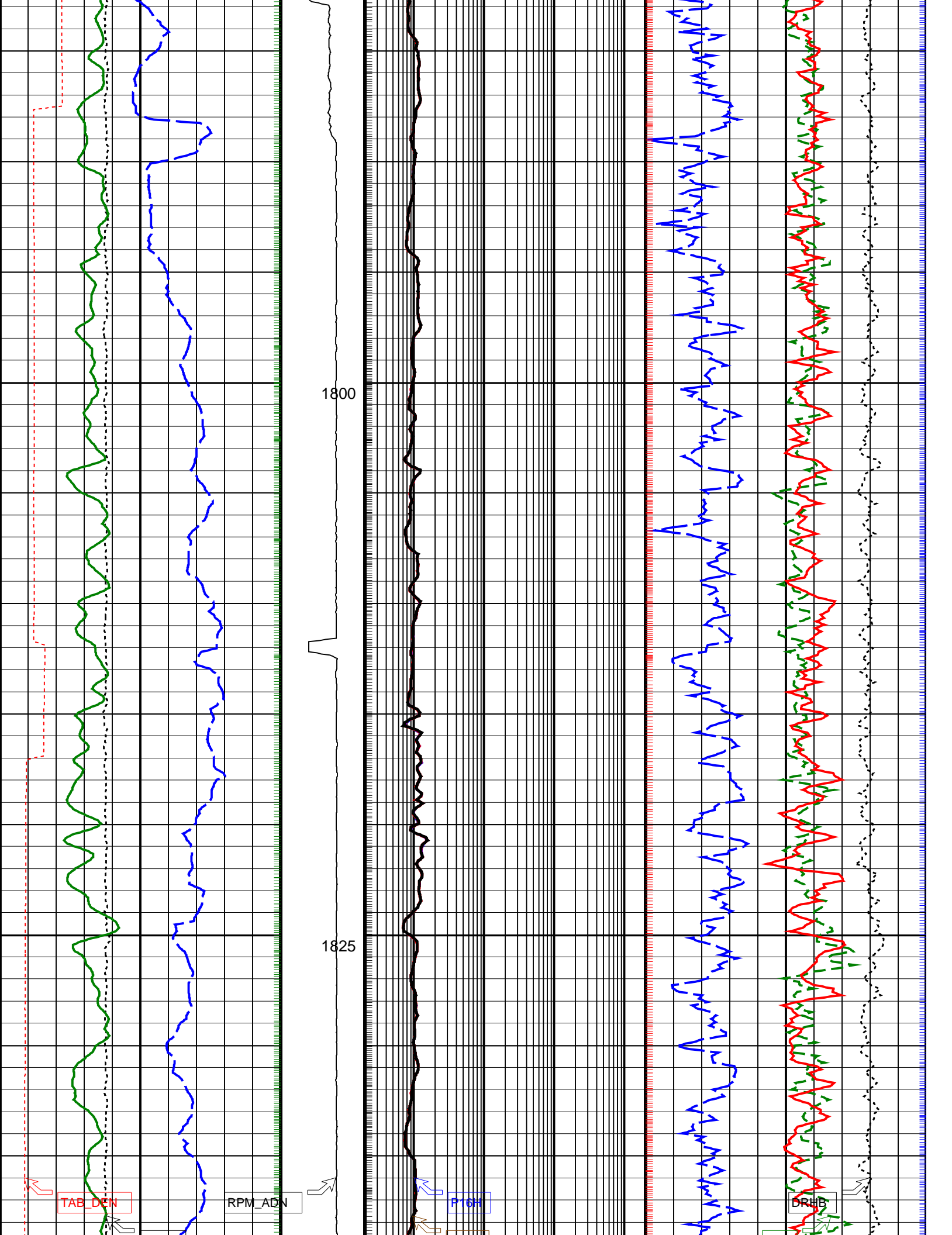


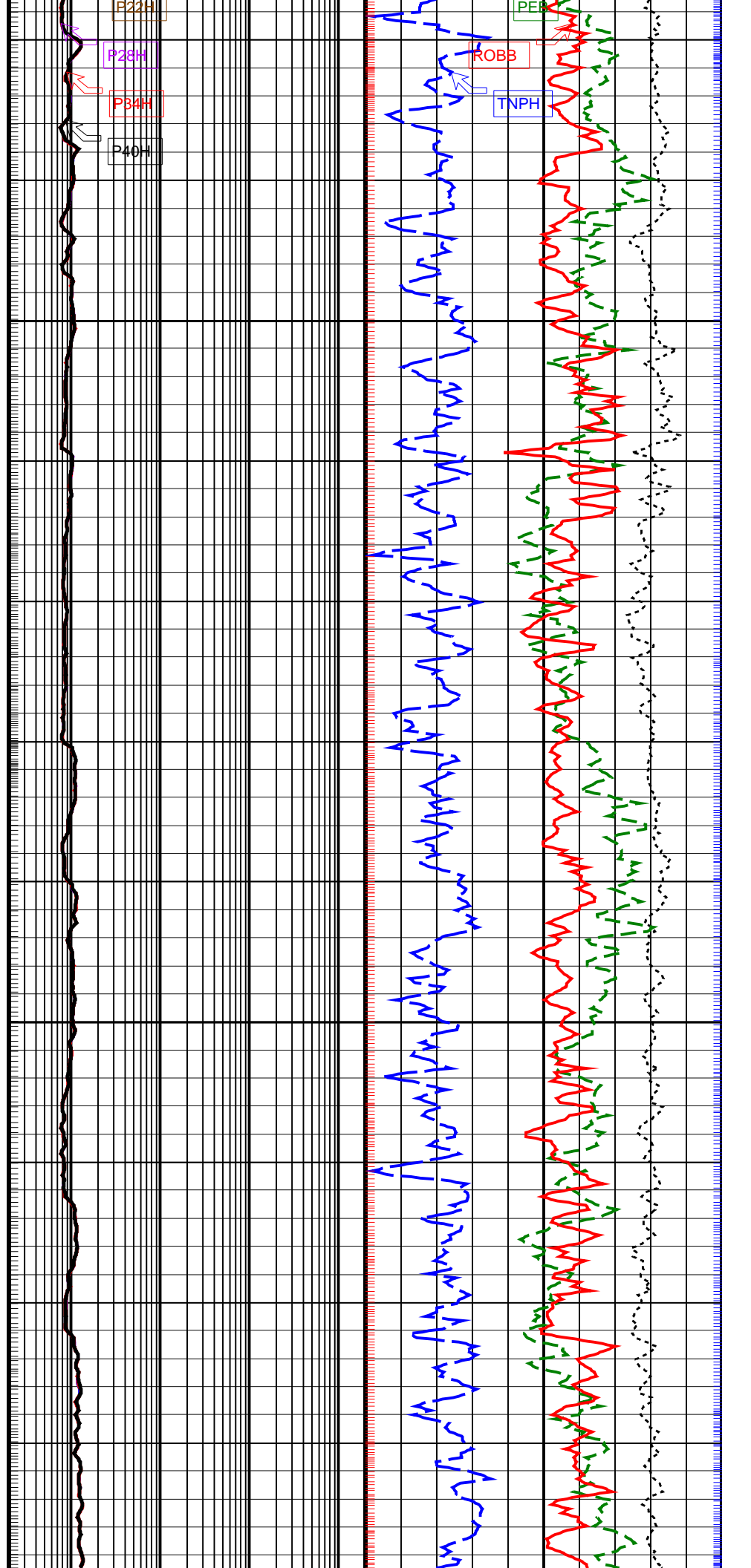
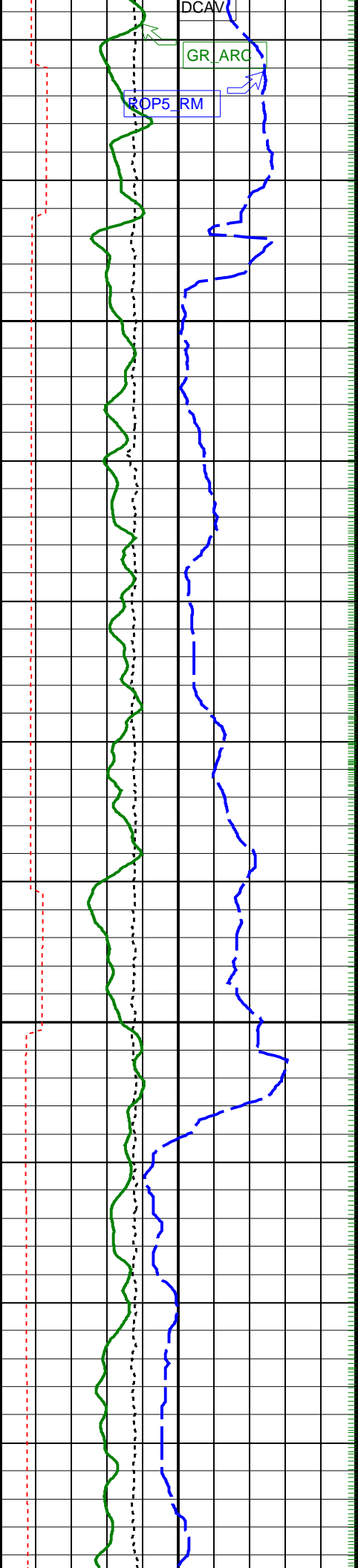


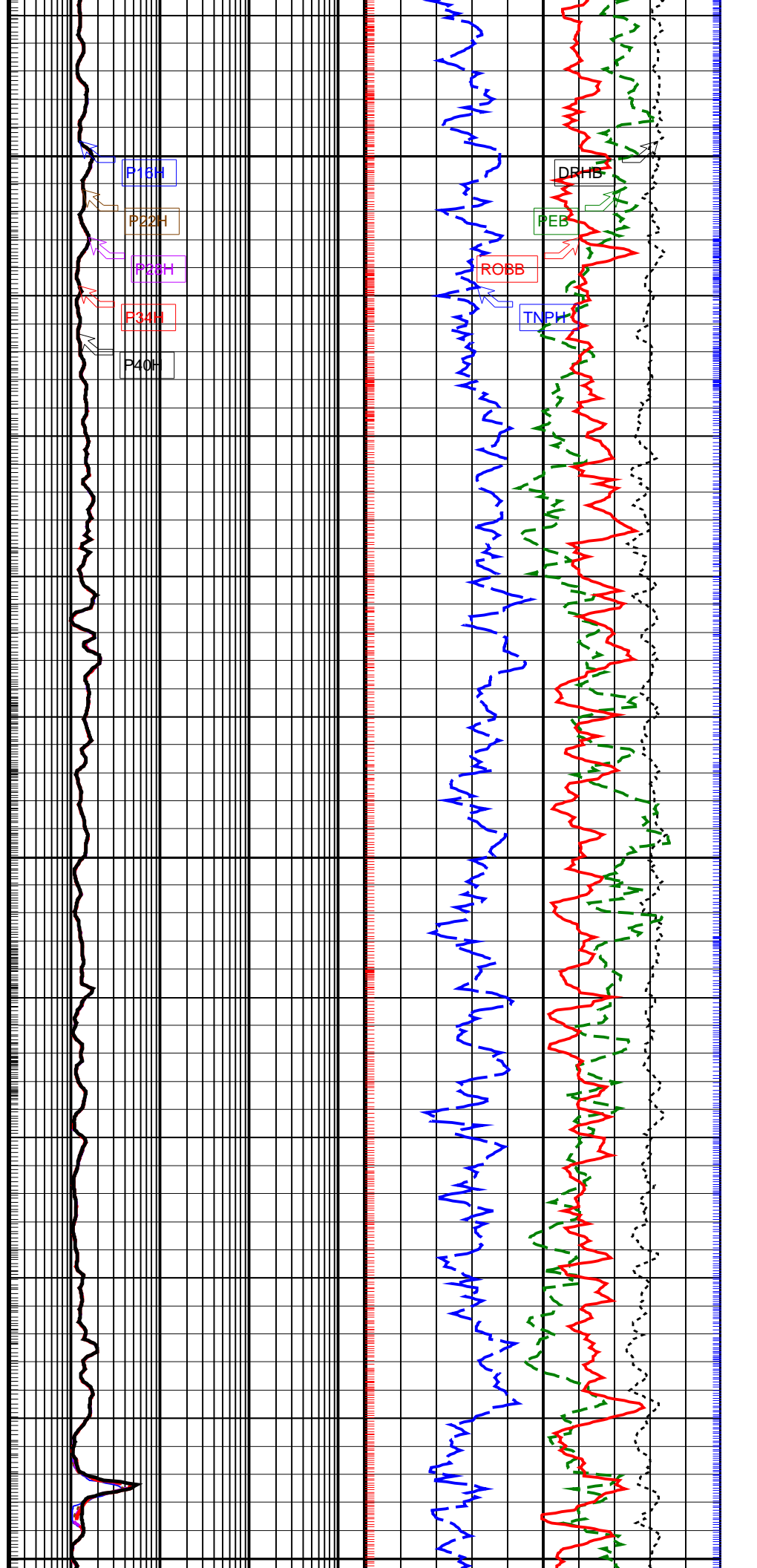
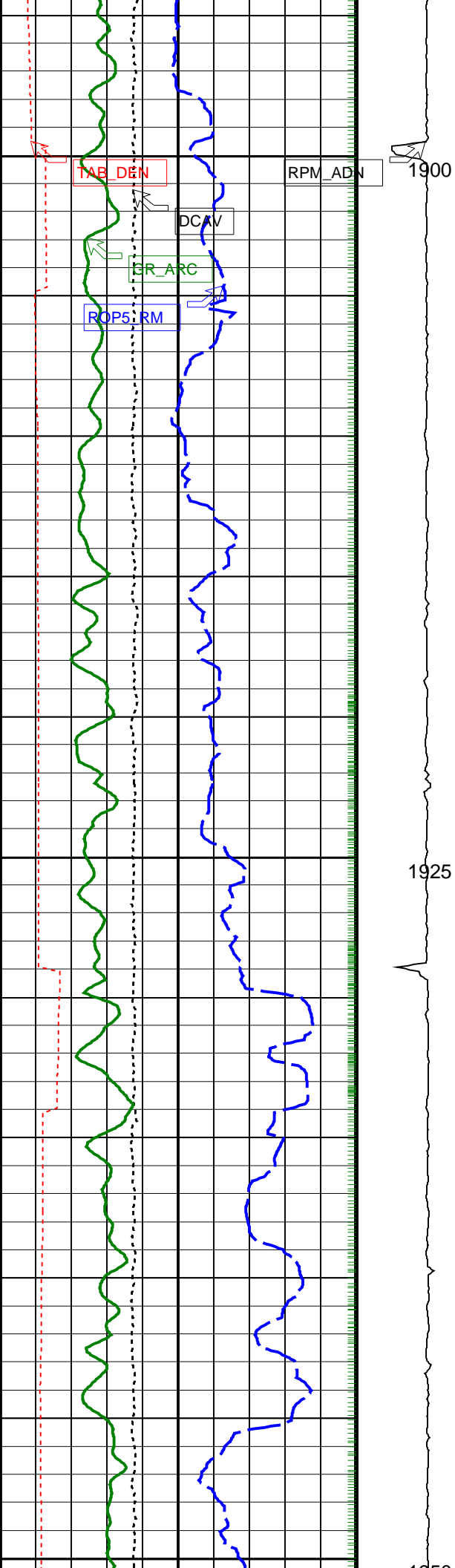


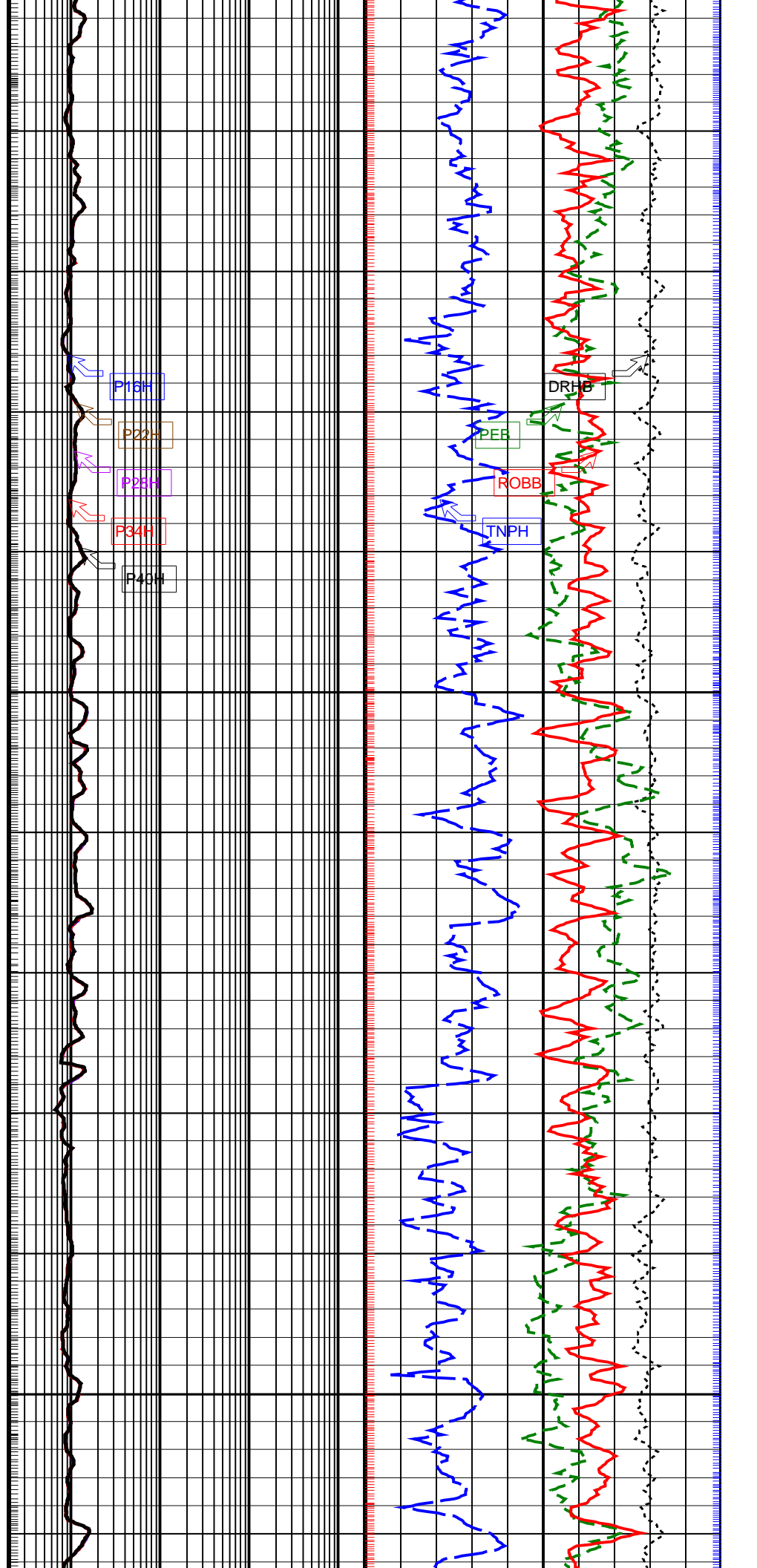
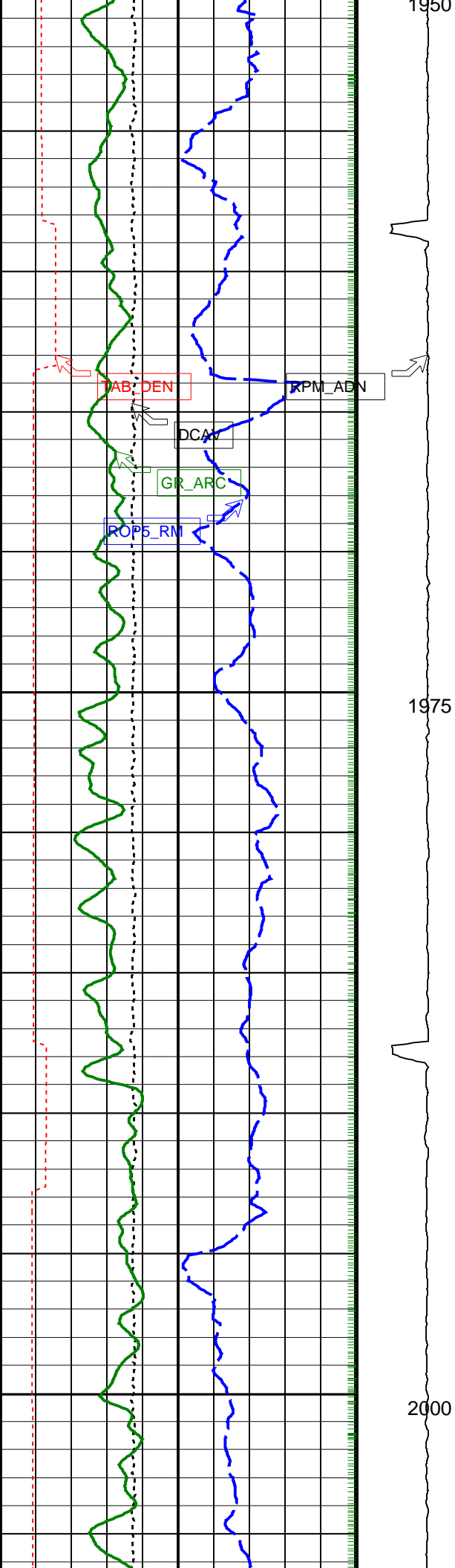


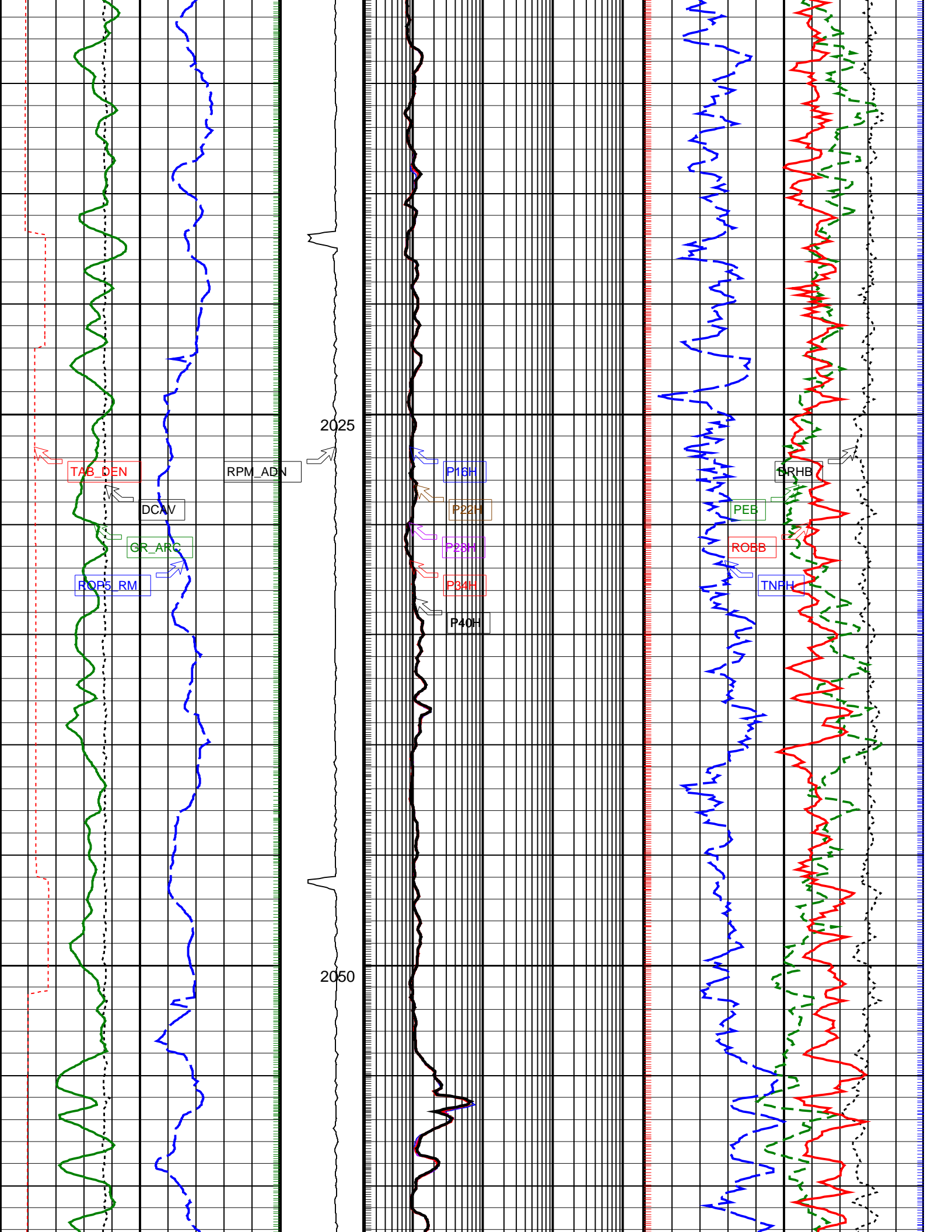


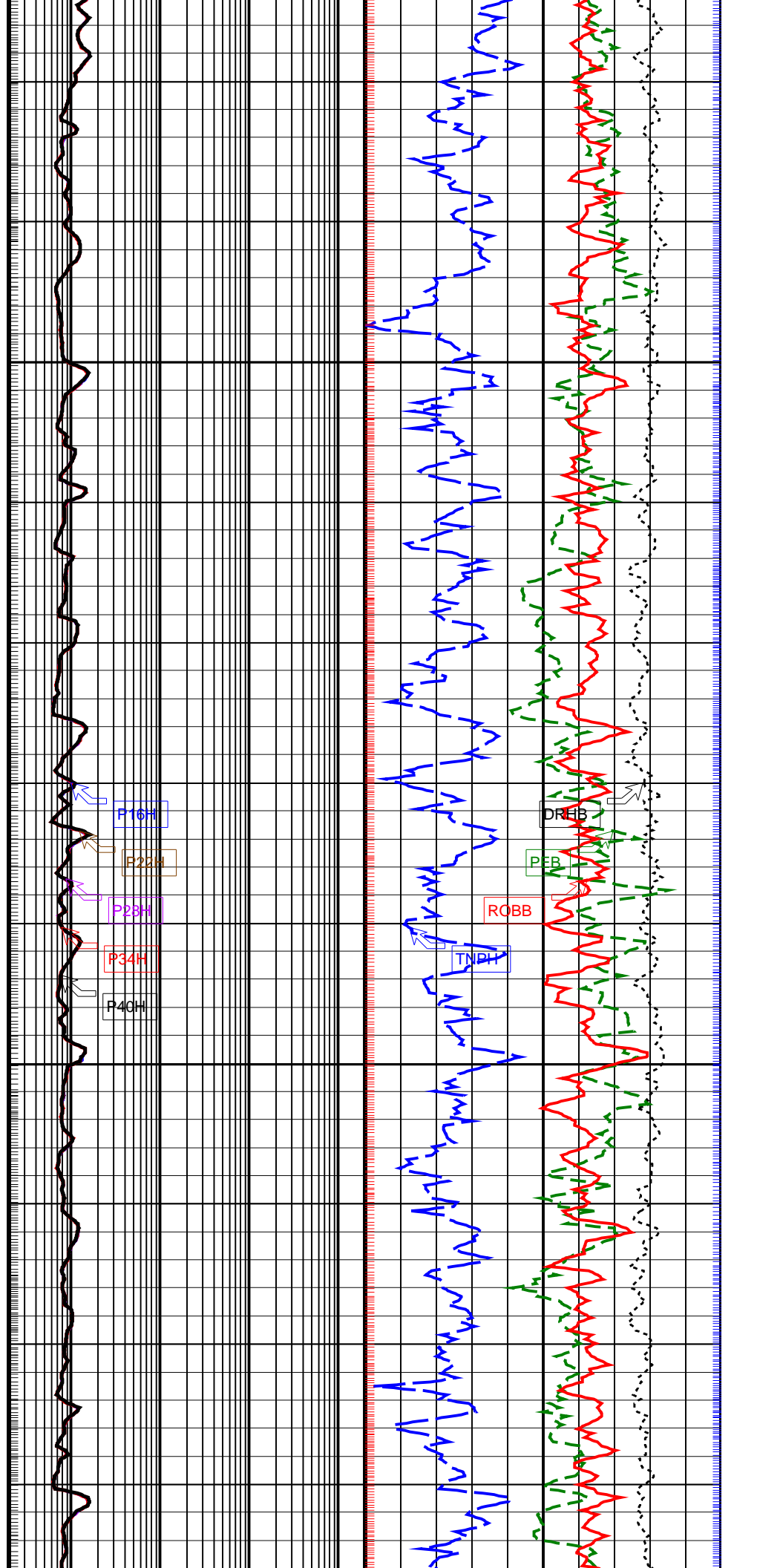
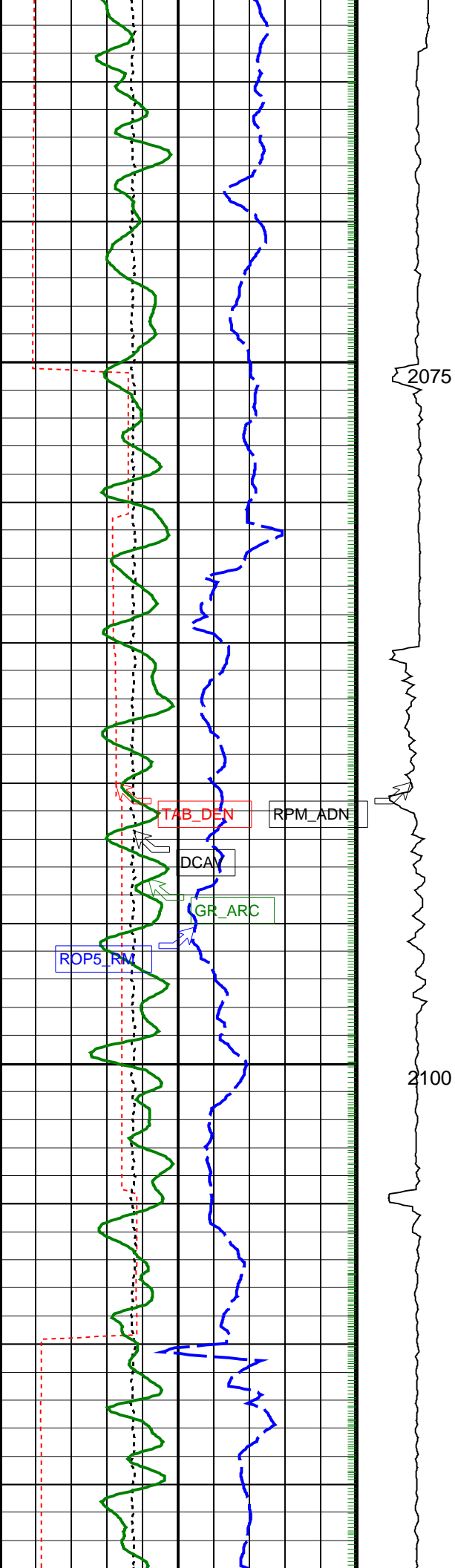


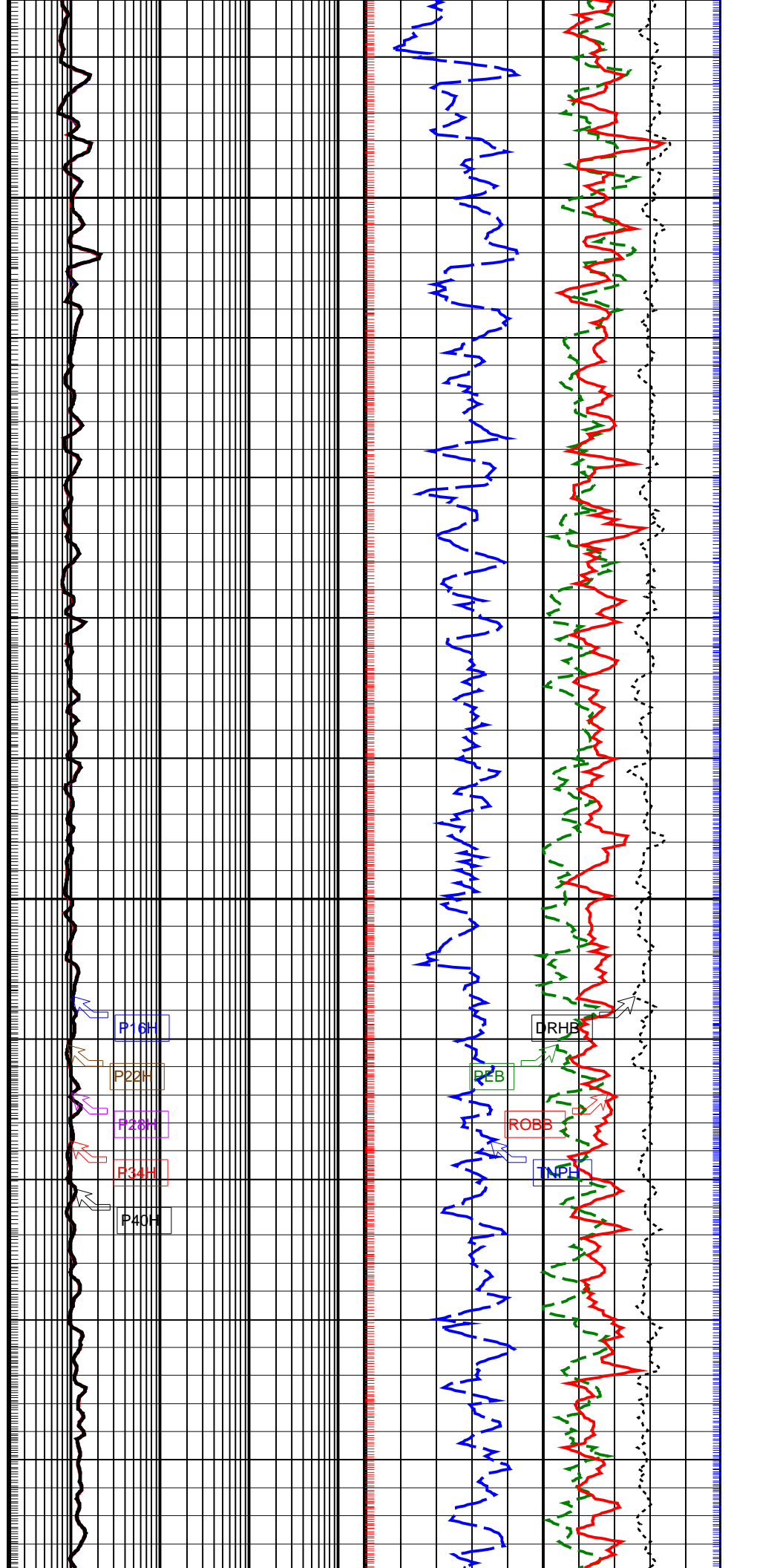
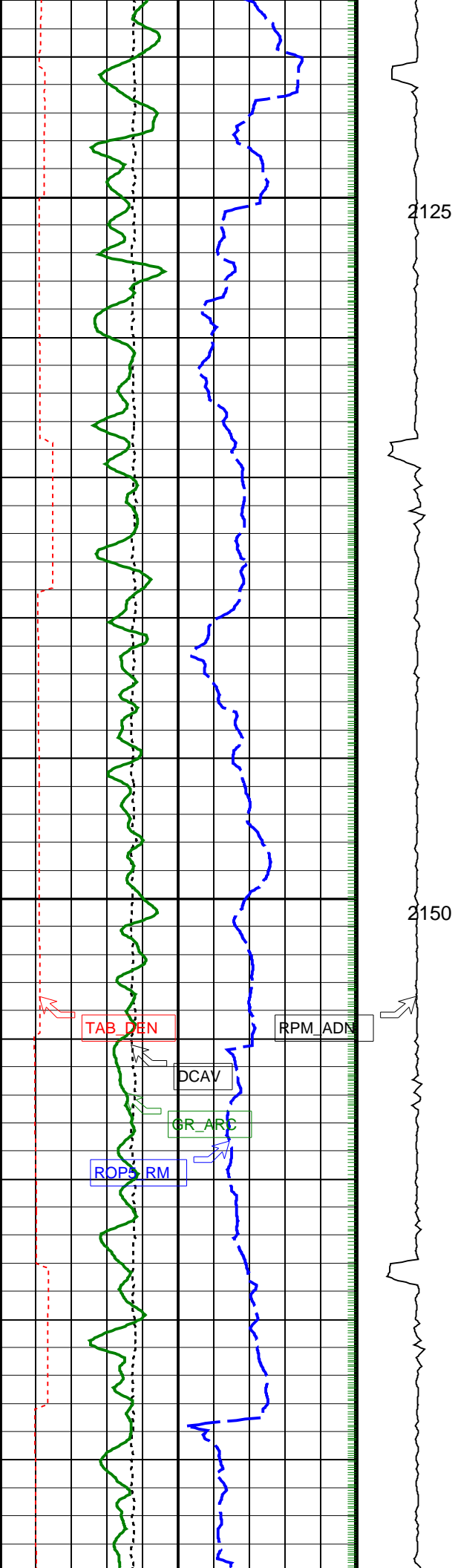


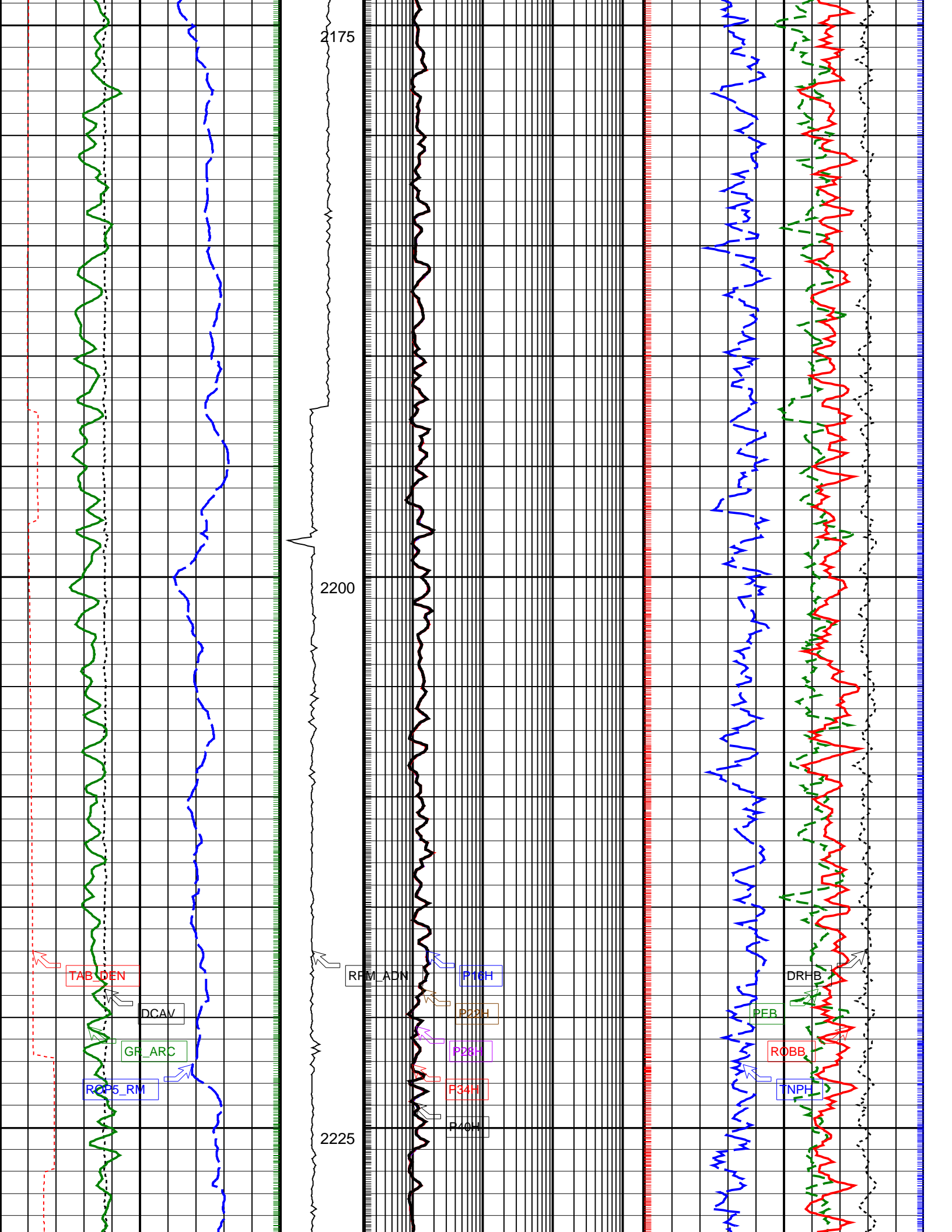


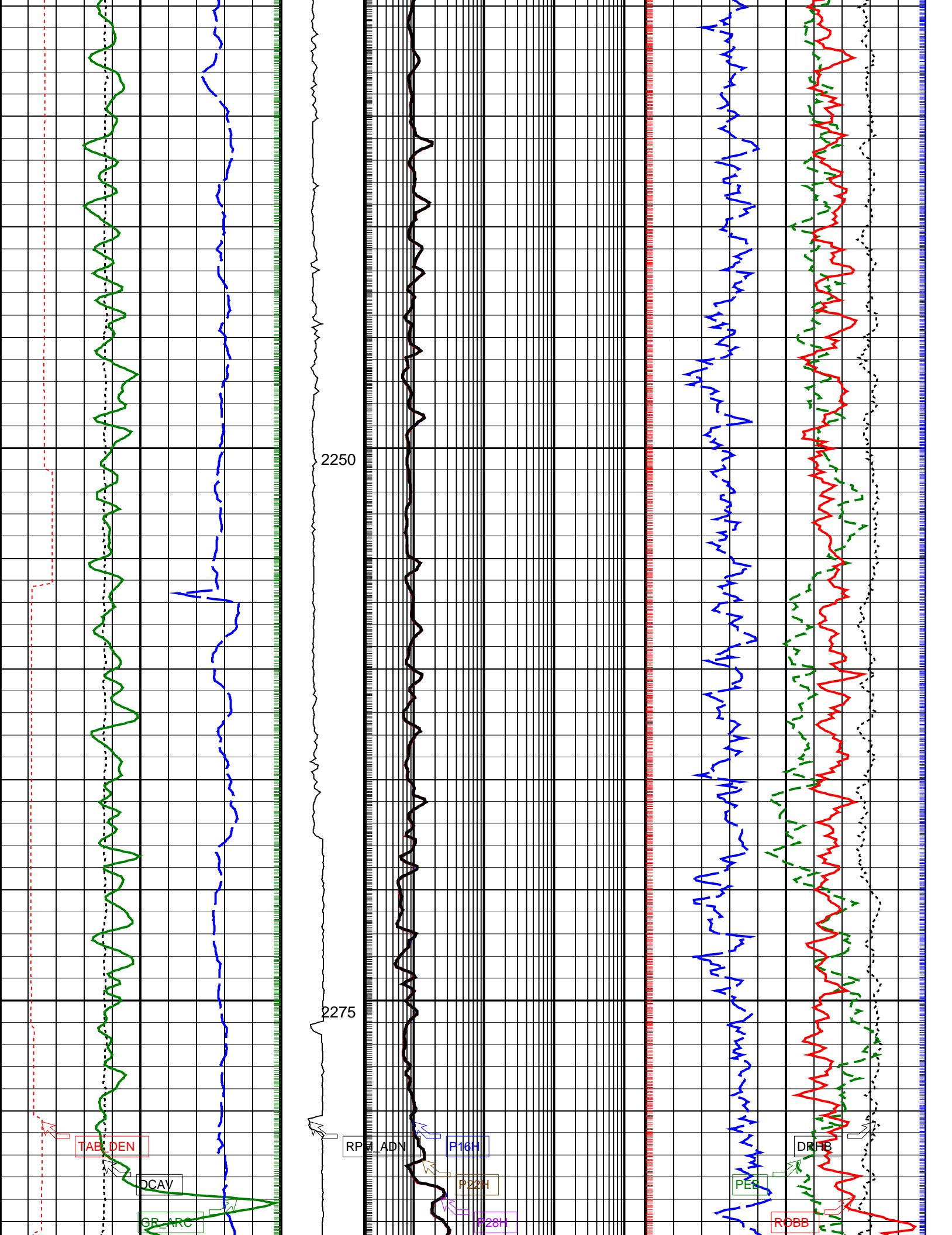


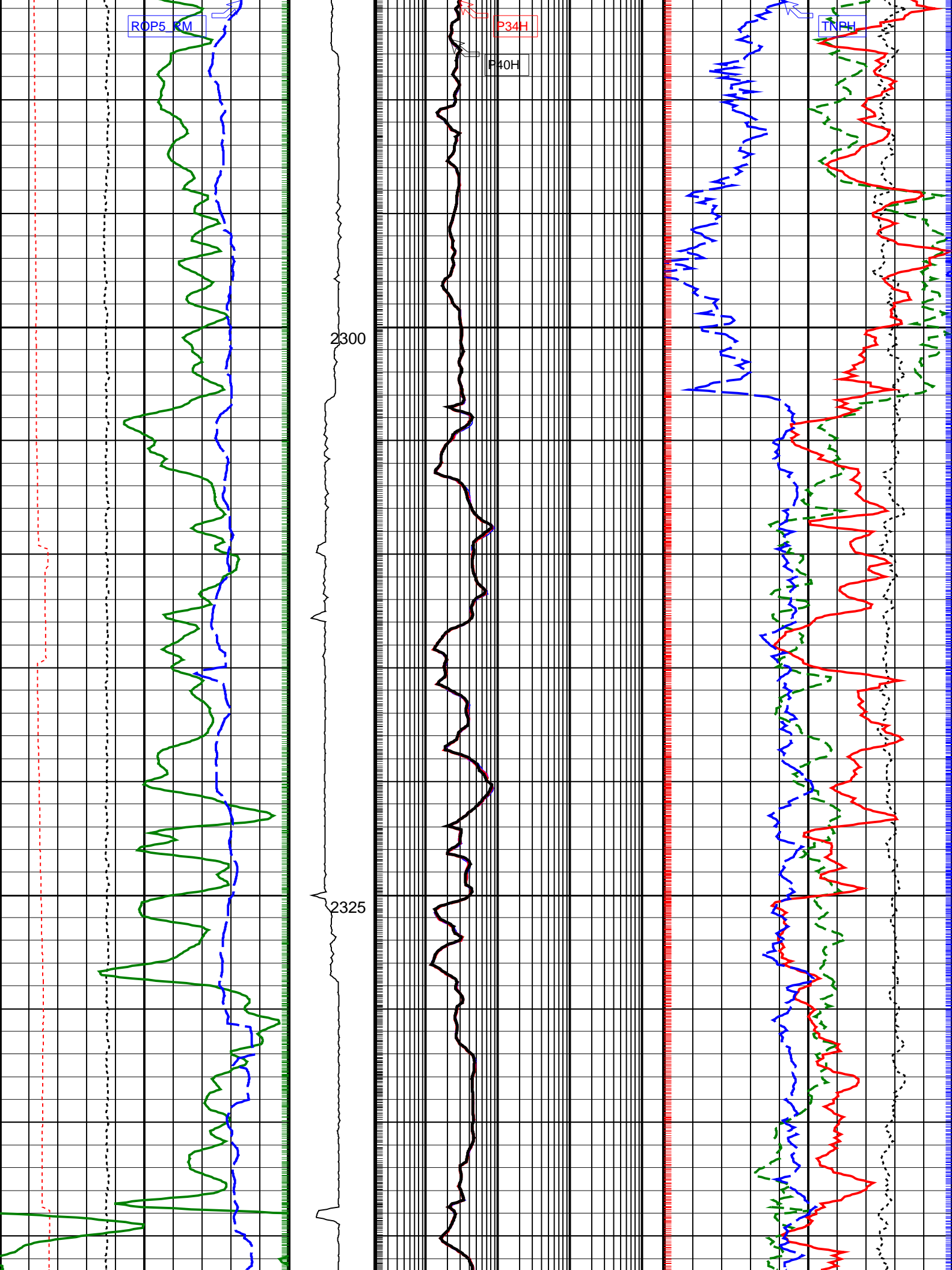


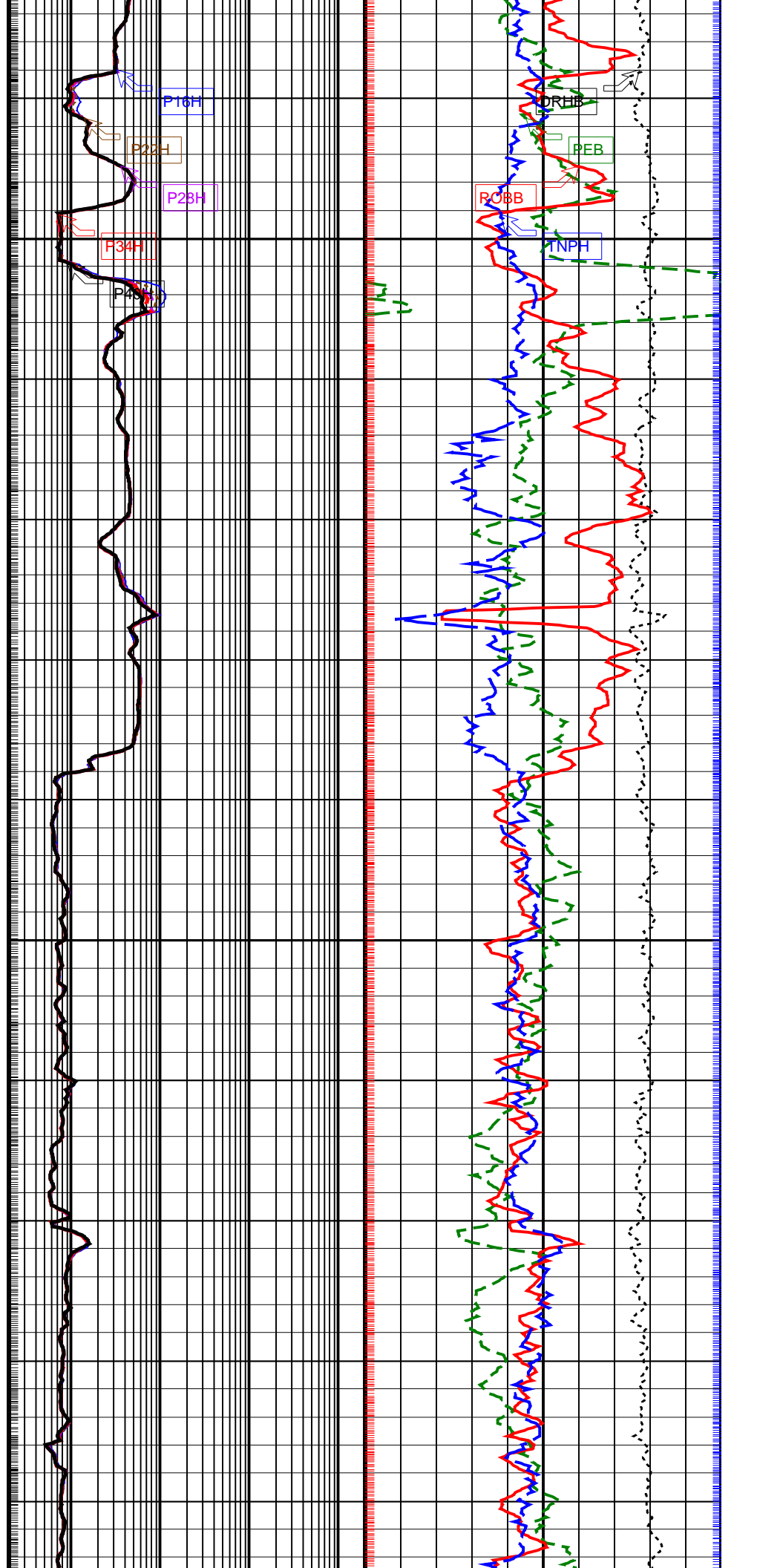
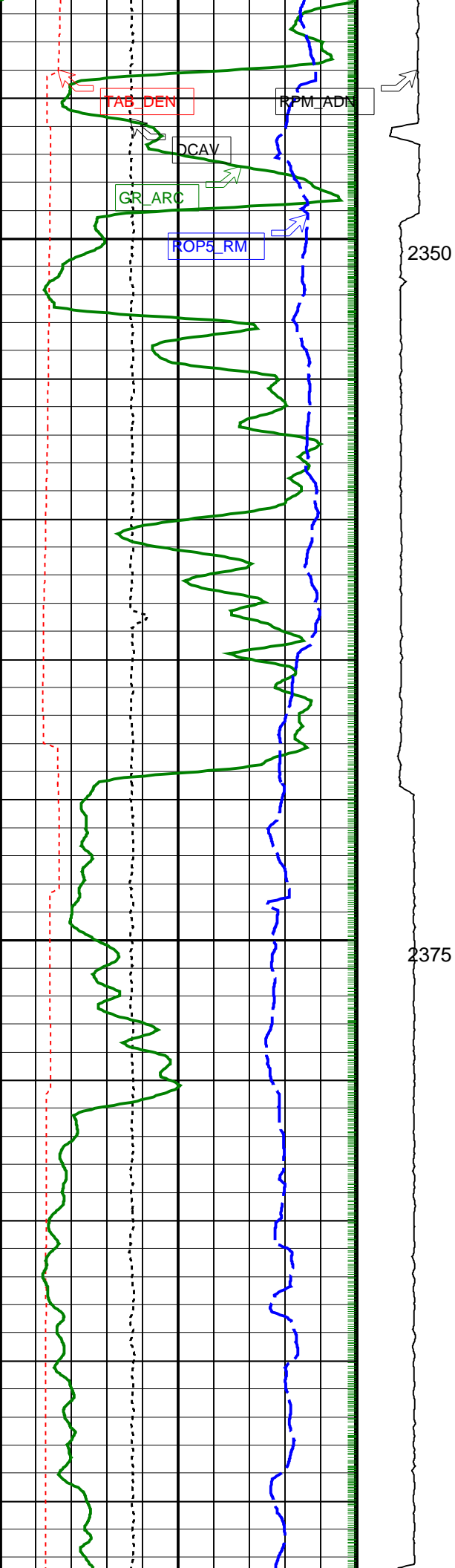


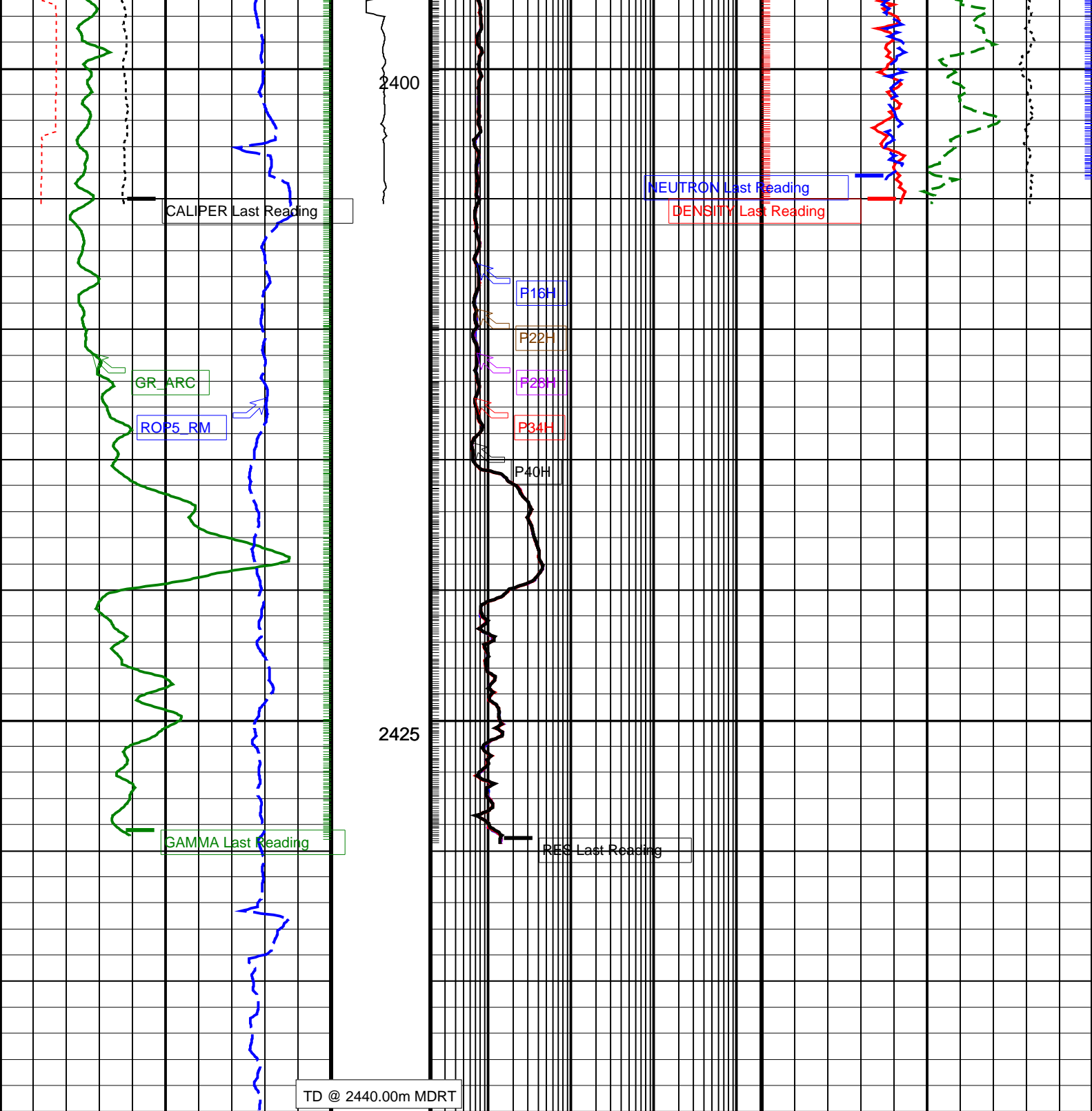












Density Time After Bit (TAB_DEN) (HR)	ADN Rotational Speed (RPM_ADN) (RPM)	ARC Phase-Shift Resistivity 16-in. at 2 MHz (P16H) (OHMM)	Bulk Density Correction, Bottom (DRHB) (G/C3)
0	10	0.2	2000
	0		
Density Caliper, Average (DCAV) (IN)		ARC Phase-Shift Resistivity 22-in. at 2 MHz (P22H) (OHMM)	Photoelectric Factor, Bottom (PEB) (----)
6	16	0.2	2000
ARC Gamma Ray (GR_ARC) (GAPI)		ARC Phase-Shift Resistivity 28-in. at 2 MHz (P28H) (OHMM)	Bulk Density, Bottom (ROBB) (G/C3)
0	200	0.2	2000
Rate of Penetration, Averaged over Last 5ft (ROP5_RM)		ARC Phase-Shift Resistivity 34-in. at 2 MHz (P34H)	Thermal Neutron Porosity (TNPH) (V/V)

200	(M/HR)	0	0.2	(OHMM)	2000	0.45	(V/V)	-0.15						
			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: ID14_0C_25														
IDF														
ARC6A-AA			Id14_0c_25			ADN								
						Id14_0c_25								

6.75-in. Azimuthal Density Neutron / Equipment Identification			
Primary Equipment:			
Tool Name and Serial Number	ADN6 - CA		141
Collar Type and Serial Number	ADDC - AA		1
Chassis Type and Serial Number	ADSE - EA		18
Stabilizer Type and Serial Number			1
Neutron Logging Source	NSR - M		202
Density Logging Source	GSR - J/Z		1994
Stabilizer Size	9.48 in.		
Calibration Status	AUTO -		

Master: 19-Nov-2009 14:55														
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				506.9	Master				1408	Master				3796
	250.0	4125	8000		700.0	9350	18000		2500	23750	45000			
	(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)			

Master: 19–Nov–2009 14:55														
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				86.44	Master				820.1	Master				2668
	50.00	725.0	1400		500.0	4250	8000			1500	15750	30000		
	(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)		

Master: 19–Nov–2009 14:55														
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				30.61	Master				96.64	Master				429.4
	15.00	82.50	150.0		40.00	220.0	400.0			150.0	825.0	1500		
	(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)		

Master: 19-Nov-2009 14:55									
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				1.003	Master				1.085
	1.003	1.018	1.033		1.080	1.110	1.140		
	(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)		

Master: 19-Nov-2009 14:55														
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				17.53	Master				4.570	Master				2.063
	13.30	19.05	24.70			3.400	4.857	6.200			1.600	2.363	3.100	
	(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(Maximum)			(Minimum)	(Nominal)	(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	<div><div></div></div> <div>13.30 (Minimum)</div>	<div><div></div></div> <div>19.05 (Nominal)</div>	<div><div></div></div> <div>24.70 (Maximum)</div>	18.20	Master	<div><div></div></div> <div>3.400 (Minimum)</div>	<div><div></div></div> <div>4.857 (Nominal)</div>	<div><div></div></div> <div>6.200 (Maximum)</div>	4.636	Master	<div><div></div></div> <div>1.600 (Minimum)</div>	<div><div></div></div> <div>2.363 (Nominal)</div>	<div><div></div></div> <div>3.100 (Maximum)</div>	2.134
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	<div><div></div></div>			17.69	Master	<div><div></div></div>			4.489	Master	<div><div></div></div>			2.135
	<div><div></div></div> <div>13.30 (Minimum)</div>	<div><div></div></div> <div>19.05 (Nominal)</div>	<div><div></div></div> <div>24.70 (Maximum)</div>			<div><div></div></div> <div>3.400 (Minimum)</div>	<div><div></div></div> <div>4.857 (Nominal)</div>	<div><div></div></div> <div>6.200 (Maximum)</div>			<div><div></div></div> <div>1.600 (Minimum)</div>	<div><div></div></div> <div>2.363 (Nominal)</div>	<div><div></div></div> <div>3.100 (Maximum)</div>	
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	<div><div></div></div>			17.61	Master	<div><div></div></div>			4.449	Master	<div><div></div></div>			2.094
	<div><div></div></div> <div>13.30 (Minimum)</div>	<div><div></div></div> <div>19.05 (Nominal)</div>	<div><div></div></div> <div>24.70 (Maximum)</div>			<div><div></div></div> <div>3.400 (Minimum)</div>	<div><div></div></div> <div>4.857 (Nominal)</div>	<div><div></div></div> <div>6.200 (Maximum)</div>			<div><div></div></div> <div>1.600 (Minimum)</div>	<div><div></div></div> <div>2.363 (Nominal)</div>	<div><div></div></div> <div>3.100 (Maximum)</div>	
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	<div><div></div></div>			18.12	Master	<div><div></div></div>			4.559	Master	<div><div></div></div>			2.040
	<div><div></div></div> <div>13.30 (Minimum)</div>	<div><div></div></div> <div>19.05 (Nominal)</div>	<div><div></div></div> <div>24.70 (Maximum)</div>			<div><div></div></div> <div>3.400 (Minimum)</div>	<div><div></div></div> <div>4.857 (Nominal)</div>	<div><div></div></div> <div>6.200 (Maximum)</div>			<div><div></div></div> <div>1.600 (Minimum)</div>	<div><div></div></div> <div>2.363 (Nominal)</div>	<div><div></div></div> <div>3.100 (Maximum)</div>	
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	<div><div></div></div>			17.19	Master	<div><div></div></div>			4.617	Master	<div><div></div></div>			2.104
	<div><div></div></div> <div>13.30 (Minimum)</div>	<div><div></div></div> <div>19.05 (Nominal)</div>	<div><div></div></div> <div>24.70 (Maximum)</div>			<div><div></div></div> <div>3.400 (Minimum)</div>	<div><div></div></div> <div>4.857 (Nominal)</div>	<div><div></div></div> <div>6.200 (Maximum)</div>			<div><div></div></div> <div>1.600 (Minimum)</div>	<div><div></div></div> <div>2.363 (Nominal)</div>	<div><div></div></div> <div>3.100 (Maximum)</div>	
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	<div><div></div></div>			463.5	Master	<div><div></div></div>			702.6	Master	<div><div></div></div>			325.0
	<div><div></div></div> <div>345.0 (Minimum)</div>	<div><div></div></div> <div>487.5 (Nominal)</div>	<div><div></div></div> <div>595.0 (Maximum)</div>			<div><div></div></div> <div>535.0 (Minimum)</div>	<div><div></div></div> <div>768.8 (Nominal)</div>	<div><div></div></div> <div>925.0 (Maximum)</div>			<div><div></div></div> <div>230.0 (Minimum)</div>	<div><div></div></div> <div>343.7 (Nominal)</div>	<div><div></div></div> <div>430.0 (Maximum)</div>	
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	<div><div></div></div>			453.0	Master	<div><div></div></div>			700.6	Master	<div><div></div></div>			323.0
	<div><div></div></div> <div>345.0 (Minimum)</div>	<div><div></div></div> <div>487.5 (Nominal)</div>	<div><div></div></div> <div>595.0 (Maximum)</div>			<div><div></div></div> <div>535.0 (Minimum)</div>	<div><div></div></div> <div>768.8 (Nominal)</div>	<div><div></div></div> <div>925.0 (Maximum)</div>			<div><div></div></div> <div>230.0 (Minimum)</div>	<div><div></div></div> <div>343.7 (Nominal)</div>	<div><div></div></div> <div>430.0 (Maximum)</div>	


Master: 19–Nov–2009 14:55													
6.75–in. Azimuthal Density Neutron Calibration													
Neutron: Water Block Check													
Phase	Far Neutron water porosity PU											Value	
Master	<div><div></div></div>											109.4	
	<div><div></div></div> <div>90.00 (Minimum)</div>	<div><div></div></div> <div>100.0 (Nominal)</div>						<div><div></div></div> <div>125.0 (Maximum)</div>					

6.75–in. Array Resistivity Compensated / Equipment Identification													
Primary Equipment:													
Tool Name and Serial Number													
ARC6 – BA 1708													
ARC675 Calibration Status													
AUTO –													

Master: 18-Sep-2009 12:48														
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	<div><div></div></div>			1.783	Master	<div><div></div></div>			-1.661	Master	<div><div></div></div>			1.696
	-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	<div><div></div></div>			-1.703	Master	<div><div></div></div>			1.660	Master	<div><div></div></div>			-0.4140
	-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	<div><div></div></div>			0.2910	Master	<div><div></div></div>			-0.3730	Master	<div><div></div></div>			0.2900
	-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			-0.3780
	-3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)

Master: 18-Sep-2009 12:48											
6.75-in. Array Resistivity Compensated Calibration											
Resistivity: Air											
Phase	Attenuation T1		Value	Phase	Attenuation T2		Value	Phase	Attenuation T3		Value
Master			8.342	Master			6.600	Master			4.967
	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			4.506	Master			3.519	Master			8.321
	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			6.628	Master			4.939	Master			4.530
	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			3.500								
	1.600 (Minimum)	3.600 (Nominal)	5.600 (Maximum)								

Master: 28-Sep-2009 14:11			
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			4.929
	2.780 (Minimum)	4.800 (Nominal)	6.000 (Maximum)

SCHLUMBERGER

Survey report

Client.....: ESSO Australia Pty Ltd
Field.....: WEST KINGFISH

Well.....: WKF W12A
API number.....: N/A
Engineer.....: MRG/DP/WC

COUNTY.....: N/A
STATE.....: VIC

----- 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.....: 77.00 m
KB above permanent.....: -41.73 m
DF above permanent.....: -41.73 m

----- Vertical section origin-----
Latitude (+N/S-).....: -2.32 m
Departure (+E/W-).....: 4.16 m

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

Azimuth from Vsect Origin to target: 19.15 degrees

Spud date.....: 21-NOV-09
Last survey date.....: 25-Nov-09
Total accepted surveys...: 84
MD of first survey.....: 0.00 m
MD of last survey.....: 2440.00 m

----- Geomagnetic data -----
Magnetic model.....: BGGM version 2009
Magnetic date.....: 20-Nov-2009
Magnetic field strength...: 60057.39 GAMA
Magnetic dec (+E/W-).....: 13.22 degrees
Magnetic dip.....: -69.00 degrees

----- MWD survey Reference Criteria -----
Reference G.....: 1000.06 mGal
Reference H.....: 60057.50 GAMA
Reference Dip.....: -69.00 degrees
Tolerance of G.....: (+/-) 2.50 mGal
Tolerance of H.....: (+/-) 300.00 GAMA
Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections -----
Magnetic dec (+E/W-).....: 13.22 degrees
Grid convergence (+E/W-)..: -0.69 degrees
Total az corr (+E/W-).....: 13.91 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	0.00	0.00	0.00	0.00	0.00	0.00	-2.32	4.16	4.76	119.15	0.00	TIP	None
2	7.50	0.00	0.00	7.50	7.50	0.00	-2.32	4.16	4.76	119.15	0.00	PHOTO-GSS	No
3	206.50	3.00	260.00	199.00	206.41	-2.54	-3.22	-0.97	3.37	196.73	0.46	PHOTO-GSS	No
4	216.50	4.50	273.00	10.00	216.39	-2.77	-3.25	-1.62	3.63	206.48	5.23	PHOTO-GSS	No
5	234.50	7.00	287.00	18.00	234.30	-3.01	-2.89	-3.37	4.44	229.40	4.82	PHOTO-GSS	No
6	243.50	8.50	288.00	9.00	243.21	-3.05	-2.53	-4.53	5.19	240.86	5.10	PHOTO-GSS	No
7	253.50	8.50	288.00	10.00	253.10	-3.07	-2.07	-5.94	6.29	250.78	0.00	PHOTO-GSS	No
8	263.50	8.75	289.00	10.00	262.99	-3.09	-1.59	-7.36	7.53	257.78	0.89	PHOTO-GSS	No
9	282.50	9.25	293.00	19.00	281.76	-2.99	-0.53	-10.13	10.14	267.03	1.28	PHOTO-GSS	No
10	300.50	9.75	292.00	18.00	299.51	-2.82	0.61	-12.88	12.89	272.71	0.89	PHOTO-GSS	No
11	321.50	11.00	293.00	21.00	320.17	-2.60	2.06	-16.37	16.50	277.17	1.83	PHOTO-GSS	No
12	341.50	10.25	292.00	20.00	339.82	-2.38	3.47	-19.77	20.08	279.96	1.18	PHOTO-GSS	No
13	360.50	9.75	291.00	19.00	358.53	-2.24	4.68	-22.84	23.32	281.58	0.85	PHOTO-GSS	No
14	389.50	10.00	291.00	29.00	387.11	-2.08	6.46	-27.49	28.24	283.23	0.26	PHOTO-GSS	No
15	418.50	9.50	291.00	29.00	415.69	-1.93	8.22	-32.07	33.11	284.38	0.53	PHOTO-GSS	No
16	447.50	8.75	292.00	29.00	444.32	-1.74	9.91	-36.35	37.68	285.25	0.81	PHOTO-GSS	No
17	466.50	7.50	289.00	19.00	463.13	-1.67	10.85	-38.86	40.35	285.60	2.12	PHOTO-GSS	No
18	505.50	5.50	293.00	39.00	501.88	-1.55	12.41	-42.99	44.75	286.10	1.60	PHOTO-GSS	No
19	562.50	3.00	296.00	57.00	558.71	-1.19	14.13	-46.85	48.93	286.79	1.34	PHOTO-GSS	No
20	626.53	2.02	301.08	64.03	622.68	-0.76	15.45	-49.32	51.68	287.39	0.48	PHOTO-GSS	No
21	646.77	3.66	20.88	20.24	642.90	-0.04	16.24	-49.40	52.00	288.20	5.80	MWD+GMAG	No
22	656.61	4.55	22.13	9.84	652.72	0.67	16.89	-49.14	51.96	288.97	2.77	MWD+GMAG	No
23	685.69	8.33	21.52	29.08	681.61	3.92	19.92	-47.93	51.90	292.57	3.96	MWD+GMAG	No
24	714.73	9.35	21.05	29.04	710.30	8.38	24.08	-46.31	52.20	297.47	1.07	MWD+GMAG	No
25	744.08	9.70	21.95	29.35	739.25	13.24	28.60	-44.53	52.92	302.71	0.40	MWD+GMAG	No
26	773.27	9.46	16.40	29.19	768.03	18.09	33.18	-42.93	54.26	307.70	1.00	MWD+GMAG	No
27	802.85	9.26	13.23	29.58	797.22	22.88	37.83	-41.70	56.30	312.21	0.57	MWD+GMAG	No
28	832.02	9.27	11.81	29.17	826.01	27.55	42.42	-40.68	58.77	316.19	0.24	MWD+GMAG	No
29	861.40	9.32	11.66	29.38	855.00	32.25	47.06	-39.72	61.58	319.84	0.06	MWD+GMAG	No
30	890.64	8.69	12.79	29.24	883.88	36.80	51.53	-38.75	64.48	323.06	0.68	MWD+GMAG	No
31	919.93	9.08	19.27	29.29	912.82	41.31	55.87	-37.50	67.29	326.13	1.12	MWD+GMAG	No
32	949.14	8.96	17.29	29.21	941.67	45.89	60.22	-36.06	70.19	329.09	0.35	MWD+GMAG	No
33	978.16	8.79	14.85	29.02	970.34	50.36	64.52	-34.82	73.32	331.65	0.43	MWD+GMAG	No
34	1007.71	9.41	13.06	29.55	999.52	55.01	69.06	-33.70	76.84	333.99	0.70	MWD+GMAG	No
35	1036.88	8.46	15.85	29.17	1028.34	59.52	73.45	-32.57	80.34	336.08	1.09	MWD+GMAG	No
36	1066.29	8.66	31.20	29.41	1057.42	63.85	77.42	-30.83	83.33	338.28	2.37	MWD+GMAG	No
37	1095.65	9.11	41.94	29.36	1086.43	68.15	81.04	-28.14	85.79	340.85	1.78	MWD+GMAG	No
38	1125.06	9.44	34.42	29.41	1115.46	72.63	84.76	-25.22	88.43	343.43	1.30	MWD+GMAG	No
39	1154.05	9.63	27.44	28.99	1144.05	77.32	88.88	-22.75	91.74	345.64	1.23	MWD+GMAG	No
40	1183.48	9.60	20.06	29.43	1173.07	82.21	93.37	-20.78	95.65	347.45	1.28	MWD+GMAG	No
41	1212.66	8.94	14.68	29.18	1201.87	86.90	97.84	-19.37	99.74	348.80	1.14	MWD+GMAG	No
42	1241.60	9.05	16.97	28.94	1230.45	91.42	102.20	-18.13	103.79	349.94	0.39	MWD+GMAG	No
43	1271.30	8.65	20.23	29.70	1259.80	95.99	106.53	-16.68	107.82	351.10	0.66	MWD+GMAG	No
44	1300.70	8.80	20.89	29.40	1288.86	100.45	110.70	-15.11	111.73	352.23	0.19	MWD+GMAG	No
45	1329.76	8.90	19.33	29.06	1317.57	104.91	114.90	-13.58	115.70	353.26	0.27	MWD+GMAG	No
46	1358.94	8.89	6.87	29.18	1346.40	109.38	119.27	-12.56	119.93	353.99	2.01	MWD+GMAG	No
47	1388.26	8.69	2.85	29.32	1375.38	113.72	123.73	-12.18	124.33	354.38	0.67	MWD+GMAG	No
48	1417.51	8.70	10.24	29.25	1404.29	118.02	128.11	-11.68	128.65	354.79	1.16	MWD+GMAG	No
49	1446.94	9.09	7.11	29.43	1433.37	122.49	132.61	-10.99	133.07	355.26	0.64	MWD+GMAG	No
50	1476.39	7.76	8.46	29.45	1462.50	126.72	136.89	-10.41	137.28	355.65	1.39	MWD+GMAG	No
51	1505.59	8.16	16.27	29.20	1491.42	130.73	140.83	-9.54	141.15	356.12	1.20	MWD+GMAG	No
52	1534.75	8.56	23.45	29.16	1520.27	134.96	144.80	-8.10	145.03	356.80	1.17	MWD+GMAG	No
53	1563.84	8.66	24.16	29.09	1549.03	139.30	148.79	-6.34	148.92	357.56	0.15	MWD+GMAG	No
54	1593.11	8.70	24.23	29.27	1577.97	143.70	152.82	-4.53	152.88	358.30	0.04	MWD+GMAG	No
55	1622.65	8.89	25.65	29.54	1607.16	148.20	156.91	-2.63	156.93	359.04	0.30	MWD+GMAG	No
56	1651.82	8.95	26.68	29.17	1635.98	152.68	160.97	-0.63	160.97	359.78	0.18	MWD+GMAG	No
57	1680.83	8.98	28.50	29.01	1664.63	157.16	164.98	1.46	164.98	0.51	0.30	MWD+GMAG	No
58	1708.19	8.68	23.13	27.36	1691.67	161.32	168.75	3.29	168.79	1.12	0.98	MWD+GMAG	No
59	1739.30	8.17	17.30	31.11	1722.44	165.87	173.02	4.87	173.09	1.61	0.97	MWD+GMAG	No
60	1768.35	7.62	16.34	29.05	1751.22	169.86	176.84	6.03	176.94	1.95	0.59	MWD+GMAG	No
61	1798.01	6.99	12.87	29.66	1780.64	173.62	180.49	6.98	180.62	2.22	0.79	MWD+GMAG	No
62	1827.32	5.13	18.45	29.31	1809.78	176.70	183.47	7.80	183.64	2.43	2.03	MWD+GMAG	No
63	1856.68	0.47	246.72	29.36	1839.11	177.93	184.67	8.10	184.85	2.51	5.66	MWD+GMAG	No
64	1885.99	1.59	215.04	29.31	1868.41	177.46	184.29	7.76	184.45	2.41	1.26	MWD+GMAG	No
65	1915.16	1.46	221.69	29.17	1897.57	176.73	183.68	7.28	183.82	2.27	0.23	MWD+GMAG	No
66	1944.22	1.30	222.87	29.06	1926.62	176.09	183.16	6.81	183.29	2.13	0.17	MWD+GMAG	No
67	1973.72	1.39	211.95	29.50	1956.11	175.43	182.61	6.39	182.72	2.00	0.28	MWD+GMAG	No
68	2002.95	1.52	193.94	29.23	1985.34	174.70	181.94	6.11	182.04	1.92	0.49	MWD+GMAG	No
69	2032.09	1.45	194.05	29.14	2014.47	173.95	181.20	5.93	181.30	1.87	0.07	MWD+GMAG	No
70	2061.55	1.41	184.15	29.46	2043.92	173.22	180.48	5.81	180.57	1.84	0.26	MWD+GMAG	No
71	2090.54	1.49	174.99	28.99	2072.90	172.54	179.75	5.82	179.84	1.85	0.26	MWD+GMAG	No

72	2119.85	1.78	315.16	29.31	2102.20	172.39	179.69	5.53	179.78	1.76	3.20	MWD+GMAG	Noi
73	2149.01	3.15	2.86	29.16	2131.34	173.36	180.81	5.25	180.89	1.66	2.46	MWD+GMAG	Noi
74	2178.44	3.05	18.34	29.43	2160.72	174.92	182.36	5.54	182.45	1.74	0.87	MWD+GMAG	Noi
75	2207.86	2.78	34.08	29.42	2190.11	176.39	183.70	6.18	183.80	1.93	0.87	MWD+GMAG	Noi
76	2236.90	2.88	47.90	29.04	2219.11	177.71	184.77	7.12	184.91	2.21	0.72	MWD+GMAG	Noi
77	2266.43	0.53	239.21	29.53	2248.63	178.25	185.20	7.55	185.35	2.33	3.51	MWD+GMAG	Noi
78	2295.88	1.69	192.64	29.45	2278.08	177.72	184.70	7.34	184.85	2.28	1.43	MWD+GMAG	Noi
79	2325.11	0.82	120.08	29.23	2307.30	177.25	184.18	7.43	184.33	2.31	1.71	MWD+GMAG	Noi
80	2354.24	0.97	52.46	29.13	2336.43	177.42	184.22	7.80	184.39	2.42	1.05	MWD+GMAG	Noi
81	2383.41	1.30	312.00	29.17	2365.59	177.75	184.60	7.75	184.76	2.40	1.84	MWD+GMAG	Noi
82	2412.83	1.25	268.22	29.42	2395.01	177.77	184.81	7.18	184.95	2.23	0.99	MWD+GMAG	Noi
83	2421.16	0.95	126.31	8.33	2403.34	177.71	184.77	7.15	184.90	2.22	7.62	MWD+GMAG	Noi
84	2440.00	0.90	30.30	18.84	2422.17	177.81	184.80	7.35	184.95	2.28	2.23	Proj. to TD	

Company:

ESSO Australia Pty Ltd

Well:

WKF W12A

Field:

WEST KINGFISH

Rig:

ISDL 175

State:

Victoria

VISION Service

1:200 Measured Depth

Recorded Mode Log

Schlumberger

9.875 in. Section