



**DGR Dual Gamma Ray  
SLD Stabilized Litho-Density  
CNP Compensated Neutron Porosity**

WELL INFORMATION					
MWD Run Number	300	400			
Date run completed	29-Nov-03	03-Dec-03			
Rig Bit Number	4	5			
Bit Size (mm)	311	311			
Tool Nominal OD (mm)	203	203			
Log Start Depth (TVD, m)	2448.66	2391.81			
Log End Depth (TVD, m)	2480.82	2677.28			
Drill or Wipe	Drilling	Drilling			
Drill/Wipe Start Date and Time	28-Nov-03 23:50	30-Nov-03 23:30			
Drill/Wipe End Date and Time	29-Nov-03 08:00	02-Dec-03 18:45			
Min Inc (deg) @ Depth (TVD, m)	0.75 @ 2441.08	0.28 @ 2332.10			
Max Inc (deg) @ Depth (TVD, m)	0.75 @ 2441.08	17.94 @ 2564.05			
Bit TFA(in2) / Bit Type	1.33 / Hughes MX20DX	1.33 / Hughes MX20DX			
Flow Rate (gpm)	710	690			
Max AV (mpm) / CV (mpm) @ MWD	82.7 / 153.6	60.6 / 136.8			
Fluid Type	Aqua Drill	Aqua-Drill			
Density (sg) / Viscosity (spl)	1.2 / 72.00	1.2 / 80.00			
Filtrate CL (ppm)	39950	38500			
pH / Fluid Loss (cptm)	9.50 / 1.0	10.20 / 5.5			
PV (cp) / YP (pa)	25 / 35.00	25 / 16.80			
% Solids / % Sand	5.5 / 0.75	6.0 / 0.25			
% Oil / Oil:Water Ratio	N/A / N/A:100	N/A / N/A:100			
Rm @ Measured Temp (degC)	0.12 @ 18.00	0.12 @ 20.00			
Rmf @ Measured Temp (degC)	0.11 @ 18.00	0.11 @ 20.00			
Rmc @ Measured Temp (degC)	0.25 @ 18.00	0.24 @ 20.00			
Max Tool Temp (degC) / Source	66.00 / EWR-P4	65.00 / EWR-P4			
Rm @ Max Tool Temp (degC)	0.05 @ 66.00	0.06 @ 65.00			
Lead MWD Engineer	F.Besanger	F. Besanger			
Customer Representative	P.Devine	P. Devine			

## SENSOR INFORMATION

### Downhole Processor Information

Tool Type	HCIM	HCIM			
Software Version	66.37	66.37			
Sub Serial Number	198838	198838			
Insert Serial Number	132882	132882			
Logging String Serial Number	DM90031516XHRLG	DM90031516XHRLG			
Date and Time Initialized	28-Nov-03 16:22	30-Nov-03 14:52			
Date and Time Read	29-Nov-03 14:09	03-Dec-03 08:15			

### Directional Sensor Information

Tool Type	DM	DM			
Distance From Bit (m)	26	26.71			
Software Version	3.15	3.15			
Sub Serial Number	29034	29034			
Sonde Serial Number	103286	103286			
Sensor ID Number	N/A	N/A			
Survey String Serial Number	DM90026201F8	DM90026201F8			
Toolface Offset (deg)	18.00	18.00			

### Gamma Ray Sensor Information

Tool Type	DGR	DGR			
Distance From Bit (m)	12.94	12.94			
Recorded Sample Period (sec)	10	10			
Software Version	N/A	N/A			
Sub Serial Number	082377	082377			
Insert/Sonde Serial Number	89753	89753			

### Neutron Sensor Information

Tool Type	CNP	CNP			
Distance From Bit (m)	22.31	22.31			
Recorded Sample Period (sec)	12	12			
Sub Serial Number	125694	125694			
Insert Serial Number	87644	87644			
Source Serial Number	1399NN	1399NN			
Source Factor	1.1840	1.1840			
Pin Orientation	Down	Down			

### Density Sensor Information

Tool Type	SLD	SLD			
Distance From Bit (m)	16.40	16.40			
Recorded Sample Period (sec)	12	12			
Software Version	11.00	11.00			
Sub Serial Number	130149	130149			
Insert Serial Number	152522	152522			
Sensor ID Number	423	423			
Source Serial Number	2100GW	2100GW			
Pin Orientation	Up	Up			
Stabilizer Blade O.D. (mm)	301.625	301.625			
DPA Offset	138.00	138.00			

## REMARKS

1. All depths are bit depths and referenced to the drillers pipe tally unless otherwise noted.
2. AV/CV is calculated at the MWD collar using the Power Law for water based muds and is in m/min.

3. Curve mnemonics are :
- SGRC - Smoothed Gamma Ray Combined, api
  - SBD2 - Smoothed Best Bin Bulk Density Compensated, g/cc
  - SROP - Smoothed Rate of Penetration, m/hr
  - SCO2 - Smoothed Best Bin Stand-off Correction, g/cc
  - SNP2 - Smoothed Best Bin Near Photoelectric Effect, b/e
  - NUCL - Smoothed Porosity (Limestone Matrix) corrected for Salinity, Temperature and Pressure, v/v
  - SHSI - Smoothed Density Hole Size Indicator, inches

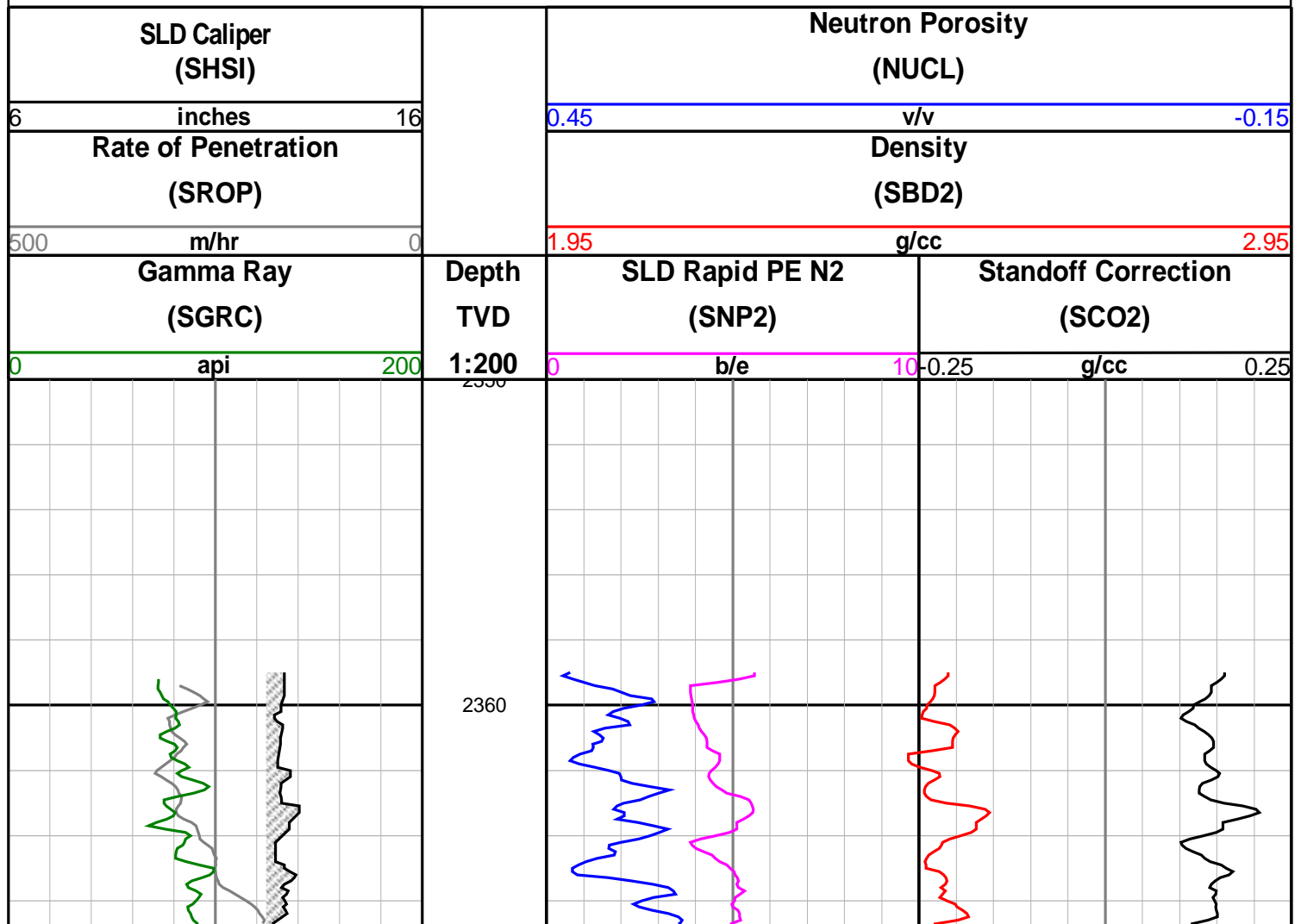
4. CNP data Processed using the CNP-E algorithm using the following parameters and is based on a Limestone Matrix:

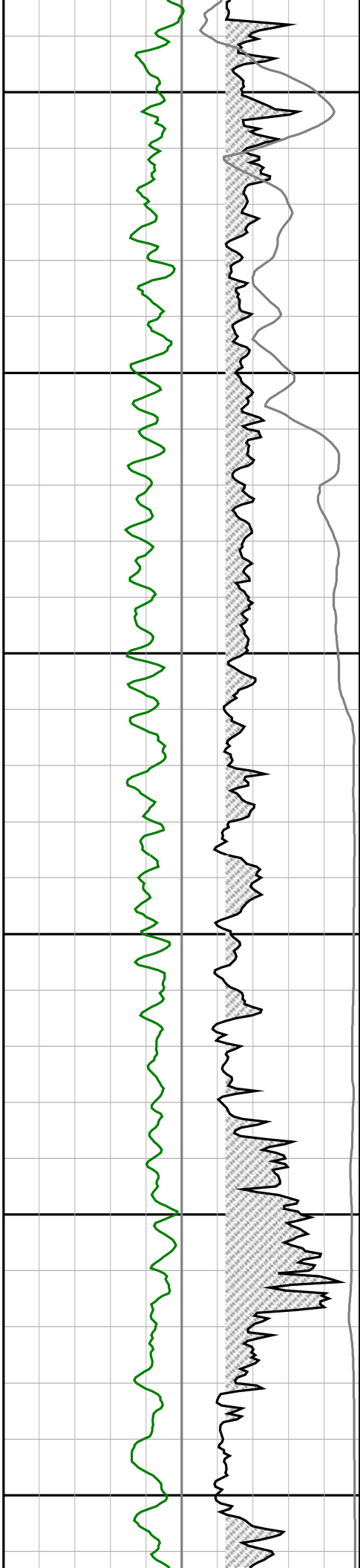
MW = 1.20 SG  
 Formation Salinity = 50,000 ppm CL  
 Mud Salinity = 38,500 ppm CL  
 Matrix Density = 2.71 g/cc  
 Fluid Density = 1.00 g/cc

5. CNP data has been reprocessed using data from the Density tool for borehole diameter.

## WARRANTY

HALLIBURTON ENERGY SERVICES (HES) WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATIONS THAT ARE PART OF, AND INCIDENT TO, THE SERVICES PROVIDED. HOWEVER, HES CANNOT AND DOES NOT WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS. UNDER NO CIRCUMSTANCES SHOULD ANY SUCH INFORMATION OR INTERPRETATION BE RELIED UPON AS THE SOLE BASIS FOR ANY DRILLING, COMPLETION, PRODUCTION, OR FINANCIAL DECISION OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING VENTURE, DRILLING RIG OR ITS CREW OR ANY OTHER THIRD PARTY. THE CUSTOMER HAS FULL RESPONSIBILITY FOR ALL DRILLING, COMPLETION AND PRODUCTION OPERATION. HES MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE SERVICES RENDERED. IN NO EVENT WILL HES BE LIABLE FOR FAILURE TO OBTAIN ANY PARTICULAR RESULTS OR FOR ANY DAMAGES, INCLUDING, BUT NOT LIMITED TO, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, RESULTING FROM THE USE OF ANY INFORMATION OR INTERPRETATION PROVIDED BY HES.





2370

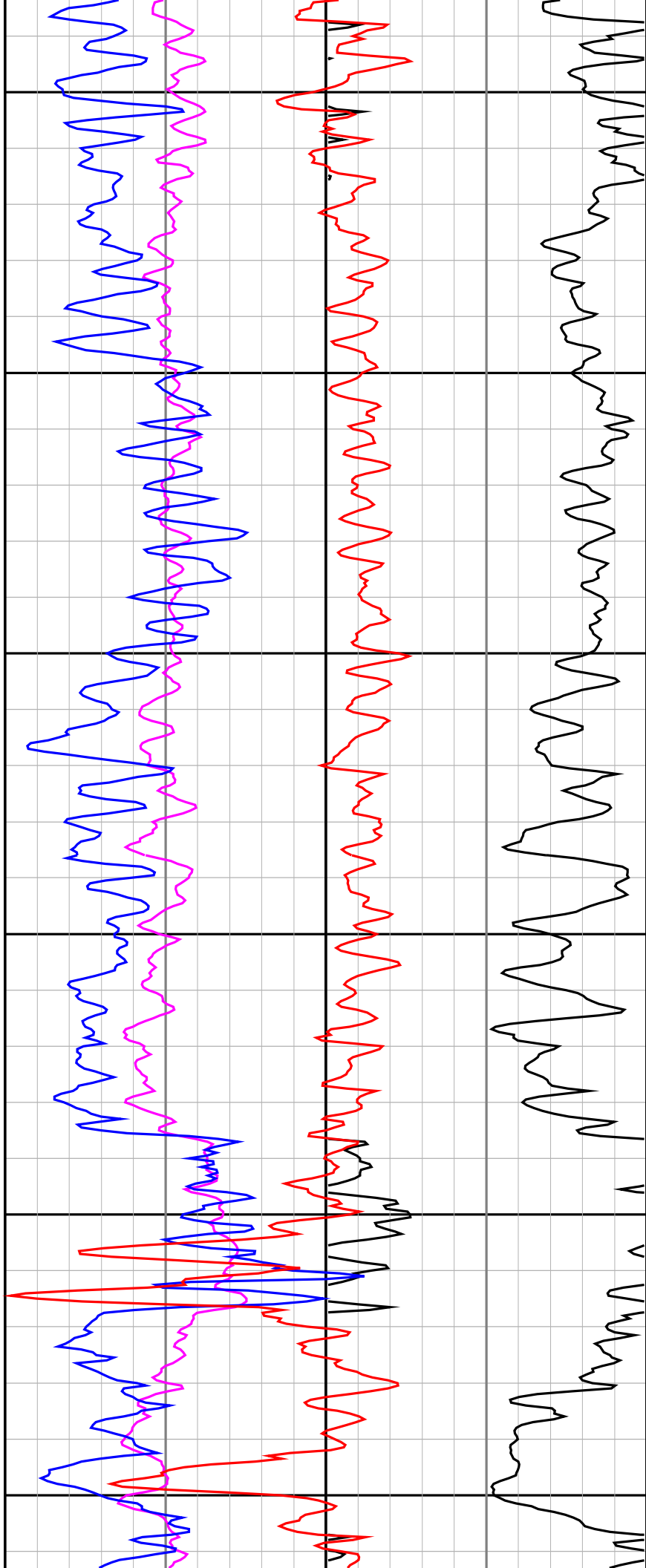
2380

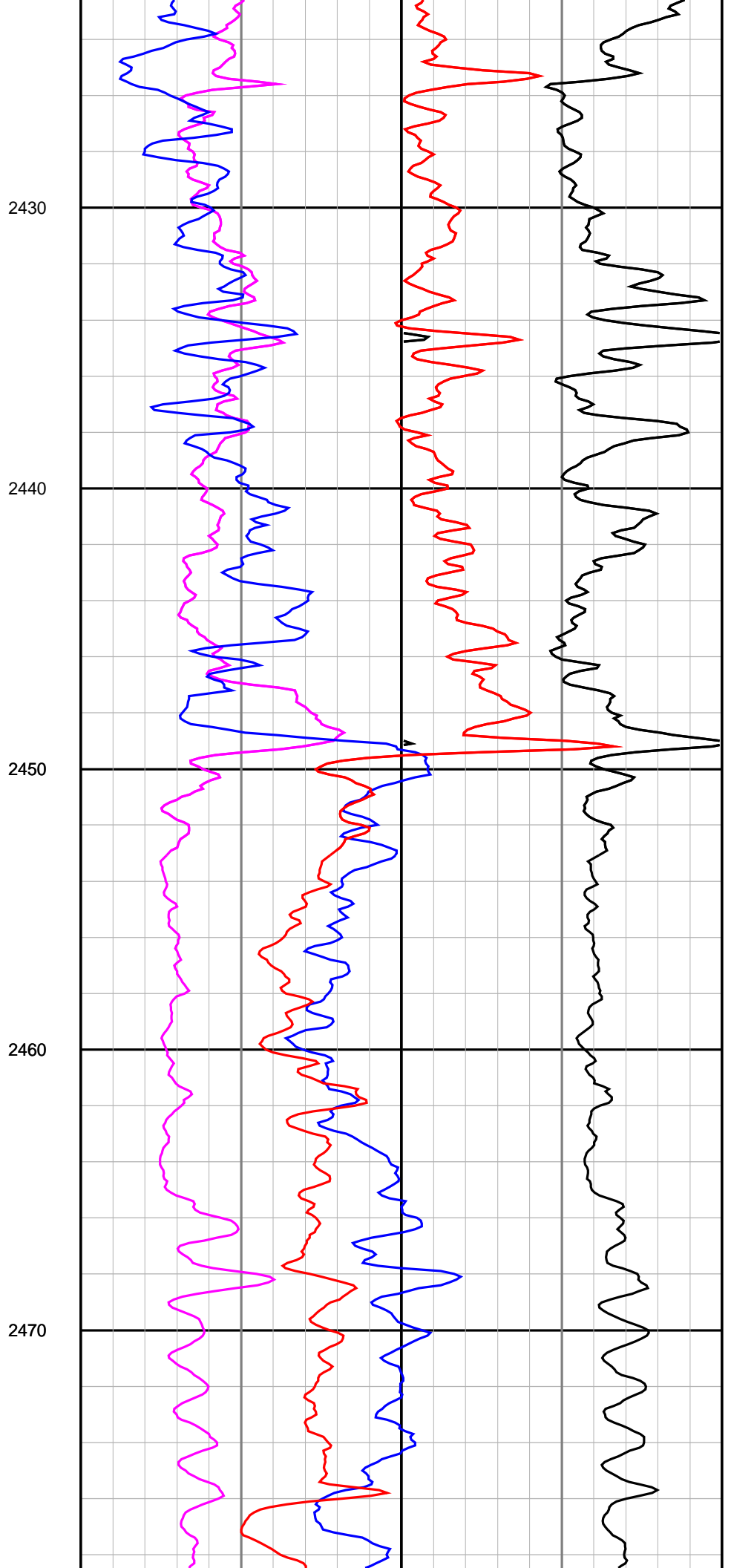
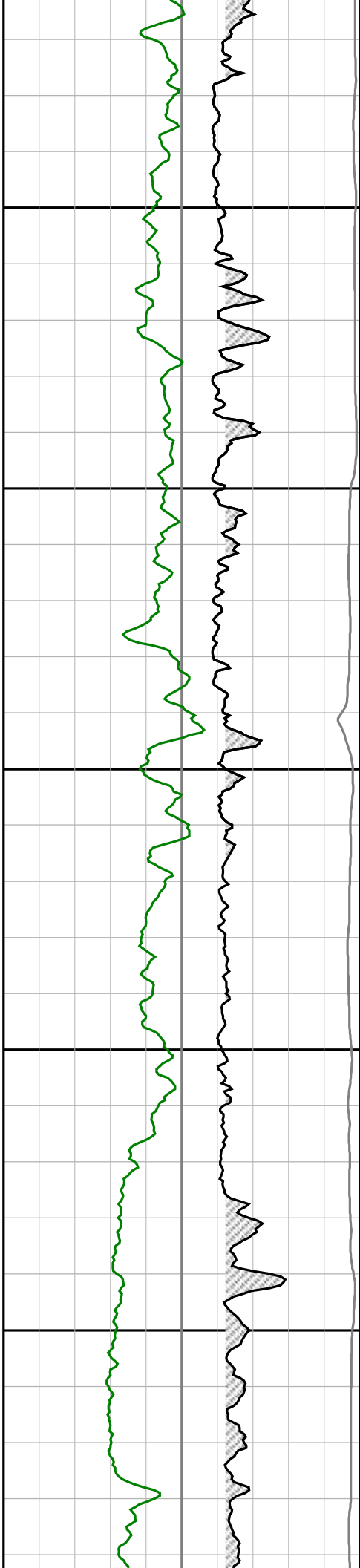
2390

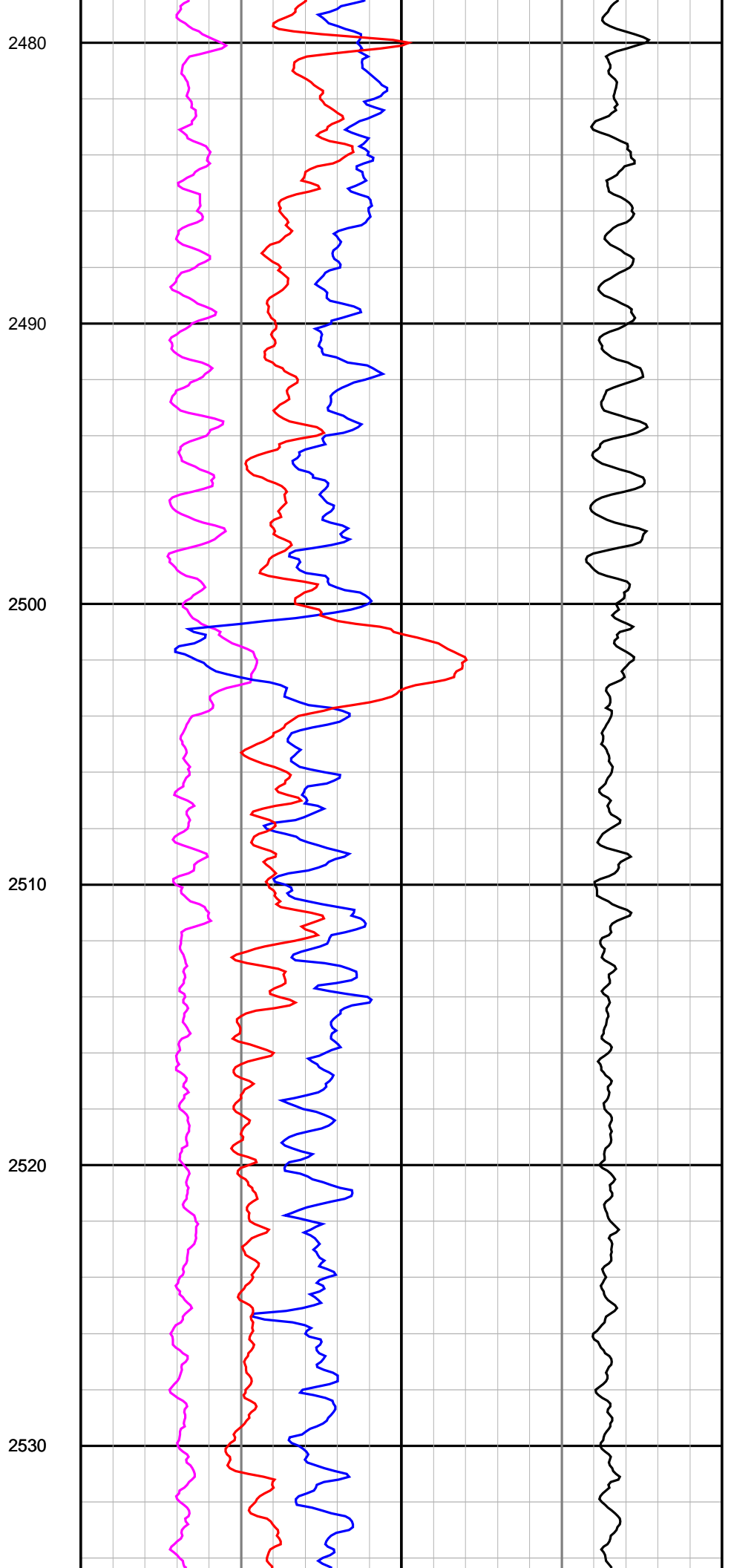
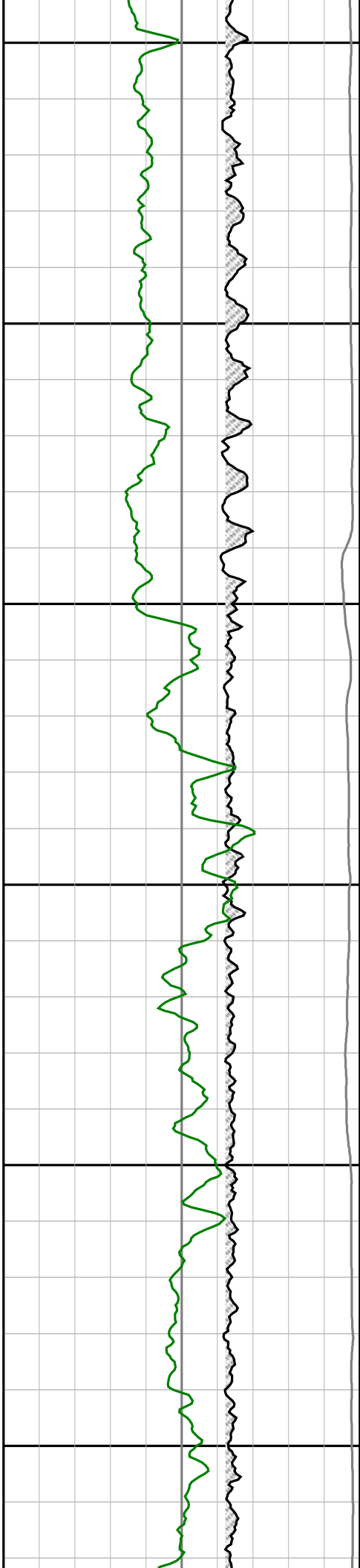
2400

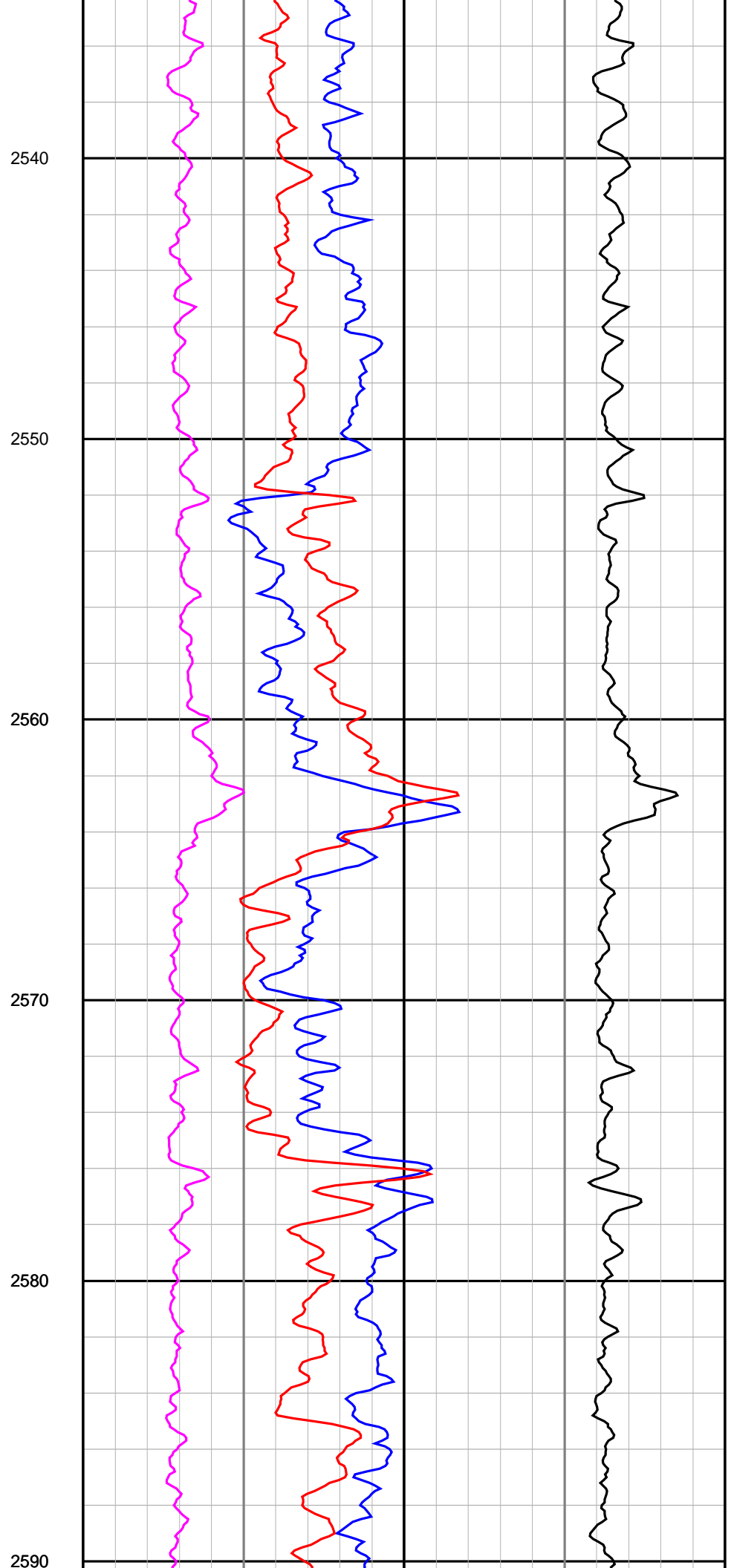
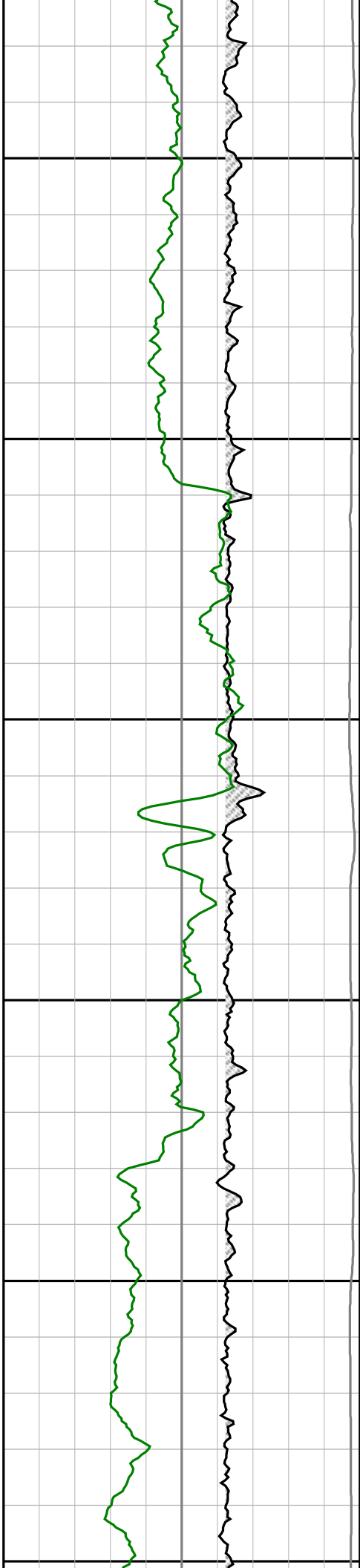
2410

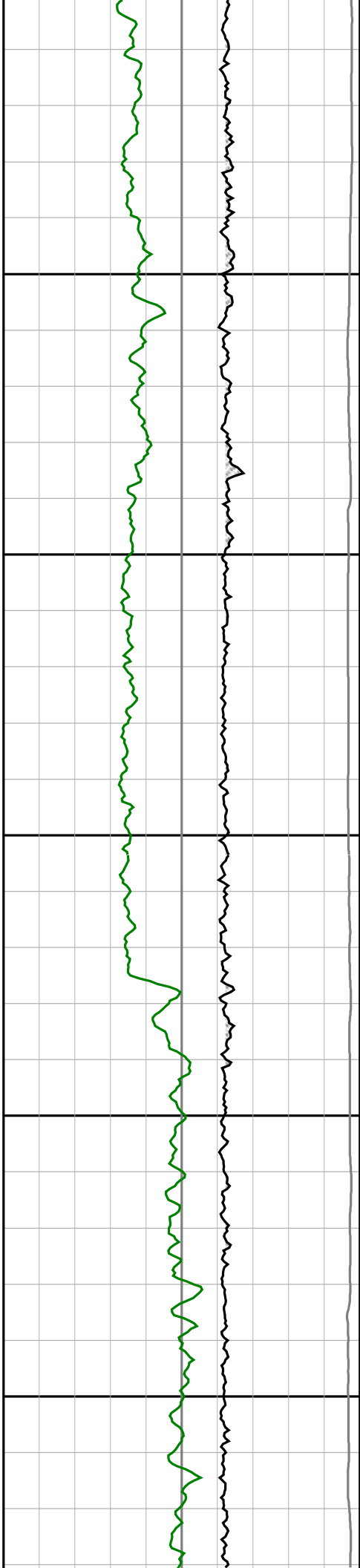
2420











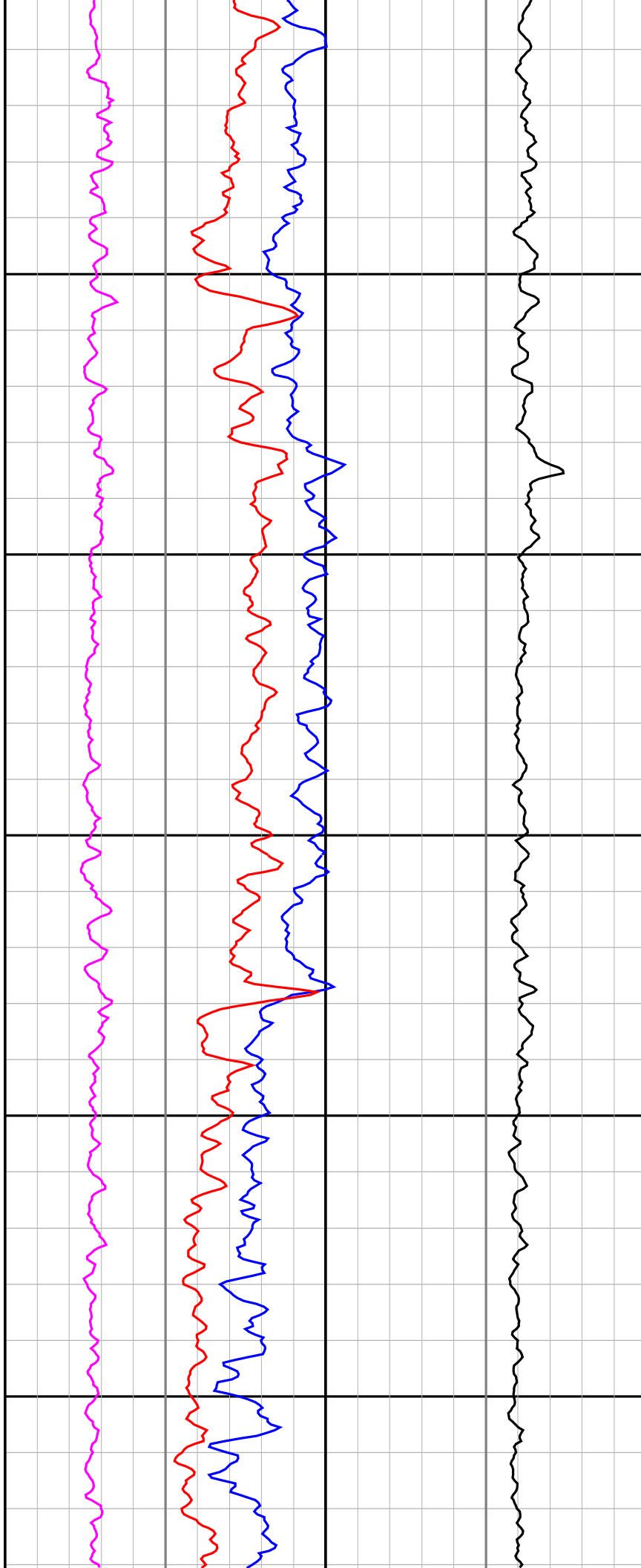
2600

2610

2620

2630

2640







<i>Measured Depth (metres)</i>	<i>Inclination (degrees)</i>	<i>Direction (degrees)</i>	<i>Vertical Depth (metres)</i>	<i>Latitude (metres)</i>	<i>Departure (metres)</i>	<i>Vertical Section (metres)</i>	<i>Dogleg (deg/30m)</i>
2383.080	0.83	351.30	2381.890	46.190 N	1.780 W	46.190	TIE-IN
2384.750	0.76	350.33	2383.560	46.213 N	1.784 W	-41.053	1.22
2412.800	0.28	303.92	2411.609	46.435 N	1.871 W	-41.217	0.65
2443.800	7.35	186.91	2442.525	44.507 N	2.172 W	-39.344	7.23
2469.500	14.35	185.33	2467.750	39.699 N	2.666 W	-34.784	8.18
2499.760	15.12	185.79	2497.015	32.039 N	3.413 W	-27.535	0.78
2528.500	15.52	186.75	2524.733	24.491 N	4.244 W	-20.352	0.49
2553.500	16.08	187.06	2548.789	17.733 N	5.062 W	-13.889	0.68
2585.900	16.57	187.44	2579.882	8.698 N	6.212 W	-5.224	0.47
2614.750	17.07	187.73	2607.497	0.421 N	7.315 W	2.734	0.53
2656.600	17.94	187.31	2647.409	12.059 S	8.961 W	14.727	0.63
2688.000	17.94	187.31	2677.282	21.653 S	10.192 W	23.932	0.00

**CALCULATION BASED ON MINIMUM CURVATURE METHOD**














**SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT  
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT**









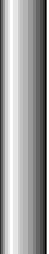


**VERTICAL SECTION RELATIVE TO WELL HEAD  
VERTICAL SECTION IS COMPUTED ALONG A CLOSURE OF 205.21 DEGREES (GRID)  
A TOTAL CORRECTION OF 14.07 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.  
HORIZONTAL DISPLACEMENT(CLOSURE) AT 2688.000 METRES  
IS 23.932 METRES ALONG 205.21 DEGREES (GRID)**

## MWD RUN 300 - BHA














## MWD RUN 300 - MWD

		<b>Component Length (m)</b>	<b>Cumulative Length (m)</b>			<b>Sensor Measure Point Distance To Bit (m)</b>
			211.42			
HWDP		75.650		Sonic		
Cross Over Sub		.640	135.77			
			135.13			
HWDP		9.470		MWD		
Cross Over Sub		1.110	125.66			
			124.55			
Drill Collar		18.920		Directional		
			105.63			
Drilling Jars		9.750		Processor		
			95.88			

Drill Collar		55.780		Neutron		22.310
Cross Over Sub		1.920	40.10			
			38.18	Resistivity		19.360
MWD		26.450				
3-Point String Reamer		2.320	11.73	Density		16.400
Float Sub		.770	9.41			
			8.64			
8" SperryDrill Lobe 7/8 - 3.0 sM		8.290		Gamma Ray		12.940
PDC		.350	0.35			

MWD RUN 400 - BHA

MWD RUN 400 - MWD

		Component Length (m)	Cumulative Length (m)			Sensor Measure Point Distance To Bit (m)
			211.42			
HWDP		75.650		Sonic		
			135.77			
Cross Over Sub		.640	135.13			
				MWD		
HWDP		9.470	125.66			
			124.55			
Cross Over Sub		1.110		Directional		
			105.63			
Drill Collar		18.920		Processor		
Drilling Jars		9.750				

