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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.
Comments
HORIZONTAL PUMP DOWN MEMORY BIT DEPTH 11309 LOGGED TO 7489 ALL SCALES AND PRESENTATIONS PER CLIENT REQUEST LIMESTONE MATRIX, 2.71 g/cc USED FOR POROSITY MEASUREMENTS TOOLSTRING RAN WITH DECENTRALIZERS TBHV REPRESENTS TOTAL BOREHOLE VOLUME, ft3 ABHV REPRESENTS ANNULAR HOLE VOLUME, CALCULATED FOR 4.5" CSG ft3 DEPTH REFERENCE PIPE TALLY RIG: ENSIGN #135 CREW: JUAN RELLES, CHAD JACOBSMEYER

Service Ticket No.	986	API No.	05-123-34362	PGM Ver	WARRIOR 7.0
The Well Name, Location, Borehole Description, and / or Cementing Data Furnished by Client					
EQUIPMENT DATA					
GAMMA RAY		DENSITY		NEUTRON	
INDUCTION					

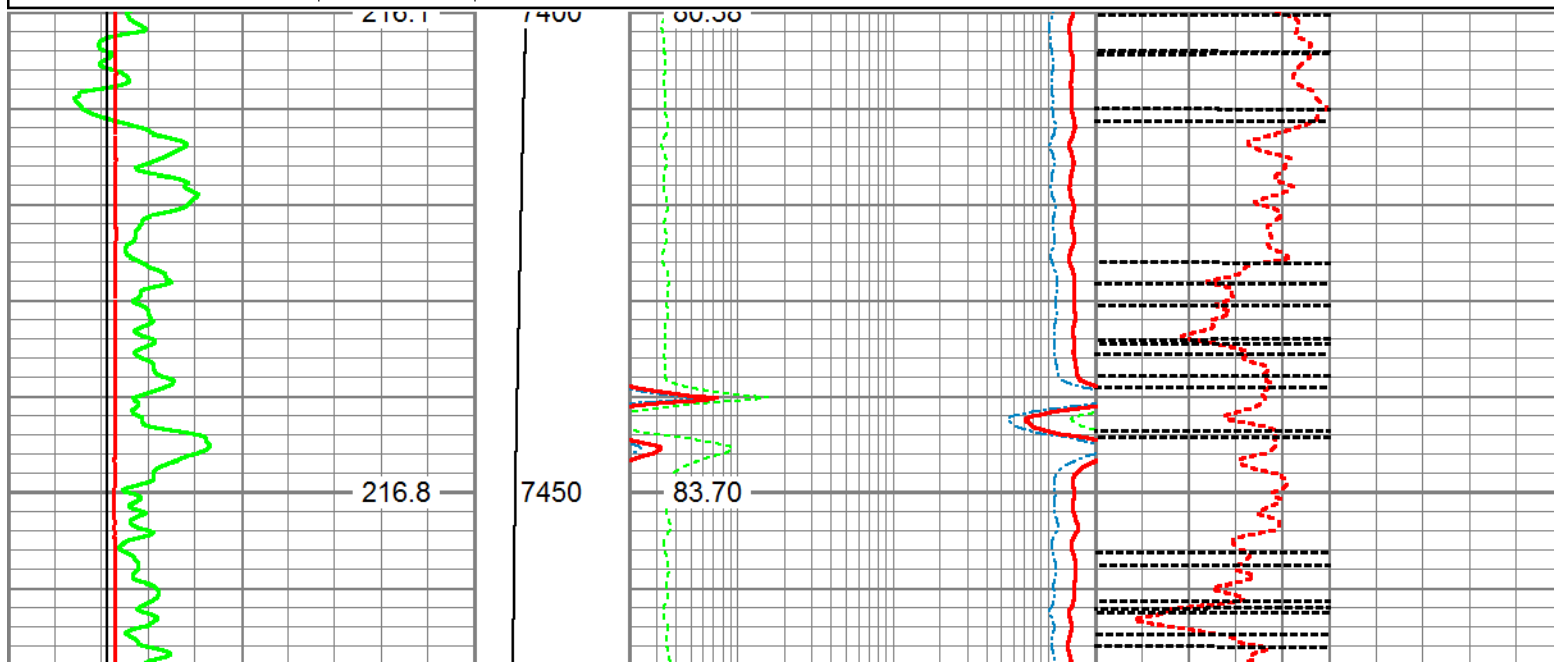
Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE	
Serial No.	6T	Serial No.	21D	Serial No.	12N	Serial No.	20R	
Model No.	PS	Model No.	PS	Model No.	PS	Model No.	PS	
Diameter	2.125	Diameter	2.125	Diameter	2.125	Diameter	2.125	
LOGGING DATA								
General Data								
Pass	Depths		Well Head	Speed	Logging Run Comments			
No.	From	To	Pressure	Ft/Min				
ONE	11408	7495		30				
	GAMMA RAY		DENSITY		NEUTRON		INDUCTION	
Pass	Scale		Scale		Scale		Scale	
No.	L	R	L	R	L	R	L	L
ONE	0	200	30	-10	30	-10	.2	200
DIRECTIONAL INFORMATION								
Maximum Deviation			deg. @		KOP			

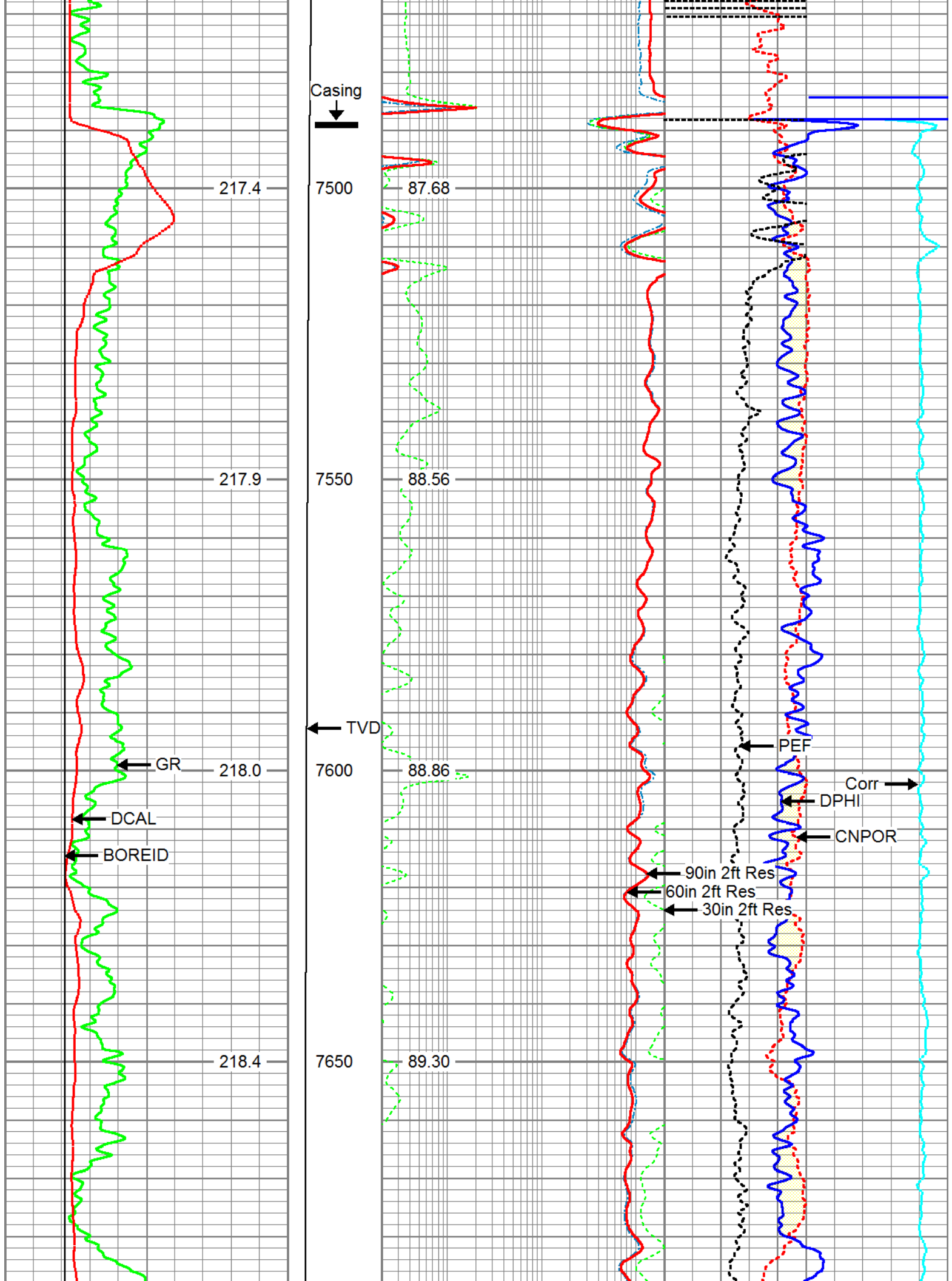


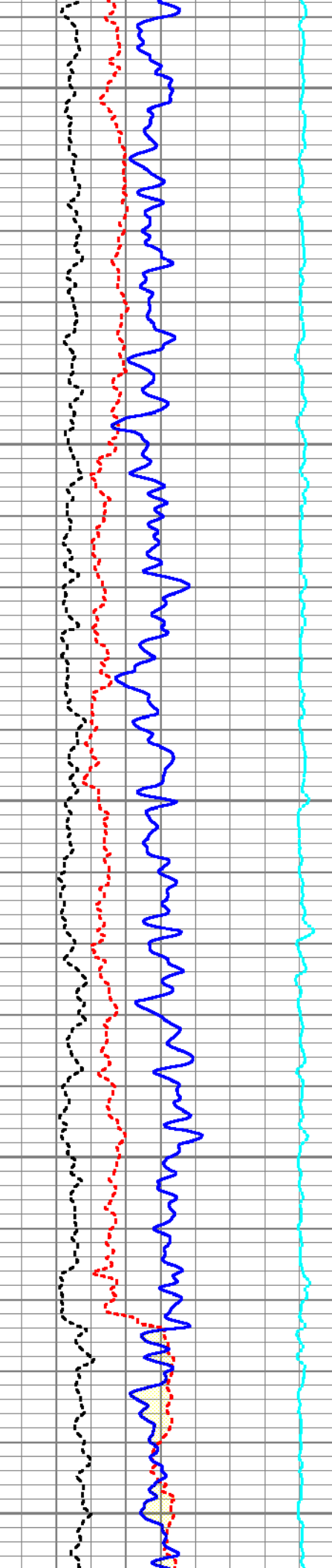
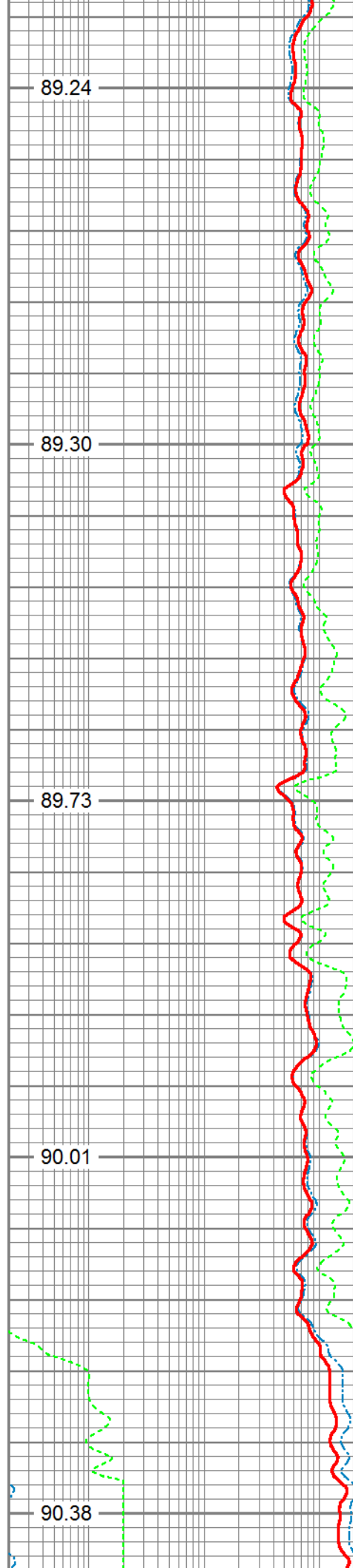
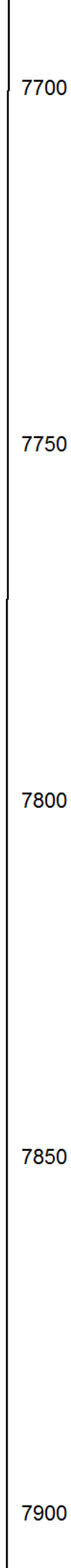
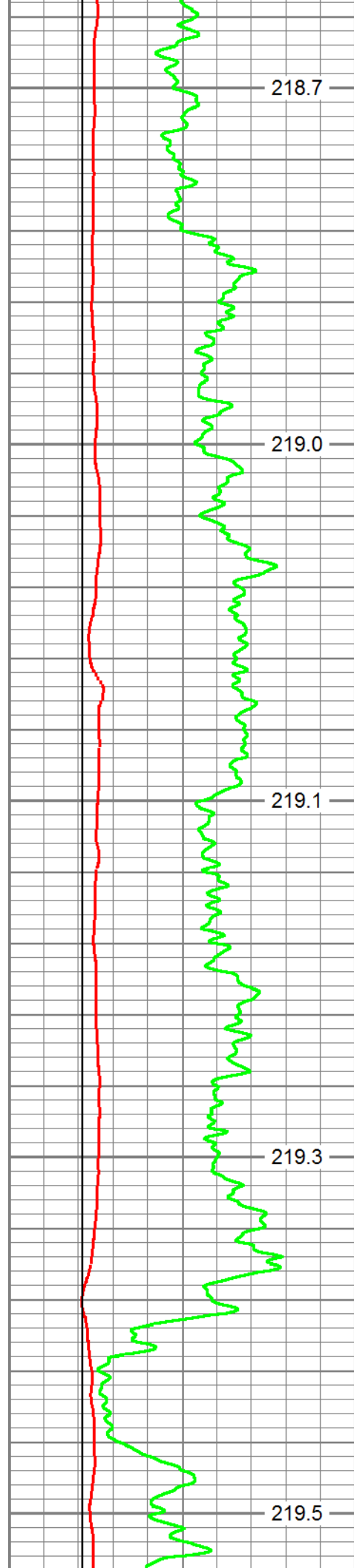
MAIN PASS

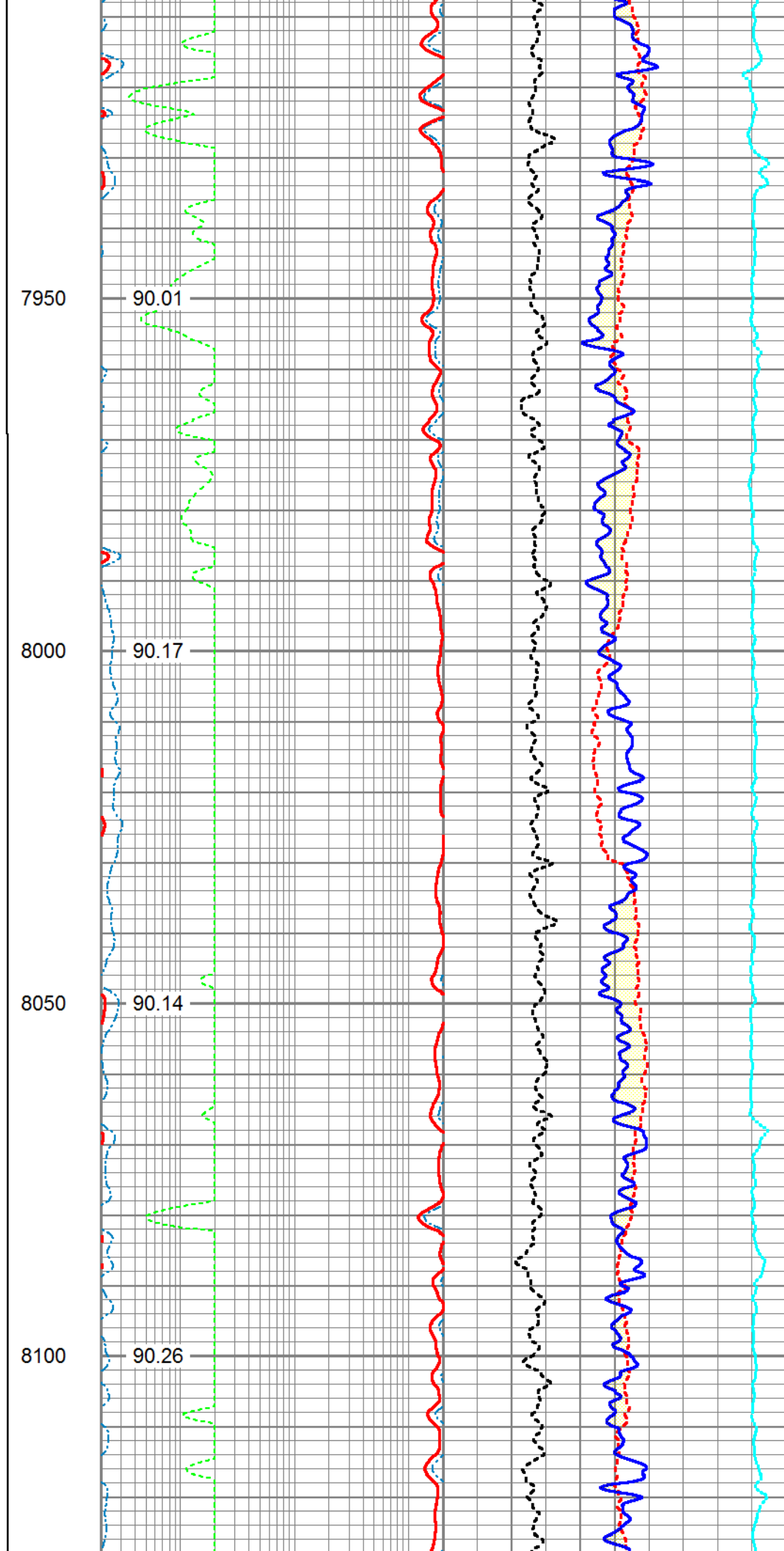
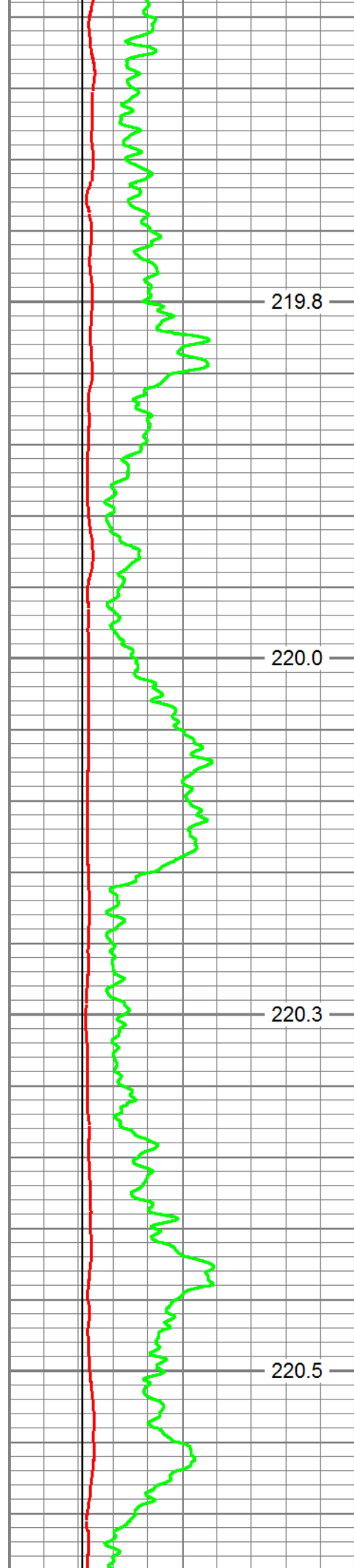
Database File: encana gratton #4b-30h_mem.db
 Dataset Pathname: proc1/pass4
 Presentation Format: ENC5IN~1
 Dataset Creation: Sat Feb 25 15:11:22 2012
 Charted by: Depth in Feet scaled 1:240

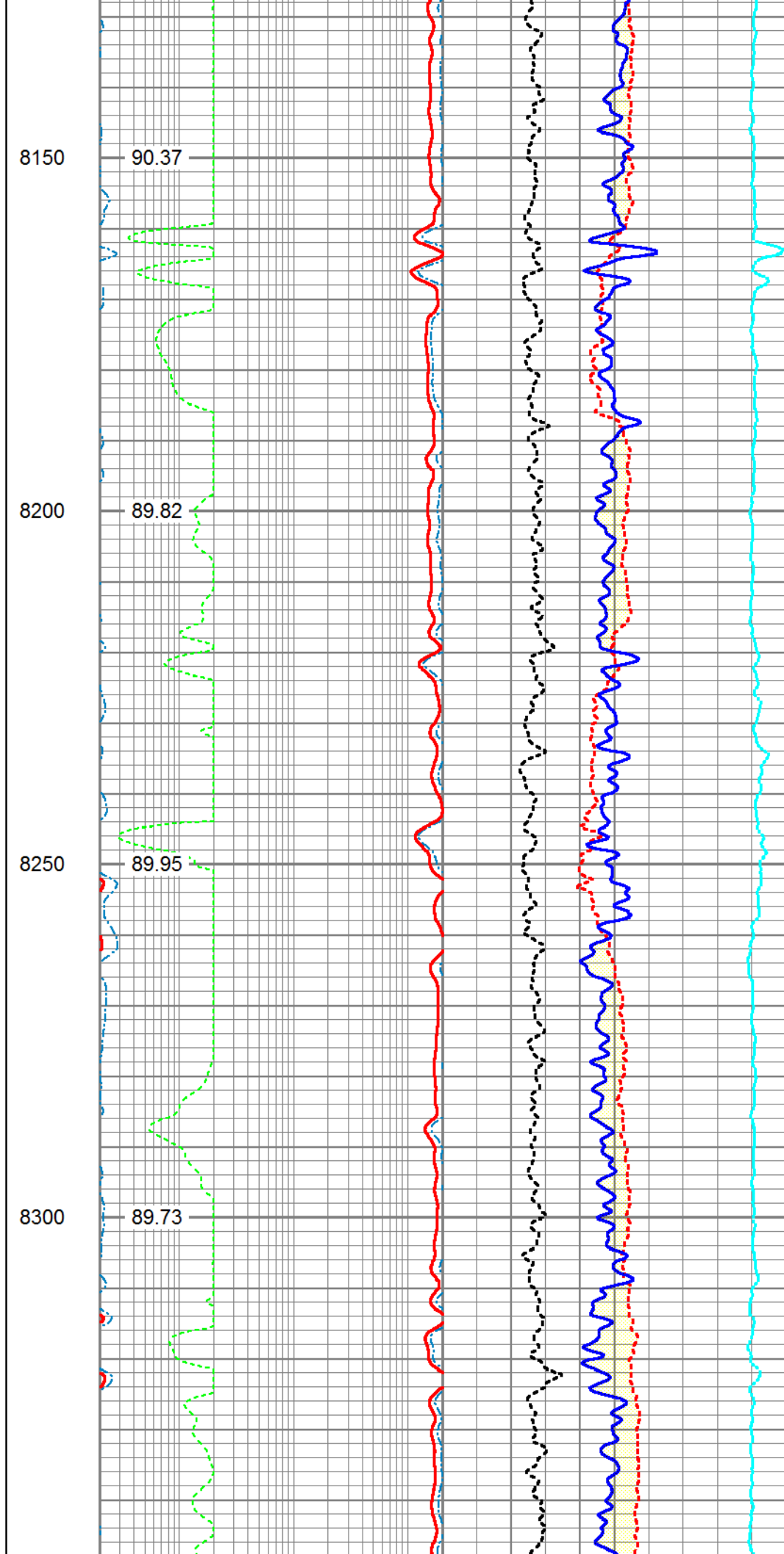
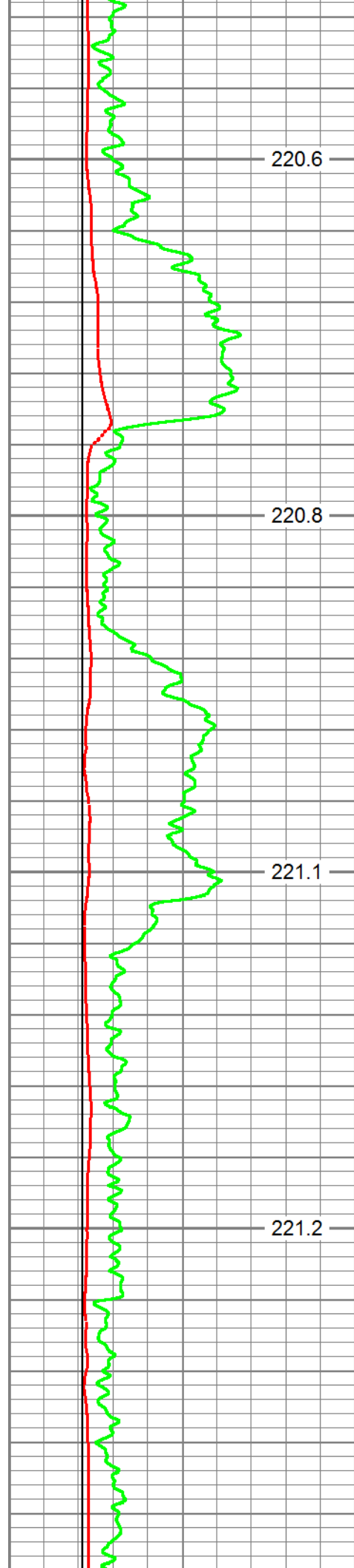
0	GR (GAPI)	200	TVD	0.2	60in 2ft Res (Ohm-m)	200	30	CNPOR (pu)	-10
4	DCAL (in)	14	7030 6930	0.2	30in 2ft Res (Ohm-m)	200	30	DPHI (pu)	-10
4	BOREID (in)	14		0.2	90in 2ft Res (Ohm-m)	200	0	PEF (barn) 10	Corr
	GRTEMP (degF)			INC (°)				-0.8 (g/cc)	0.2

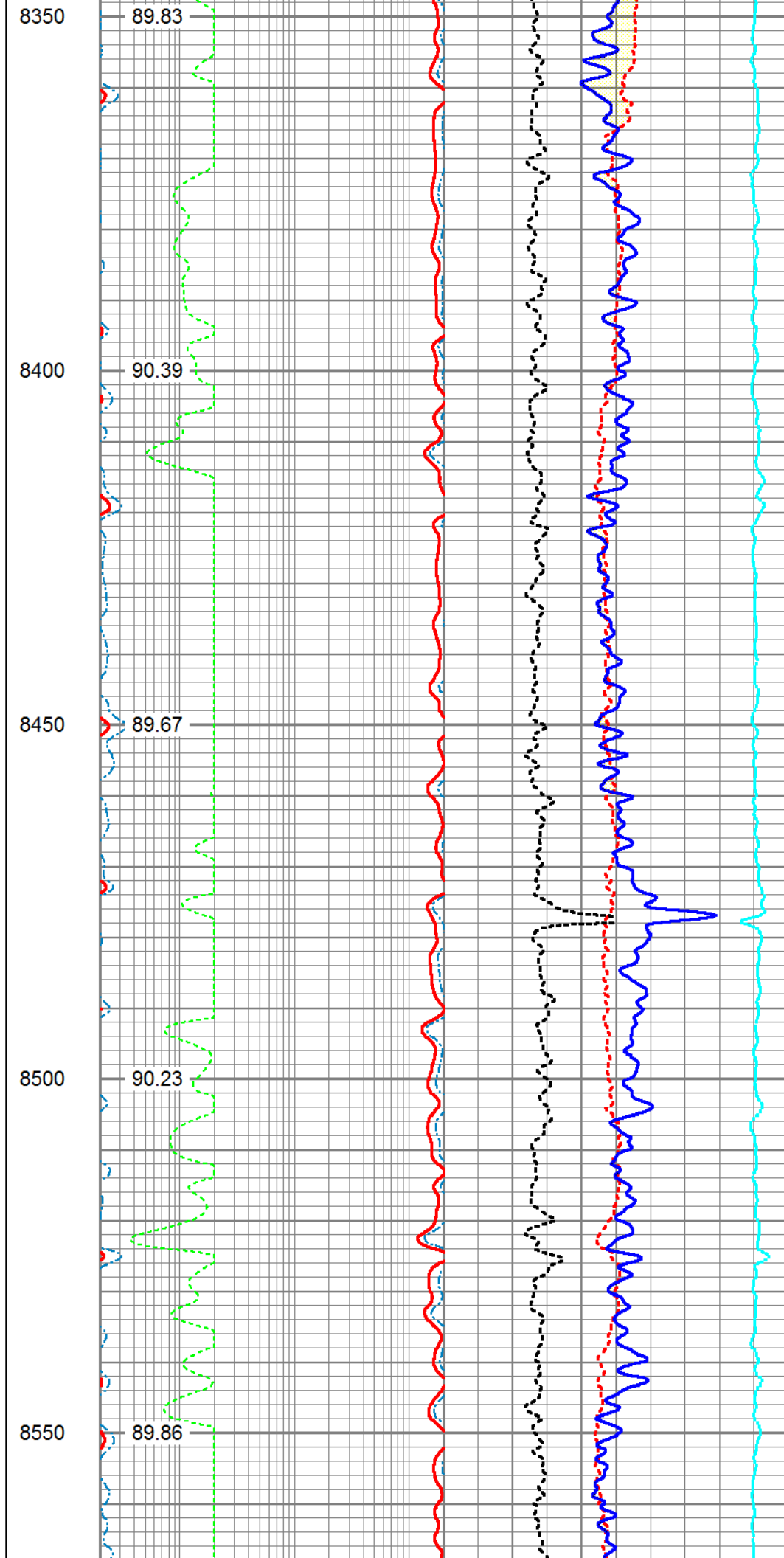
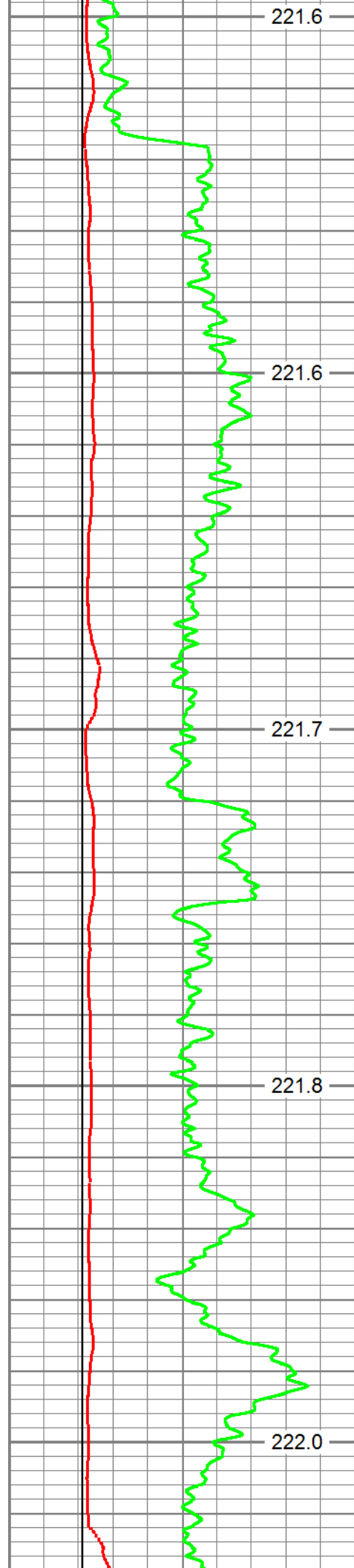


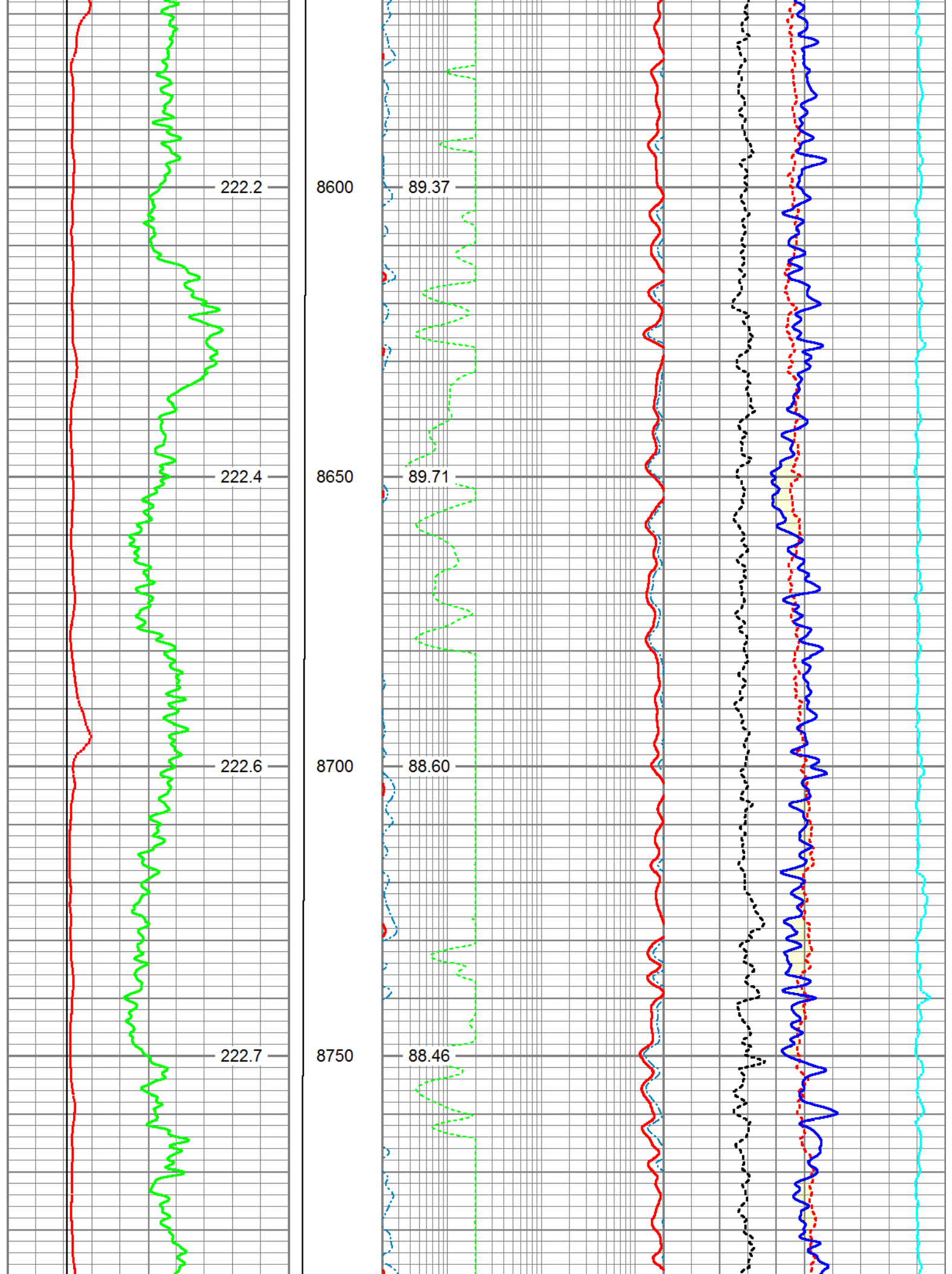


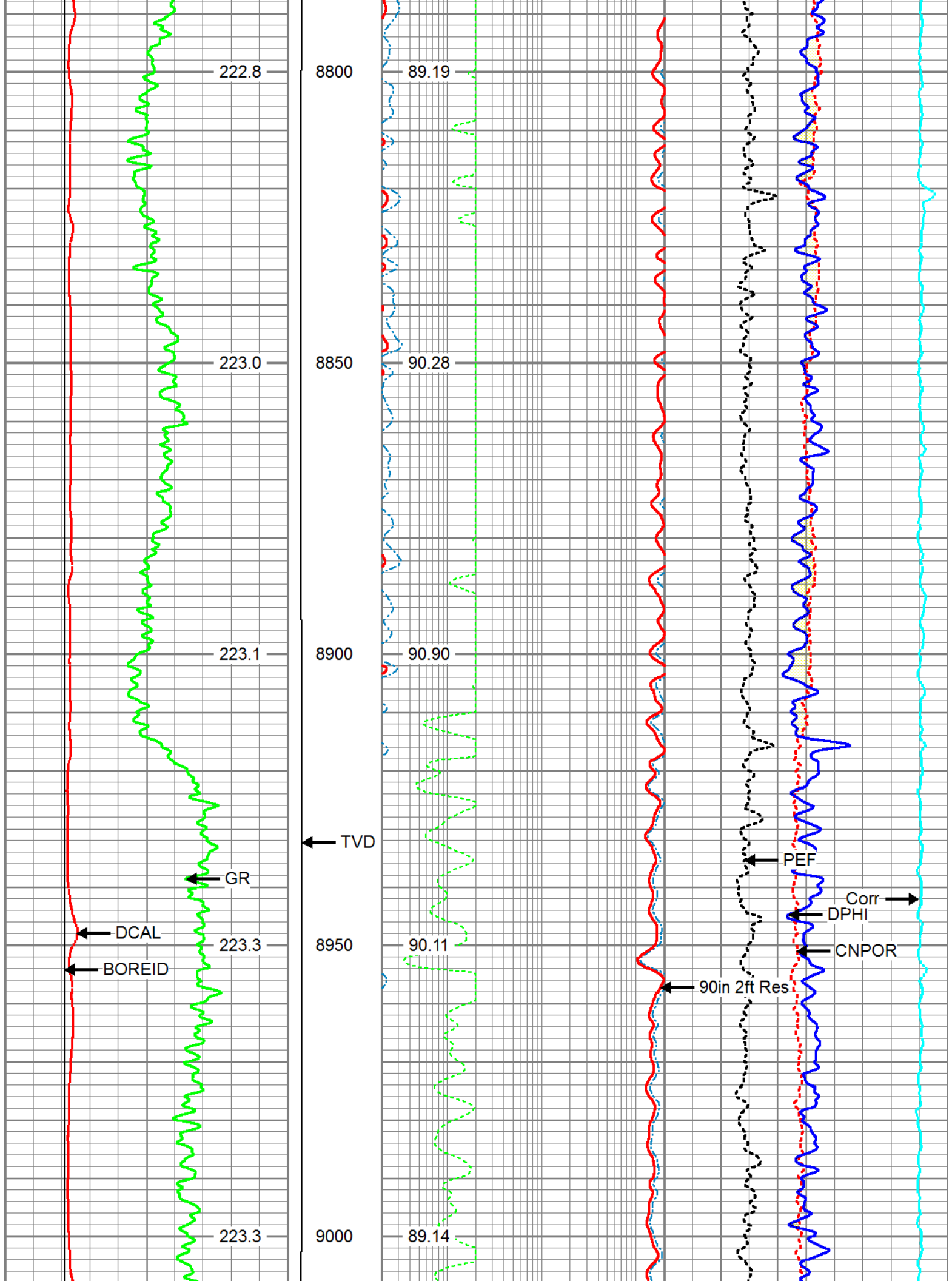


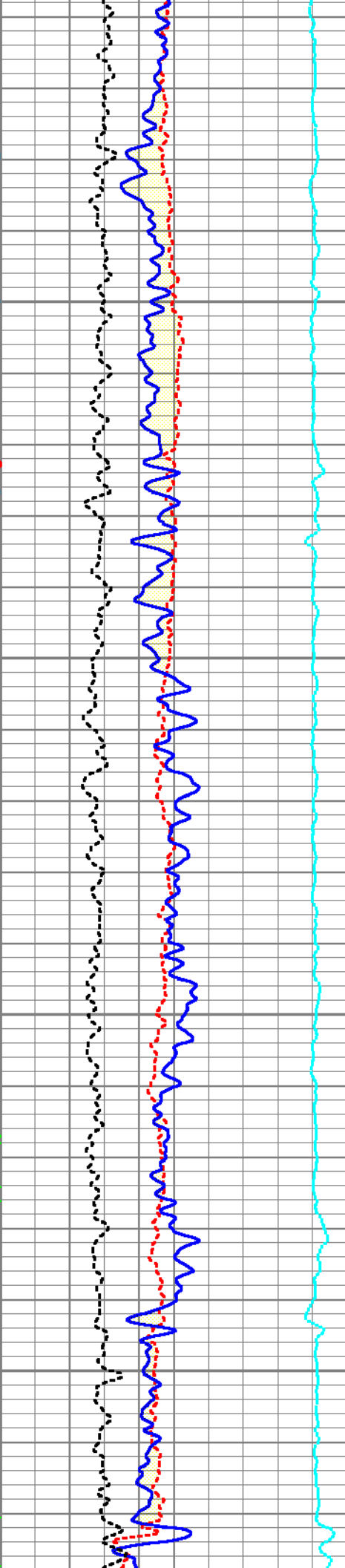
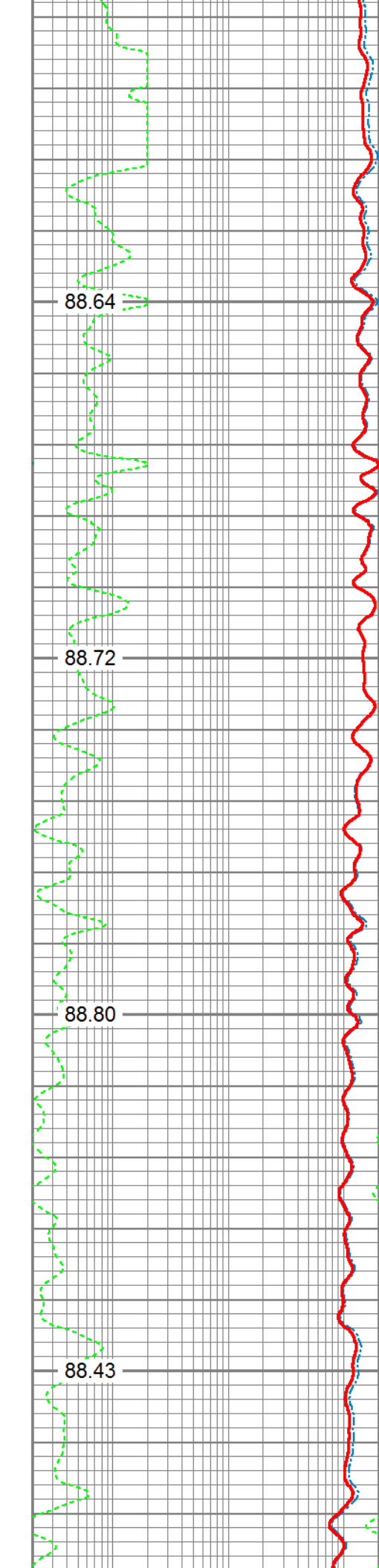
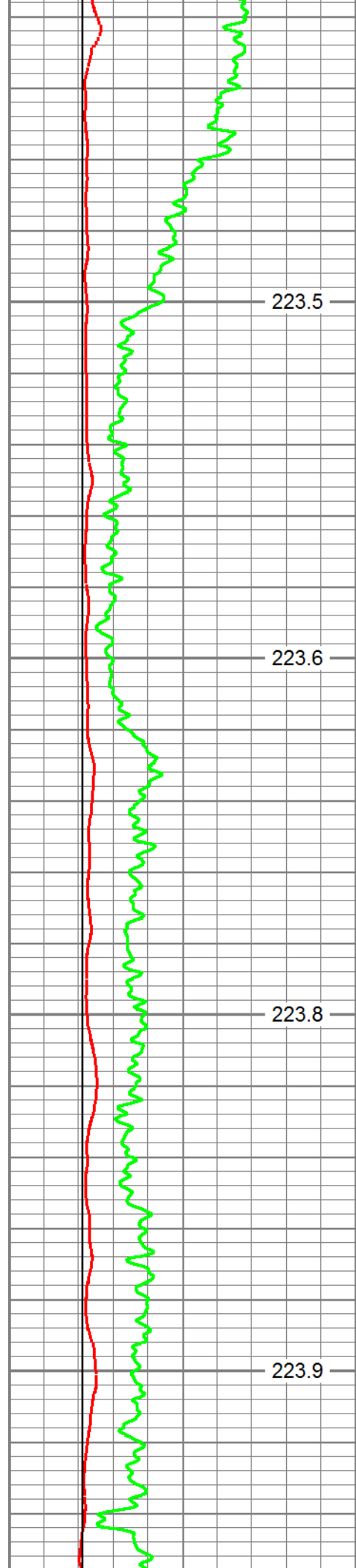


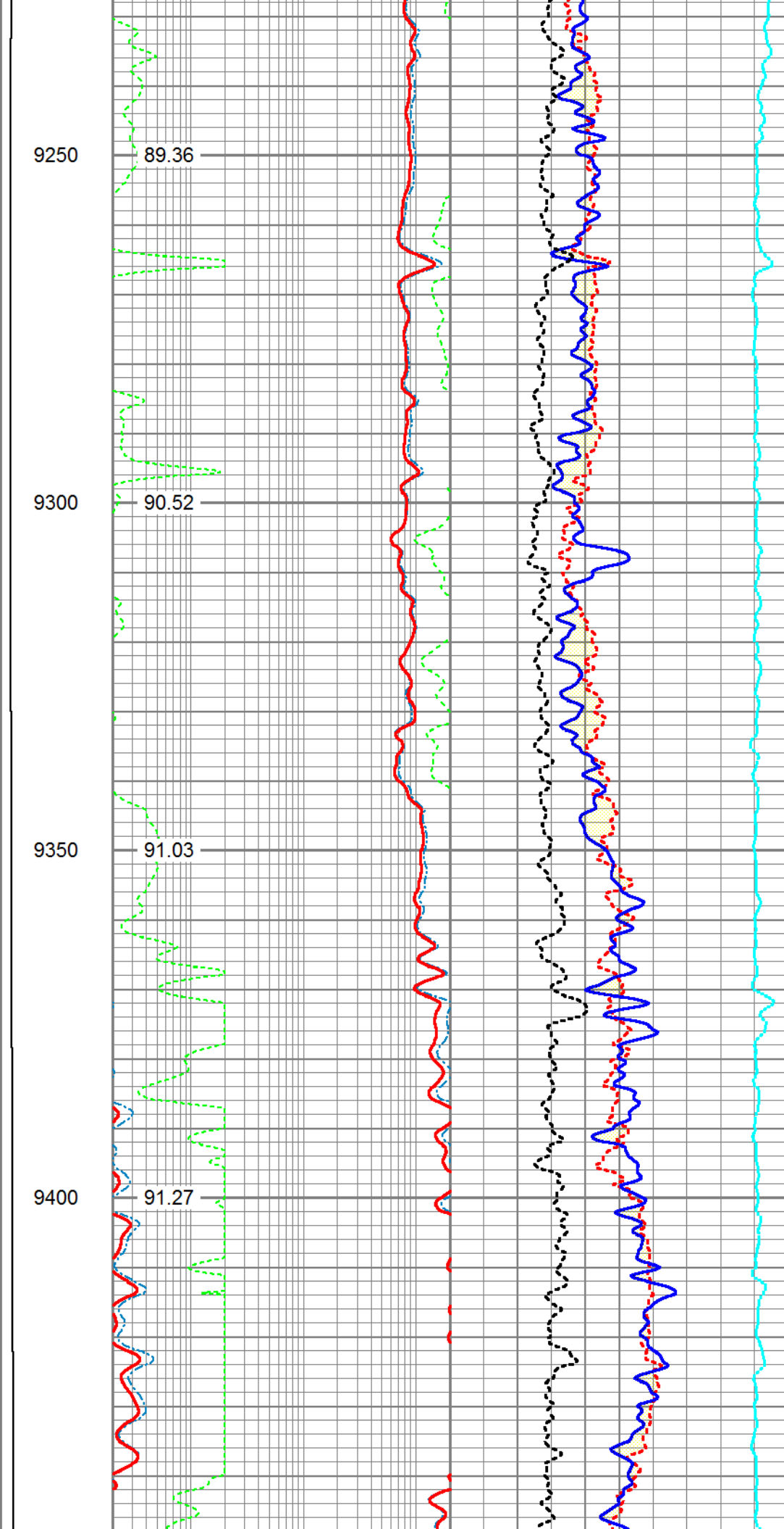
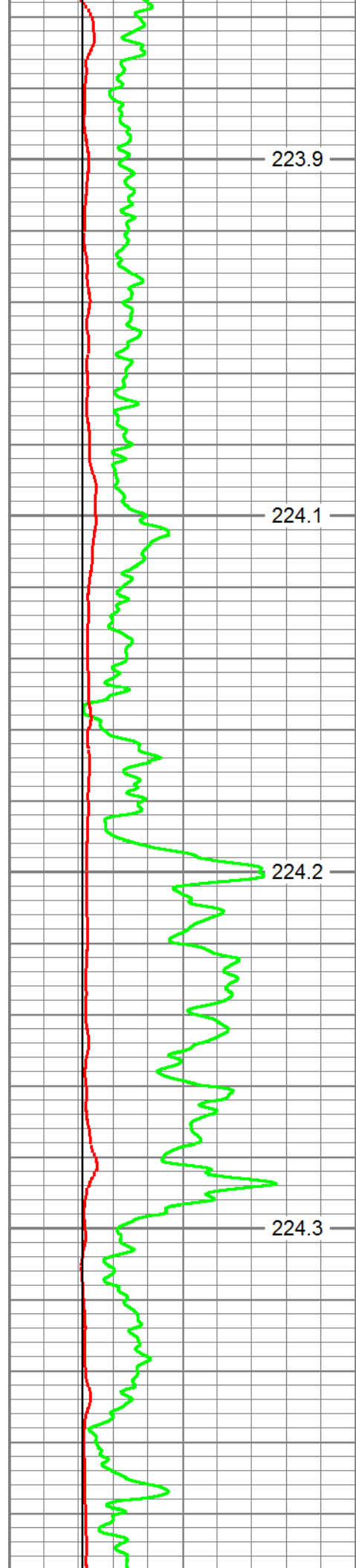


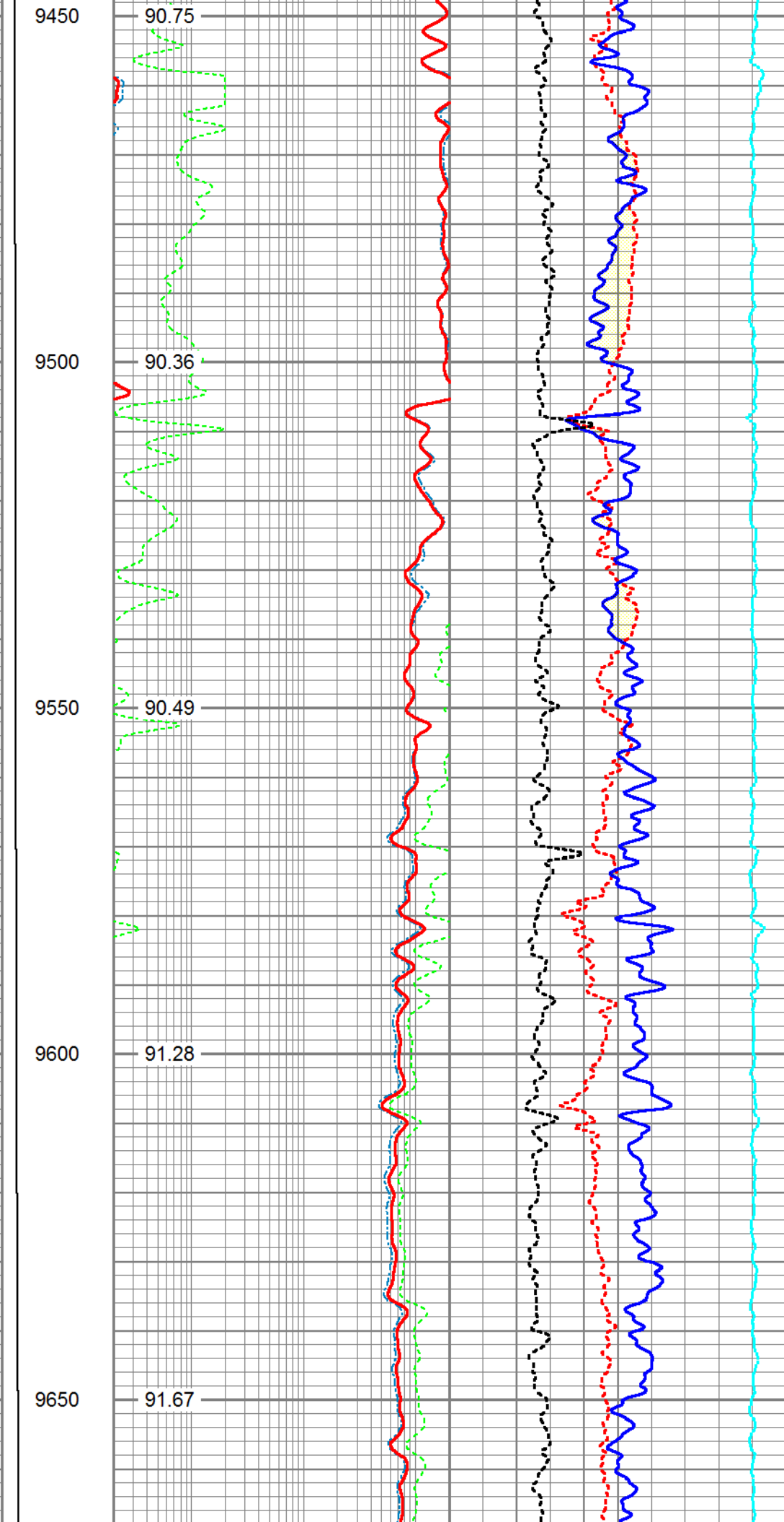
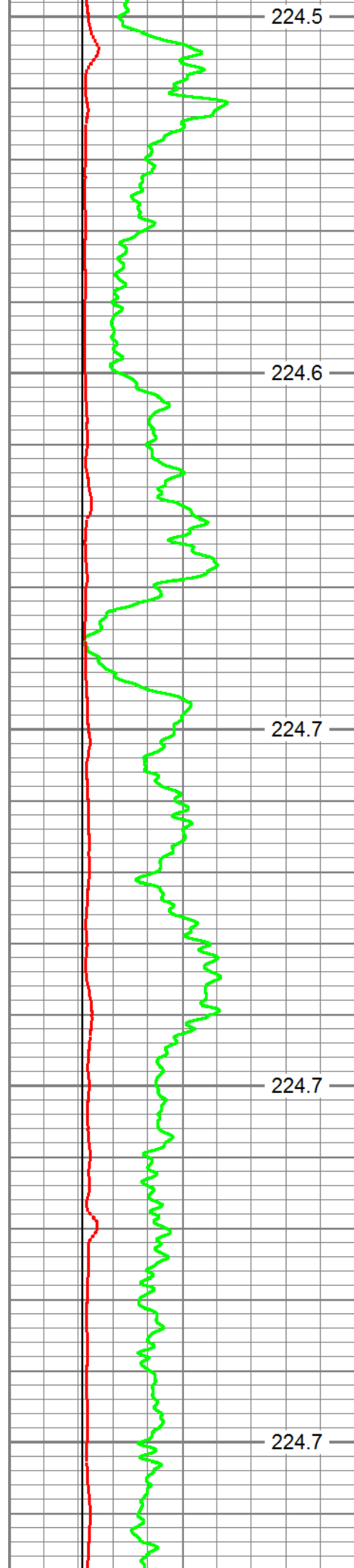


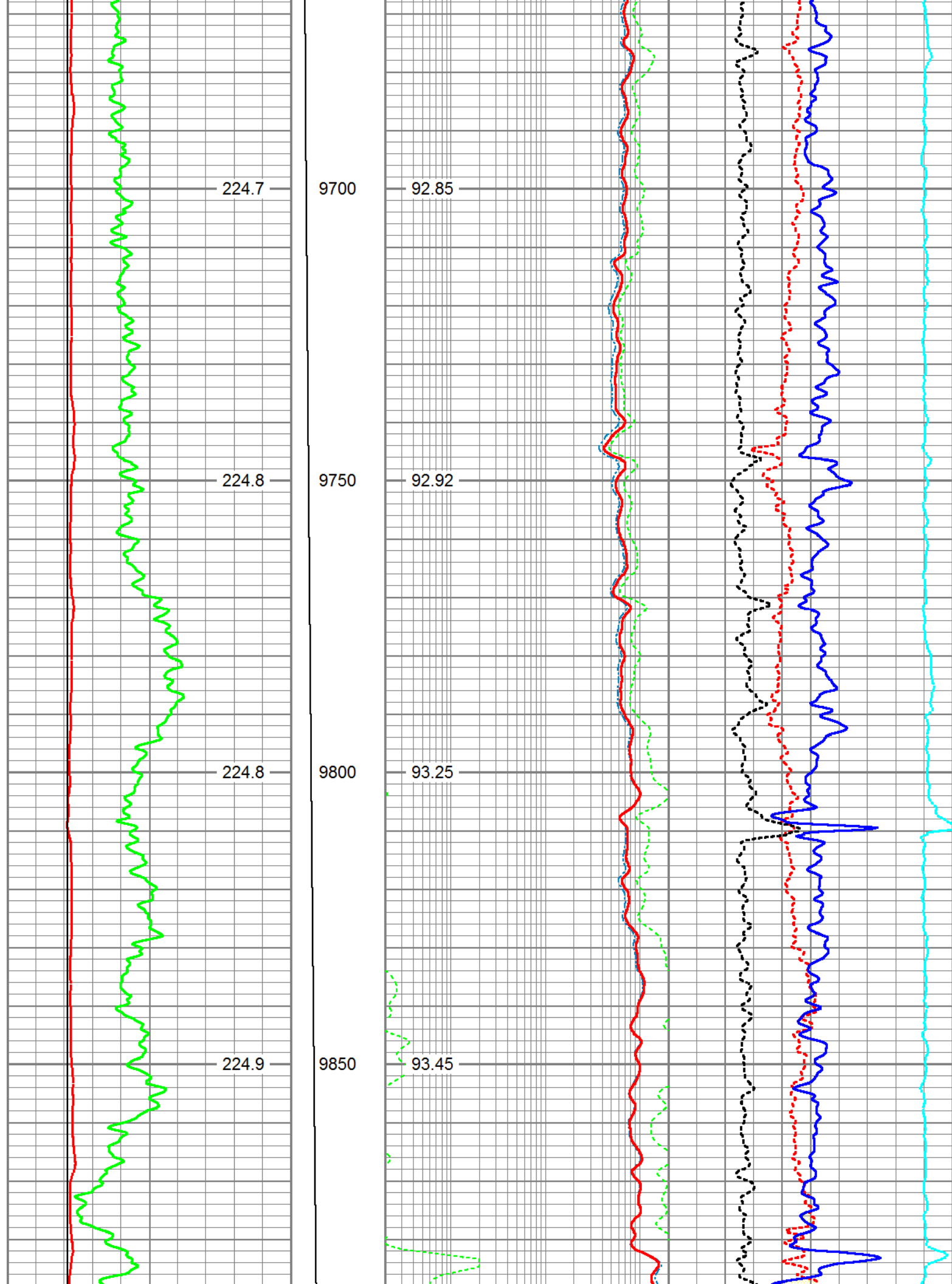


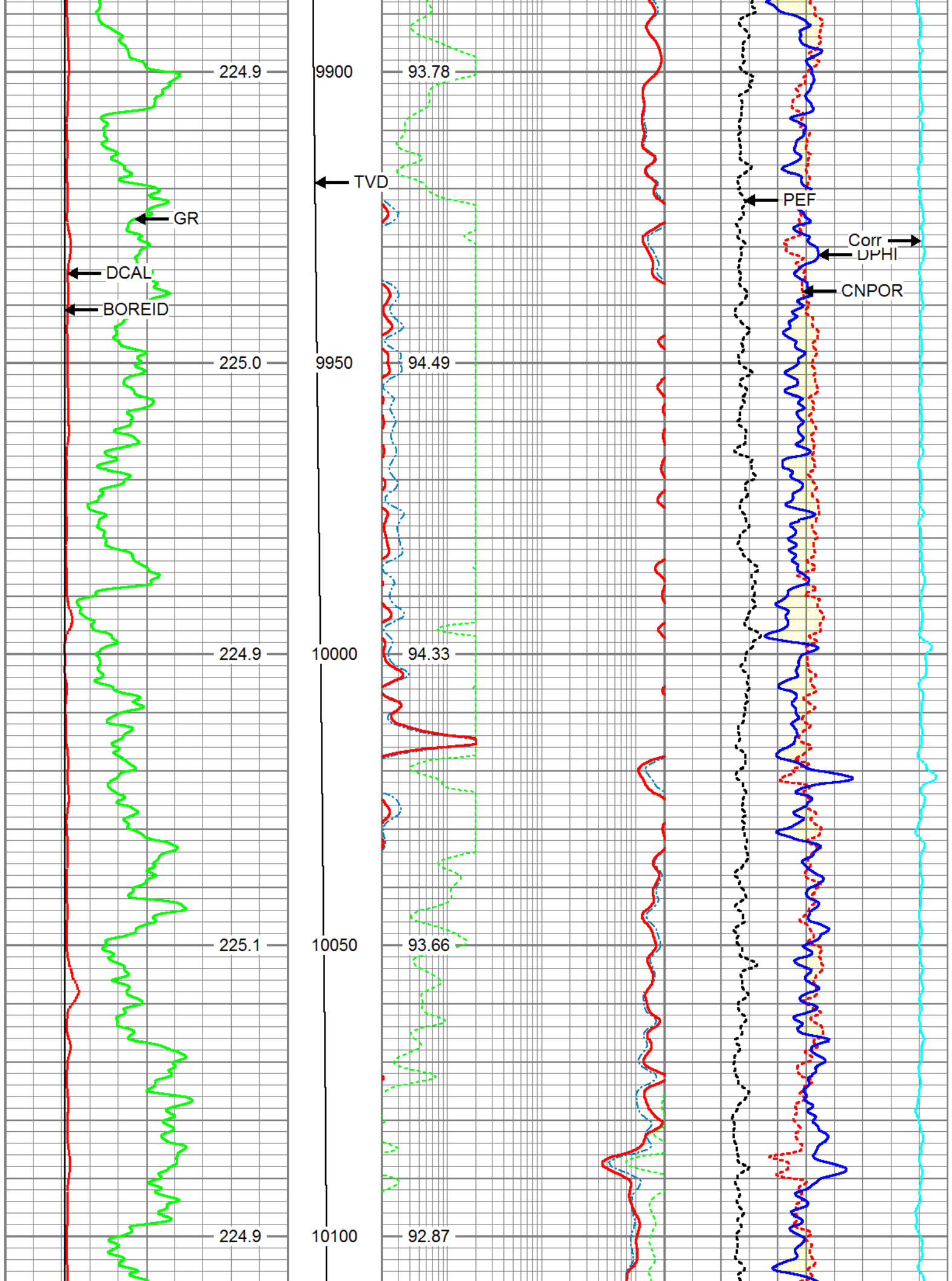


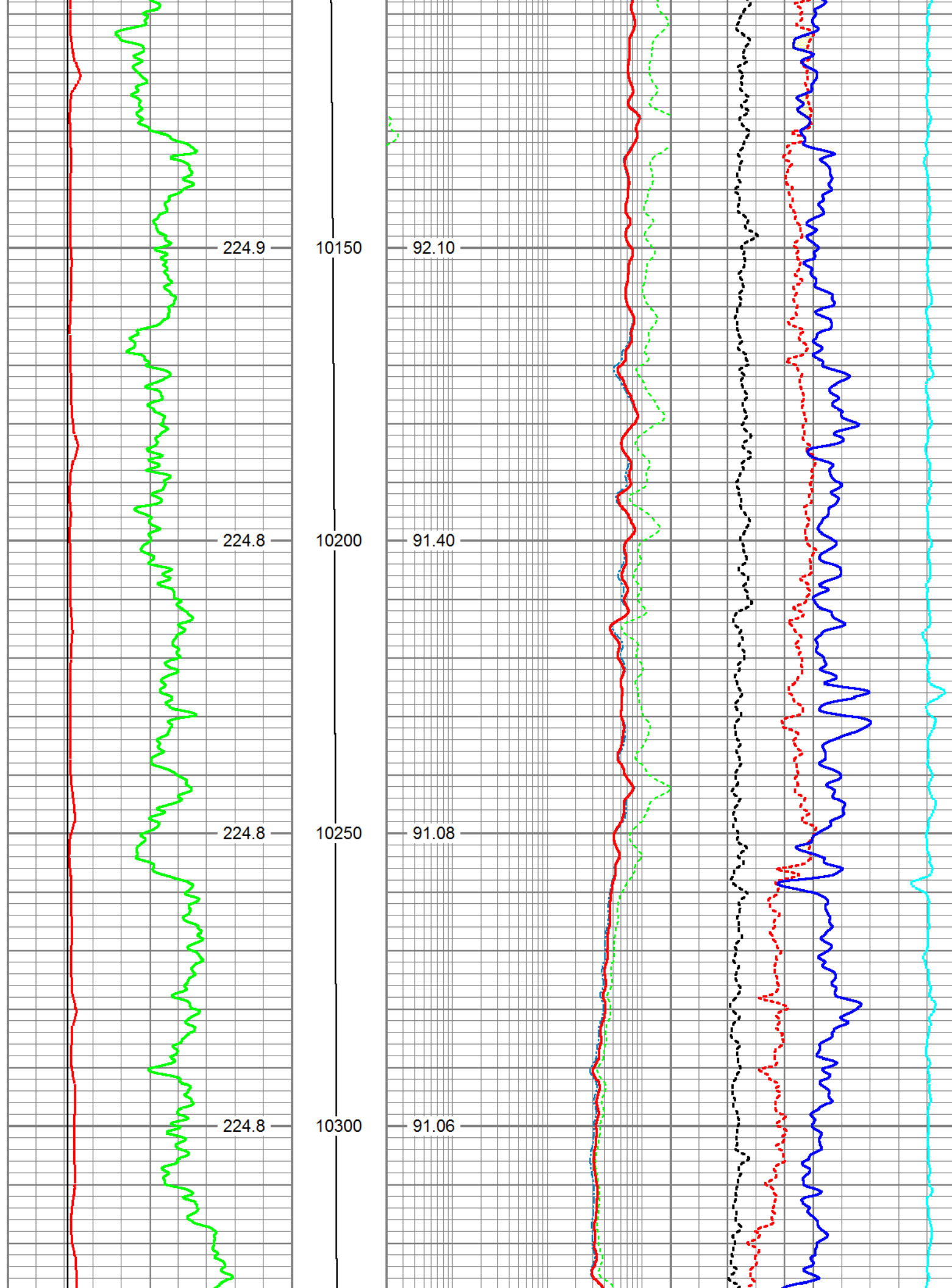


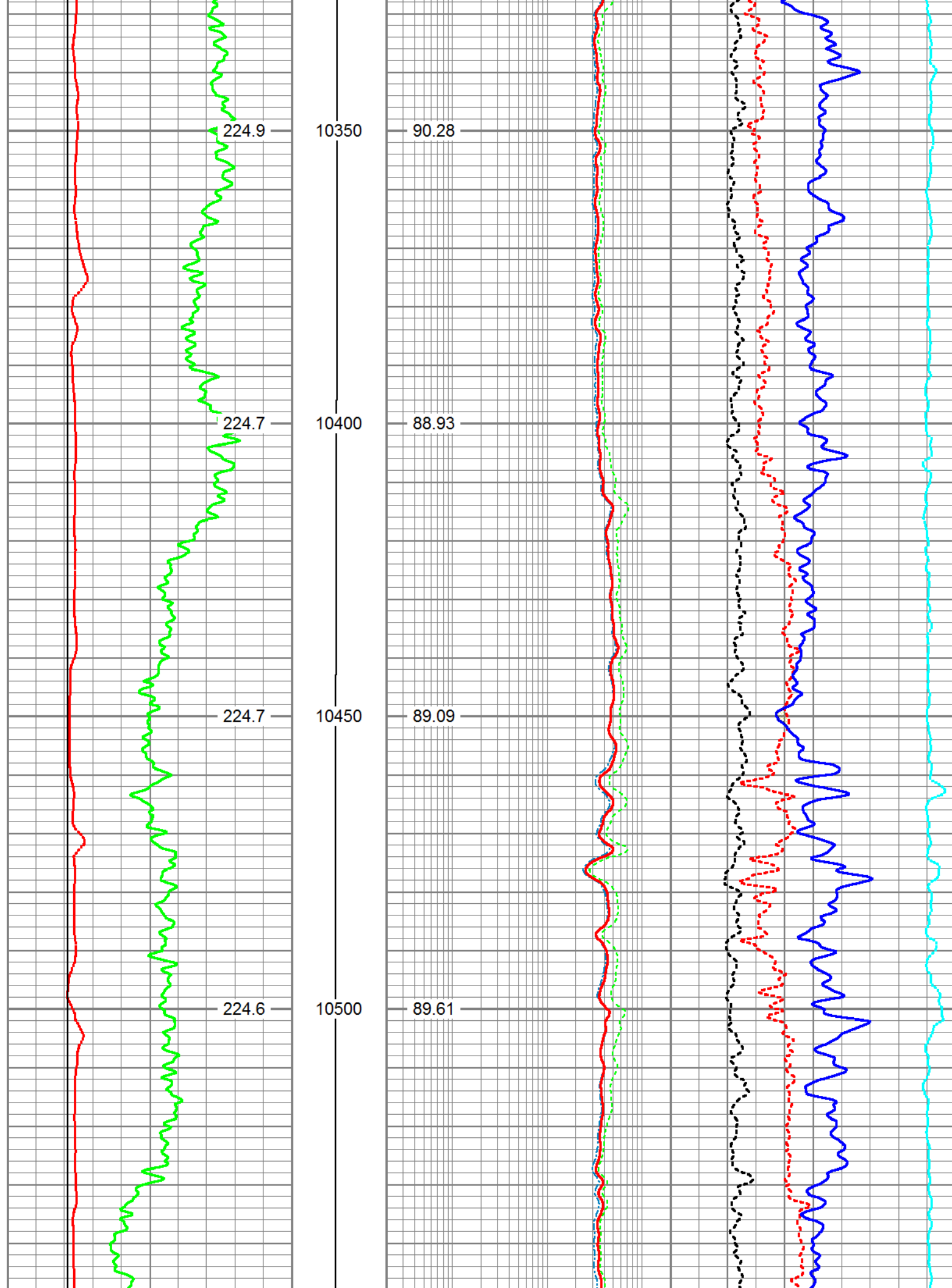


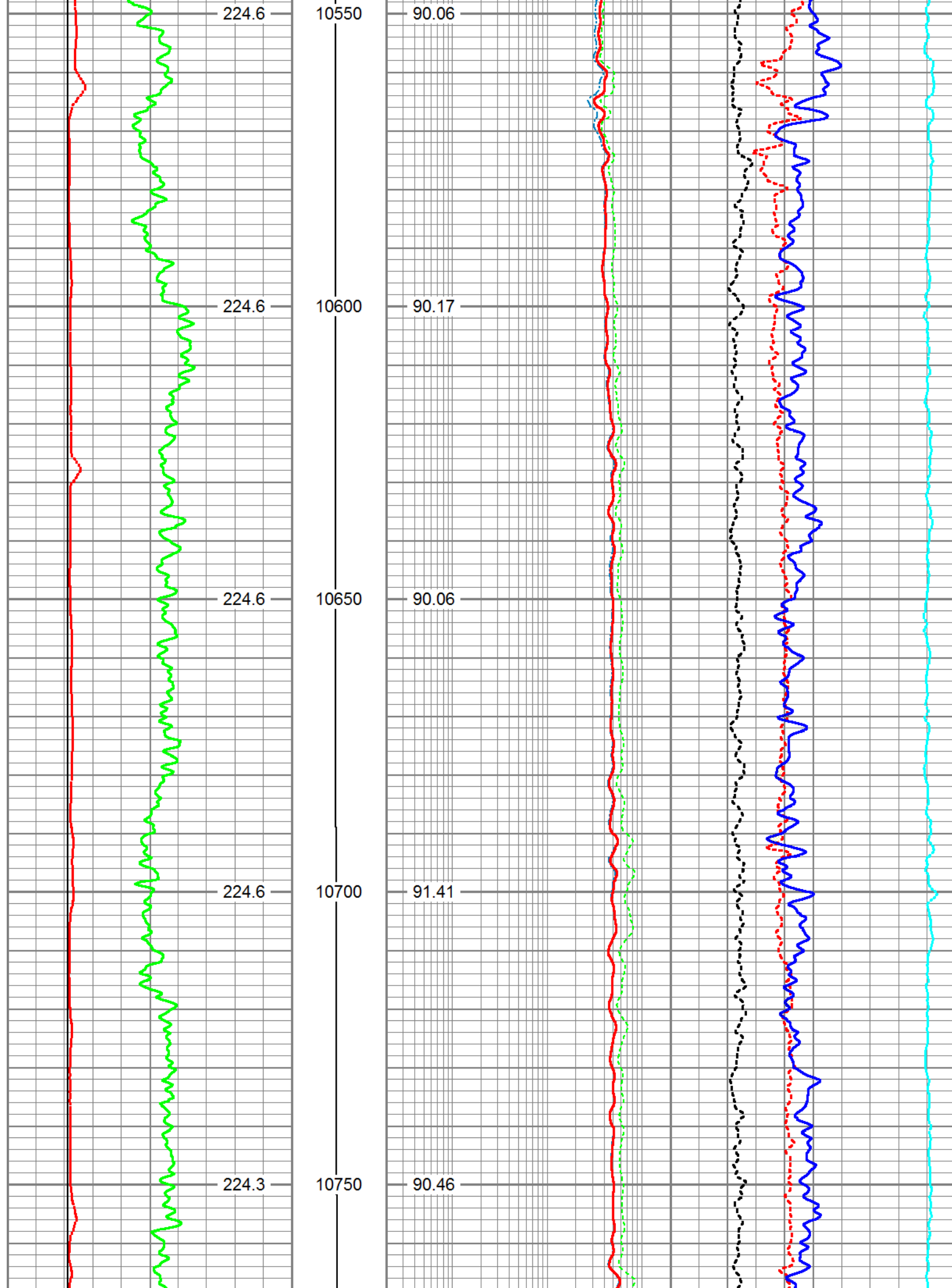


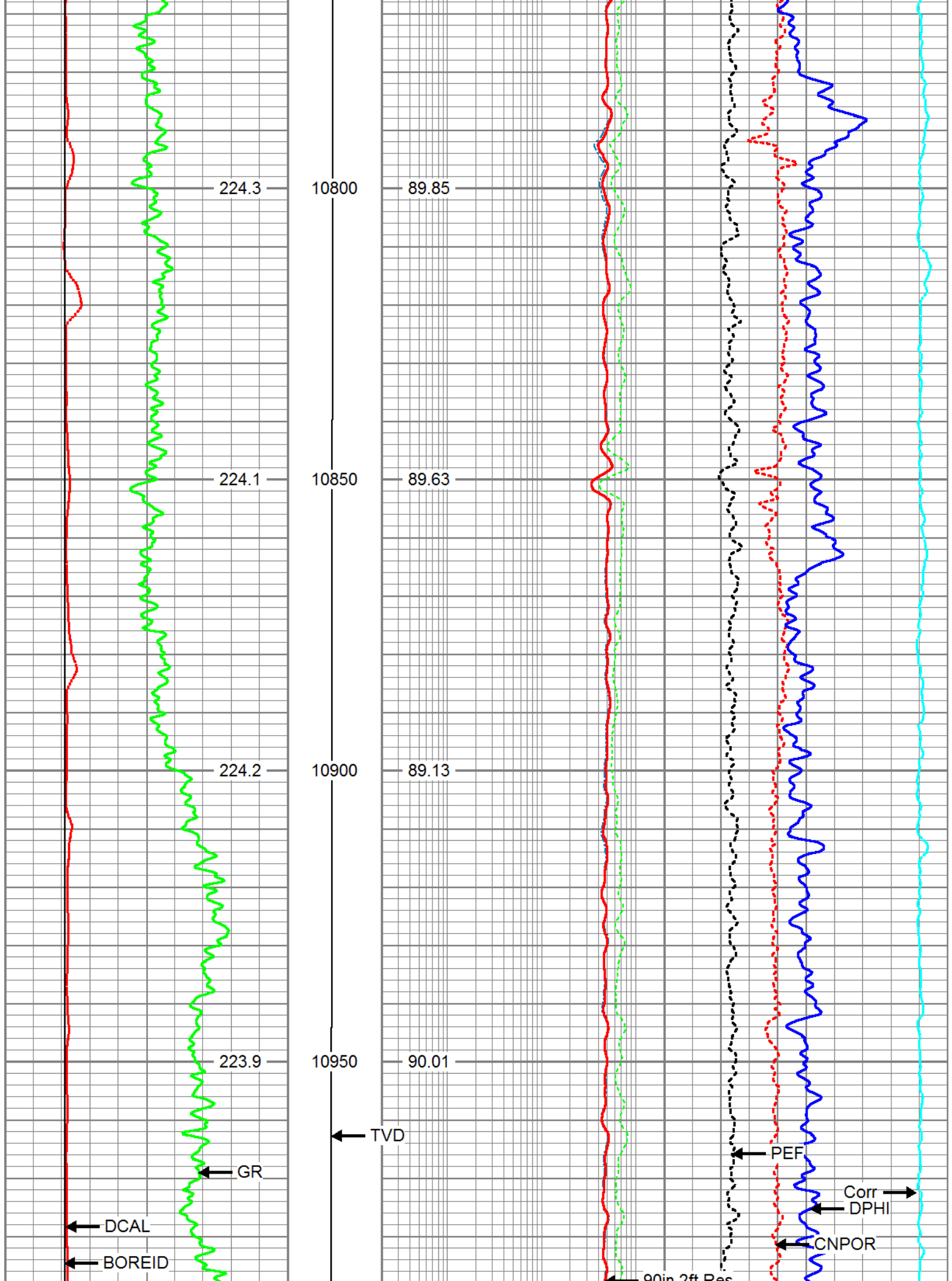


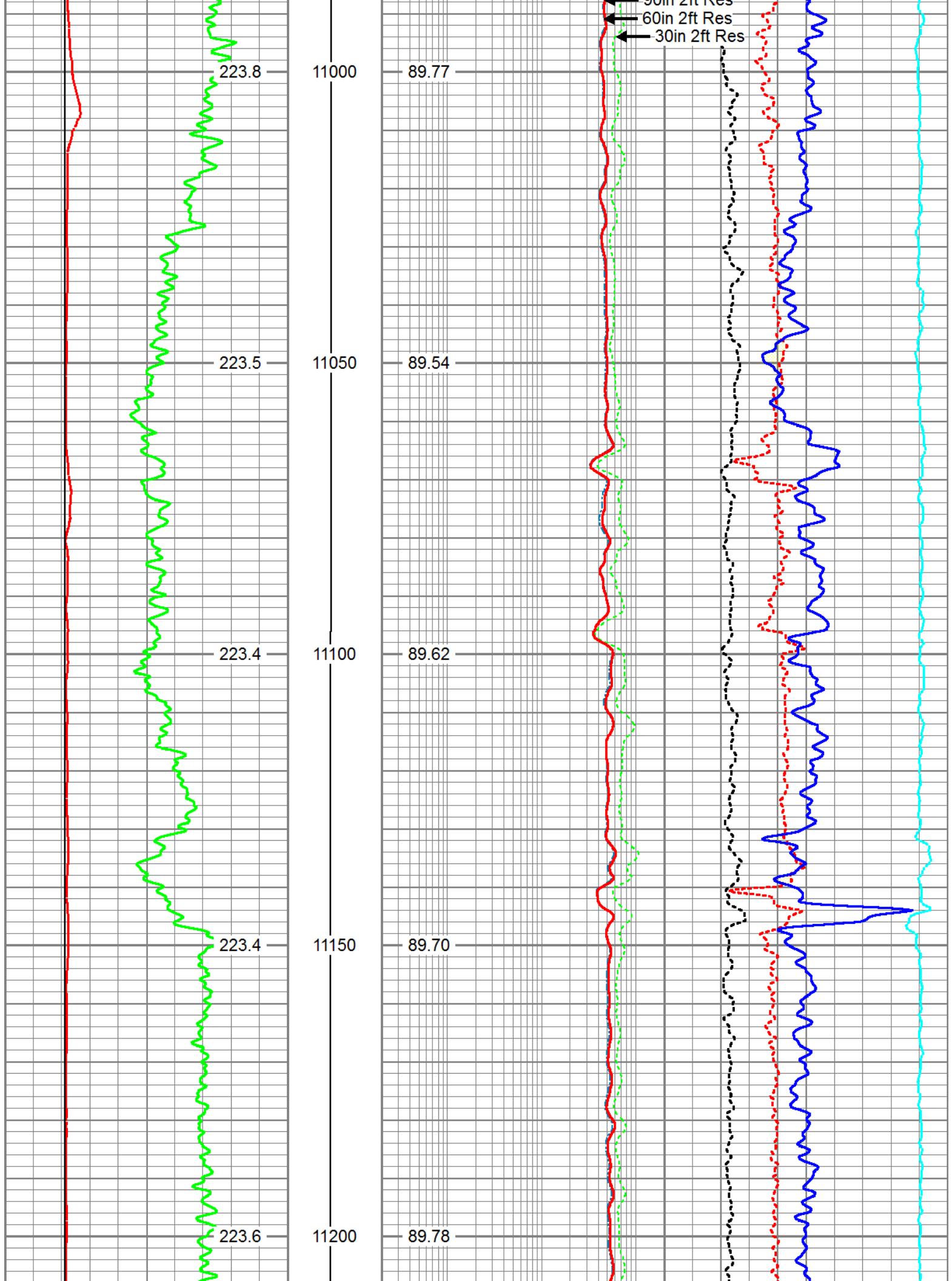












(degF)

Log Variables

Database: C:\Warrior\Data\encana gratton #4b-30h_mem.db

Dataset: field/well/proc1/pass4

Top - Bottom

A	BHCOR	BHFL_TYPE	BHFLRES Ohm-m	BHFLRESSRC	BHIDSRC	BOREID in
1	On	WBM	1	MUDCELL	CURVE	6.125
BOTTEMP degF	CASED?	CASEOD in	CASETHCK in	CEMWATERSA kppm	CMNTTHCK in	DNBHC?
229	No	4.5	0	0	0	NO
DPORSEL	FLUIDDEN g/cc	FRMSALIN kppm	LATNOR	M	MATRXDEN g/cc	MUDSALIN kppm
RHOB	1	0	Off	2	2.71	0.7
MudWgt lb/gal	NPORSEL	PEBHC?	PERFS	RESTMPSRC	SO in	SRFTEMP degF
9.3	Limestone	YES	0	INTERNAL	2	50
SZCOR	TDEPTH ft	TMPCOR	TOOLPOS			
On	11409	On	Ec-centered			

Calibration Report

Database File: encana gratton #4b-30h_mem.db

Dataset Pathname: proc1/pass4

Dataset Creation: Sat Feb 25 15:11:22 2012

ThruBit Induction Calibration Report

Tool Model-Serial Number:

PS-PS20R

Shop Calibration Performed:

Mon Jan 23 09:18:34 2012

BASELINE

R

Expected

X

Expected

Freq 1

A1	-467.5730	[-500.00, -400.00]	330.5640	[-500.00, 500.00]
A2	-136.6780	[-180.00, -100.00]	295.0060	[-500.00, 500.00]
A3	-24.6856	[-50.00, -10.00]	13.1872	[-500.00, 500.00]
A4	-14.4037	[-30.00, -10.00]	315.5210	[-500.00, 500.00]
A5	-12.6802	[-30.00, -10.00]	121.7030	[-500.00, 500.00]

Freq 2

A1	-248.0730	[-280.00, -180.00]	188.2730	[-500.00, 500.00]
A2	-89.8266	[-130.00, -50.00]	162.5220	[-500.00, 500.00]
A3	-19.4813	[-50.00, -10.00]	-44.8401	[-500.00, 500.00]
A4	-17.9260	[-30.00, -10.00]	120.8920	[-500.00, 500.00]
A5	-17.9312	[-30.00, -10.00]	-14.8166	[-500.00, 500.00]

Freq 3

A1	-157.6170	[-180.00, -80.00]	68.1097	[-500.00, 500.00]
A2	-69.1218	[-130.00, -30.00]	76.9120	[-500.00, 500.00]

A3	-16.7779	[-50.00, -10.00]	-91.1696	[-500.00, 500.00]
A4	-19.7527	[-30.00, -10.00]	-3.7343	[-500.00, 500.00]
A5	-20.7520	[-30.00, -10.00]	-114.2050	[-500.00, 500.00]
Freq 4				
A1	-87.8483	[-120.00, -40.00]	-112.8920	[-500.00, 500.00]
A2	-51.4676	[-110.00, -10.00]	-38.2067	[-500.00, 500.00]
A3	-13.7137	[-50.00, -10.00]	-170.4610	[-500.00, 500.00]
A4	-22.2023	[-30.00, -10.00]	-183.7360	[-500.00, 500.00]
A5	-25.1799	[-30.00, -10.00]	-282.1200	[-500.00, 500.00]

CALIBRATION COEFFICIENTS				
	R	Expected	X	Expected
Freq 1				
A1	0.9949	[0.95, 1.05]	-0.0028	[-0.05, 0.05]
A2	0.9917	[0.95, 1.05]	0.0009	[-0.05, 0.05]
A3	0.9980	[0.95, 1.05]	-0.0064	[-0.05, 0.05]
A4	0.9891	[0.95, 1.05]	0.0032	[-0.05, 0.05]
A5	0.9949	[0.95, 1.05]	0.0004	[-0.05, 0.05]
Freq 2				
A1	0.9892	[0.95, 1.05]	-0.0092	[-0.05, 0.05]
A2	0.9856	[0.95, 1.05]	-0.0065	[-0.05, 0.05]
A3	0.9861	[0.95, 1.05]	-0.0066	[-0.05, 0.05]
A4	0.9840	[0.95, 1.05]	-0.0045	[-0.05, 0.05]
A5	0.9916	[0.95, 1.05]	-0.0083	[-0.05, 0.05]
Freq 3				
A1	1.0032	[0.95, 1.05]	-0.0091	[-0.05, 0.05]
A2	1.0001	[0.95, 1.05]	-0.0069	[-0.05, 0.05]
A3	1.0003	[0.95, 1.05]	-0.0073	[-0.05, 0.05]
A4	0.9972	[0.95, 1.05]	-0.0056	[-0.05, 0.05]
A5	1.0086	[0.95, 1.05]	-0.0089	[-0.05, 0.05]
Freq 4				
A1	0.9922	[0.95, 1.05]	-0.0032	[-0.05, 0.05]
A2	0.9888	[0.95, 1.05]	-0.0017	[-0.05, 0.05]
A3	0.9908	[0.95, 1.05]	-0.0041	[-0.05, 0.05]
A4	0.9865	[0.95, 1.05]	-0.0010	[-0.05, 0.05]
A5	1.0096	[0.95, 1.05]	-0.0066	[-0.05, 0.05]
Temperature	14.1129 degC			

ThruBit Density Calibration Report	
Tool Model-Serial Number:	PS-PS21D
Source Number:	
Shop Calibration Performed:	Thu Feb 09 14:05:16 2012

REFERENCE		
	Density	Units
Aluminium	2.607	g/cc
Magnesium	1.752	g/cc
READINGS		

Outputs	Counts	Units	Expected
SS1 Background	142.24	cps	[130.00, 170.00]
LS1 Background	135.61	cps	[130.00, 170.00]
LS4 Background	28.20	cps	[27.00, 35.00]
SS1 Aluminium	4894.82	cps	[4500.00, 5500.00]
LS1 Aluminium	867.61	cps	[750.00, 950.00]
LS4 Aluminium	987.83	cps	[843.00, 1068.00]
SS1 Magnesium	8149.86	cps	[7000.00, 9000.00]
LS1 Magnesium	5788.09	cps	[5250.00, 6250.00]
LS1 Al + Fe	719.73	cps	[650.00, 800.00]
LS4 Al + Fe	431.63	cps	[382.00, 471.00]
RESULTS			
SS Slope	1.64		[1.52, 1.77]
LS Slope	0.42		[0.38, 0.45]
PEF K Factor	5.020		[3.510, 6.170]
PEF B Factor	-0.557		[-0.700, -0.410]

RESULTS			
Caliper Shop Calibration performed:		Thu Feb 09 14:05:16 2012	
Reference	Reading	Units	
12.00	1869.20	in	
9.00	2038.41	in	
6.00	2240.62	in	

DENSITY PRE-SURVEY CHECK Performed:		Fri Feb 10 09:25:16 2012	
Outputs	Counts	Units	Expected
SS1 Background	137.09	cps	[137.98, 146.51]
LS1 Background	145.43	cps	[131.54, 139.68]
LS4 Background	30.97	cps	[26.51, 29.89]

CALIPER PRE-SURVEY CHECK Performed:		Fri Feb 10 09:28:55 2012	
Reference	Readings	Units	Expected
9.00	9.03	in	[8.80, 9.20]

Compensated Neutron Calibration Report			
Tool Model-Serial Number:		PS-PS12N	
Source Number:			
Calibration Tank Temperature:		70.0 degF	
Shop Calibration Performed:		Wed Feb 22 10:51:14 2012	

BACKGROUND MEASUREMENT			
Outputs	Measured	Units	Expected

SS Counts	0.3	cps	<10
LS Counts	0.7	cps	<4
WATER TANK REFERENCE			
Outputs	Measured	Units	Expected
SS Counts	4071.4	cps	
LS Counts	132.2	cps	
Tank Ratio Ref	30.9580	SS/LS	
Tank Ratio	30.8037	SS/LS	
Tank Ratio Gain	1.0050		[0.85, 1.15]
ALUMINUM SLEEVE REFERENCE			
Outputs	Measured	Units	Expected
SS Counts	44347.0	cps	
LS Counts	4044.8	cps	
Al Ratio Ref	10.797	SS/LS	
Al Ratio	11.019	SS/LS	
Al Ratio Gain	0.98		[0.90, 1.10]
Sleeve Porosity	14.46	pu	

PRE-SURVEY BACKGROUND CHECK Performed: Fri Feb 10 09:52:17 2012			
Outputs	Measured	Units	Expected
SS Counts	0.1	cps	<10
LS Counts	0.3	cps	<4

Gamma Ray Calibration Report			
Tool Model-Serial Number:	PS-PS06T		
Performed:	Wed Jan 25 11:15:54 2012		
Calibrator Value:	210.5	GAPI	
Background Reading:	141.4	cps	
Calibrator Reading:	390.7	cps	
Sensitivity:	0.3750	GAPI/cps	

Inclinometer Calibration Report					
Performed:	Sun Jun 13 13:33:21 1993				
	Low Read.	High Read.	Low Ref.	High Ref.	
X Accelerometer	0.00	1.00	0.00	1.00	gee

Y Accelerometer	0.00	1.00	0.00	1.00	gee
Z Accelerometer	0.00	1.00	0.00	1.00	gee

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
Thrubit	66.92		Cablehead-S Solid Weakpoint	2.31	2.13	5.00
Thrubit	64.61		PSBDOT	3.87	2.25	35.00
Thrubit	60.75		HangOff_Tool	5.00	2.38	60.00
Thrubit	55.75		10-1	0.88	2.13	3.95
Thrubit	54.87		Universal Joint	1.46	2.06	15.00
TBBAT2	53.41		TBBAT2-A (PS21B) Thrubit Battery	6.13	2.13	40.00
TBBAT	47.29		TBBAT-A (PS03B) Thrubit Battery	6.13	2.13	80.00
TMG	41.16		TMG-PS (PS06T) ThruBit Telemetry Gamma Ray	6.13	2.13	45.00
GR	41.04					
GRTEMP	40.20					
Thrubit	35.04		Decentralizer Decentralizer (Small)	4.50	2.13	70.00
CNLSC	28.60		TBN-PS (PS12N) ThruBit Neutron	4.77	2.13	63.00
			TBD-PS (PS21D) Thrubit Density	10.48	2.13	91.00
LSW1	18.04					
DCAL	17.13					
A1_P	10.60		TBI-PS (PS20R) Thrubit Induction	15.29	2.13	94.00
A2_P	10.10					
A3_P	9.35					
A4_P	8.35					
A5_P	6.60					

Dataset:	encana gratton #4b-30h_mem.db: field/well/proc1/pass4
Total Length:	66.92 ft
Total Weight:	601.95 lb
O.D.	2.38 in



Company	ENCANA OIL & GAS INC.
Well	GRATTAN #4B-30H
Field	WATTENBERG
County	WELD
State	CO