HALLIBURTON | Sperry Drilling

GAMMA RAY
RATE OF PENETRATION
TEMPERATURE

Powered by INSITE™

1 : 600 / 1 : 240

2" / 5" MD LOG

County : **Broomfield**
Field : **Wattenberg**
Location : **Lat: 39° 58' 41.59" North**
Long: 104° 59' 27.04" West
Well : **Interchange B S22-30-20N**
Company : **Extraction Oil & Gas**
Rig : **Ensign 769**

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Rig : **Ensign 769**
Well : **Interchange B S22-30-20N**
Field : **Wattenberg**
County : **Broomfield**
API Number : **014-20851**

LOCATION
Latitude : **39° 58' 41.59" North**
Longitude : **104° 59' 27.04" West**
StatePlane X = **957,892.721 m**
StatePlane Y = **376,527.078 m**

Other Services
Directional Drilling

Permanent Datum : **Ground Level** Elevation : **5206.00 ft**
Log Measured From : **Drill Floor** **28.00 ft** Above Permanent Datum
Drilling Measured From : **Drill Floor**

MD LOG

Elev. KB **N/A**
DF **5234.00 ft**
GL **5206.00 ft**
WD **N/A**

Depth Logged : **12,002.00 ft** To **25,042.00 ft**
Date Logged : **11-May-22** To **14-May-22**
Total Depth MD : **25,042.00 ft** TVD : **7,859.74 ft**
Spud Date : **07-May-22**

Unit No. : **11824775** Job No. : **CA-XX-0907820368**
Plot Type : **Final**
Plot Date : **15-May-22**

Run No.	Borehole Record (MD)			Size	Casing Record (MD)		
	Size	From	To		Weight	From	To
2	8.500 in	12,002.00 ft	25,042.00 ft				

WELL INFORMATION

MWD Run Number	200																				
Date run completed	15-May-22																				
Rig Bit Number	2																				
Bit Size (in)	8.500																				
Tool Nominal OD (in)	6.75																				
Log Start Depth (MD, ft)	12,002.00																				
Log End Depth (MD, ft)	25,042.00																				
Drill or Wipe	Drill																				
Drill/Wipe Start Date and Time	11-May-22 16:35																				
Drill/Wipe End Date and Time	14-May-22 00:09																				
Min Inc (deg) @ Depth (MD, ft)	89.28 @ 19,783.00																				
Max Inc (deg) @ Depth (MD, ft)	90.82 @ 16,577.00																				
Bit TFA(in2) / Bit Type	1.12 / PDC																				
Flow Rate (gpm)	675.00																				
Max AV (fpm) / CV (fpm) @ MWD	286.0 / 390.0																				
Fluid Type	Diesel Mud Base																				
Density (ppg) / Viscosity (spqt)	10.00 / 40.00																				
Filtrate CL (ppm)	39,000.00																				
pH / API Filtrate (mptm)	N/A / 34																				
PV (cP) / YP (lhf2)	12 / 6.00																				
% Solids / % Sand	16.5 / 0																				
% Oil / Oil:Water Ratio	83 / 83:17																				
Rm @ Measured Temp (degF)	N/A @ N/A																				
Rmf @ Measured Temp (degF)	N/A @ N/A																				

Rmc @ Measured Temp (degF)	N/A @ N/A				
Max Tool Temp (degF) / Source	300.20 / EMT				
Rm @ Max Tool Temp (degF)	N/A @ 300.20				
Lead MWD Engineer	Hassan Sanghott				
Customer Representative	Danny Herrera				

SENSOR INFORMATION

Rotary Steerable Information

Tool Type	iCruise				
Distance From Bit (ft)	6.40				
Software Version	4.18				
Sub Serial Number	13035551				

Electro Magnetic Downhole Terminal Unit Sensor Information

Tool Type	EMT-DTU				
Distance From PWD To Bit (ft)	N/A				
Hardware Type	EMT Sonde				
Electronics Hardware Rev	Phase 3.0				
Software Version	8.16A				
Telemetry Type	PPM				

REMARKS

1. All depths are calibrated to the driller's pipe tally and are measured from the rotary table.

2. No depth corrections have been made for pipe stretch or compression.

3. All data presented is recorded (memory data) unless otherwise stated.

4. Missing data due to third party EDR error from 17325' MD - 17404'MD and 23360' MD - 23445' MD

5. Temperature data (STEM) is the circulating temperature recorded at the EMT (Electro-Magnetic Telemetry) sensor while logging.

6. Gamma data presented is not corrected for hole size, mud weight, or KCL concentration.

7. The following smoothing parameters have been applied to the data:

2" MD/TVD
STEM: No smoothing applied
All other curves: 1.0 ft interval, 3.0 ft coercion distance

5" MD/TVD
ROPA: 0.5 ft interval, 1.2 ft coercion distance
STEM: No smoothing applied

All other curves: 0.5 ft interval. 0.6 ft coercion distance

WARRANTY

Final LWD Data - Field Copy

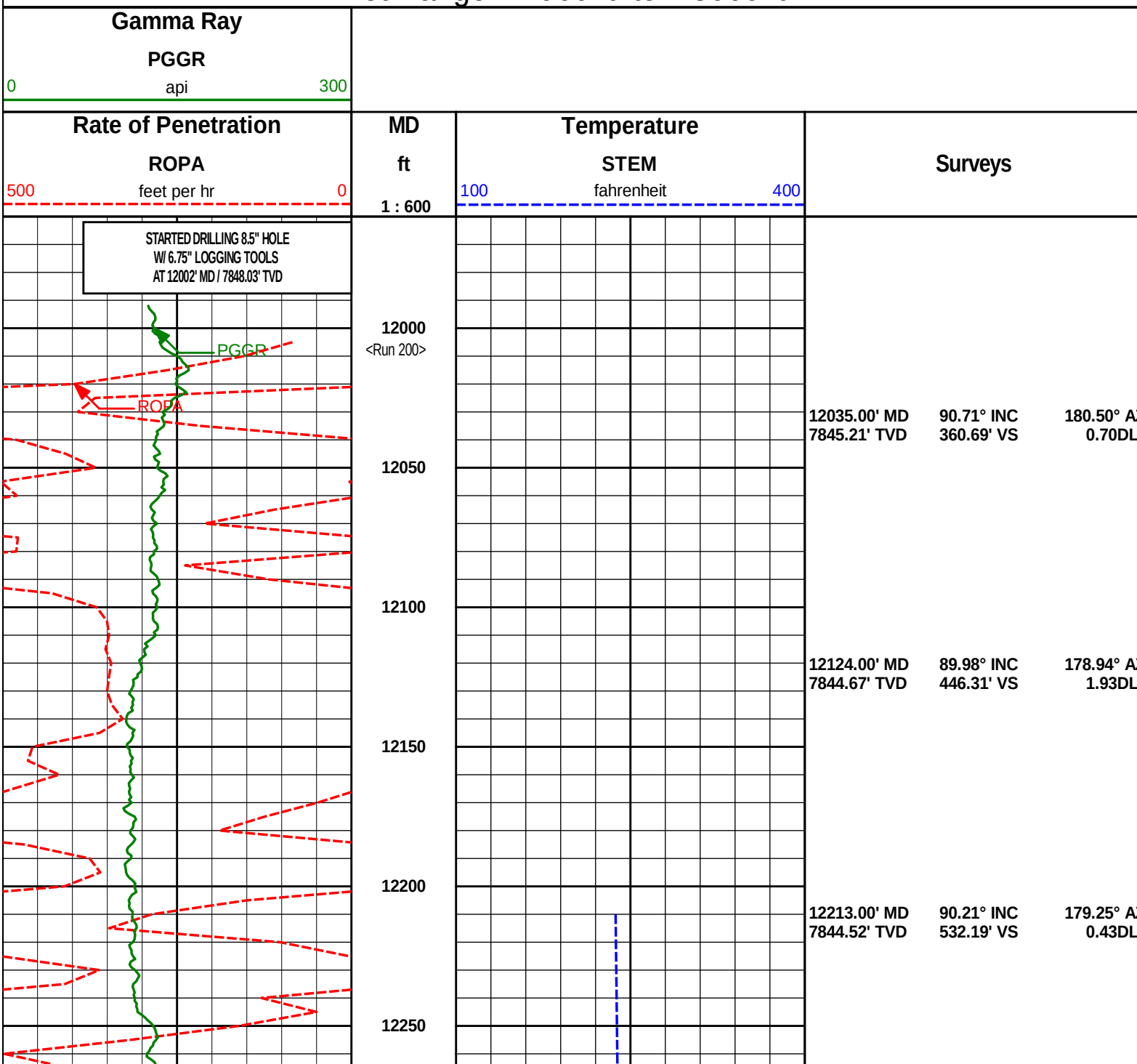
Extraction

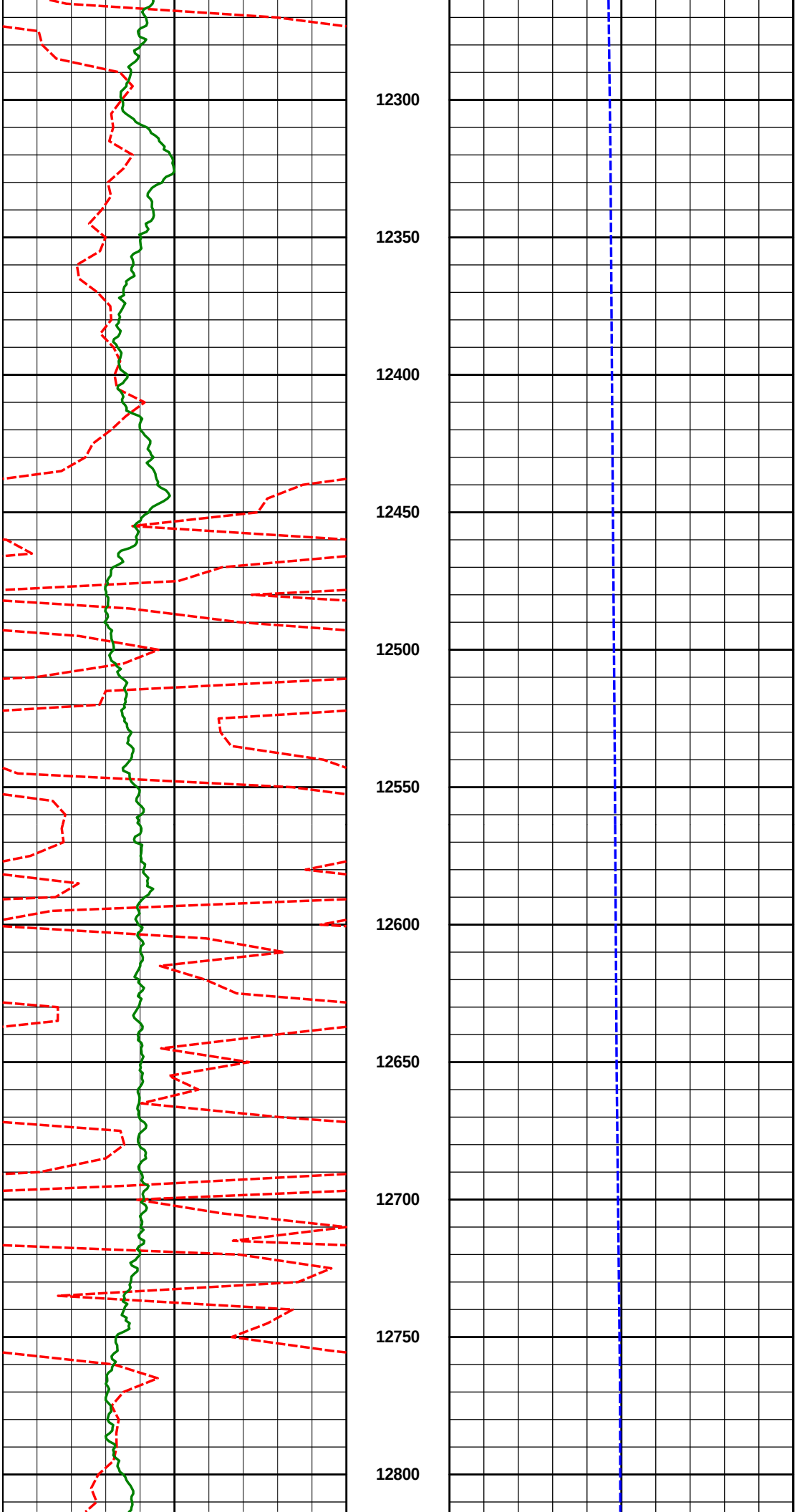
HALLIBURTON
Sperry Drilling

Well: Interchange B S22-30-20N

Scale 1:600 MD

Plot Range: 11960 ft to 25060 ft





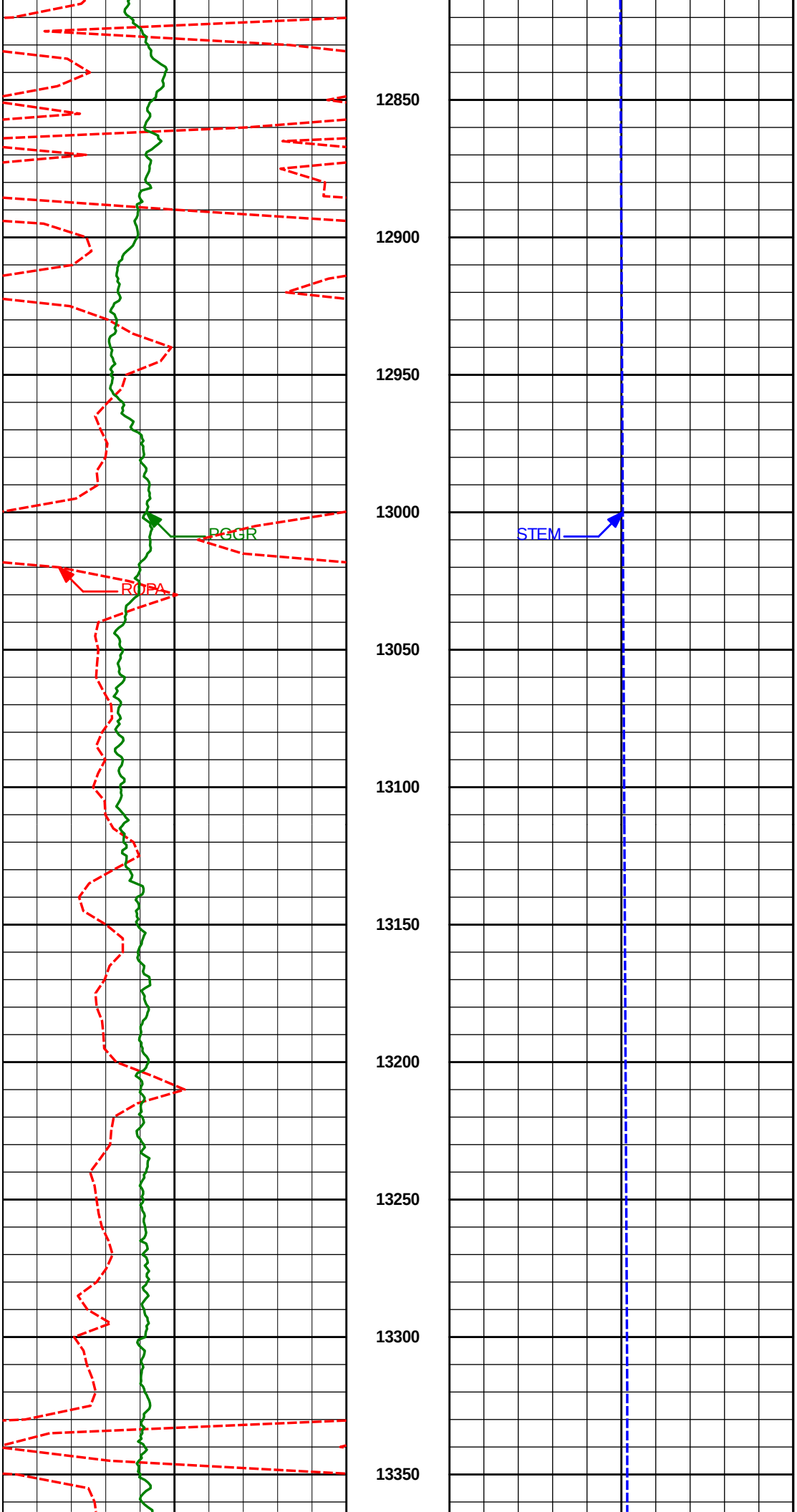
12302.00' MD 90.19° INC 179.56° AZ
7844.21' TVD 617.94' VS 0.35DL

12391.00' MD 89.87° INC 179.27° AZ
7844.16' TVD 703.68' VS 0.49DL

12480.00' MD 89.96° INC 181.94° AZ
7844.29' TVD 788.91' VS 2.99DL

12569.00' MD 90.05° INC 182.23° AZ
7844.28' TVD 873.46' VS 0.35DL

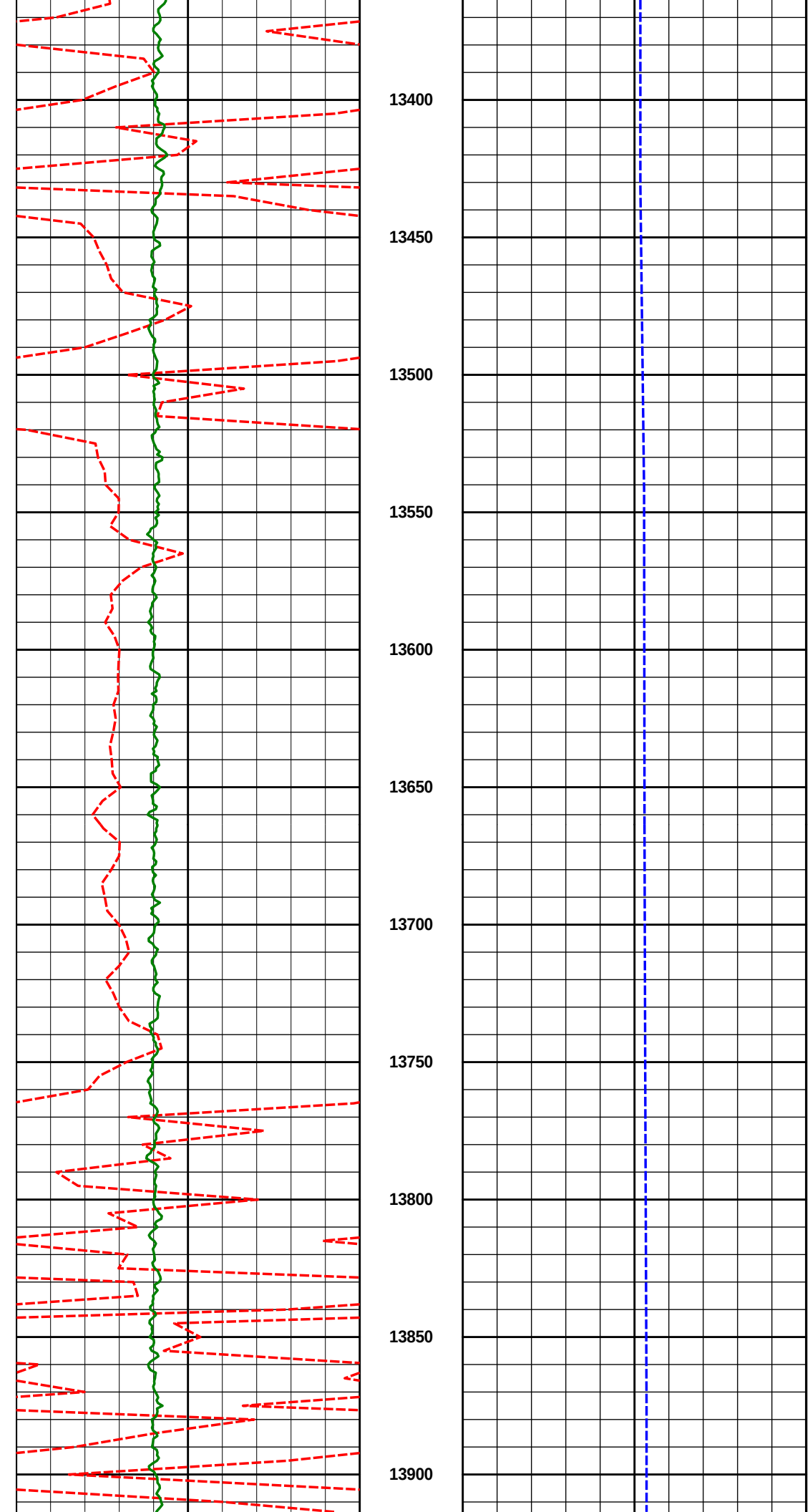
12658.00' MD 90.15° INC 181.28° AZ
7844.12' TVD 958.16' VS 1.07DL

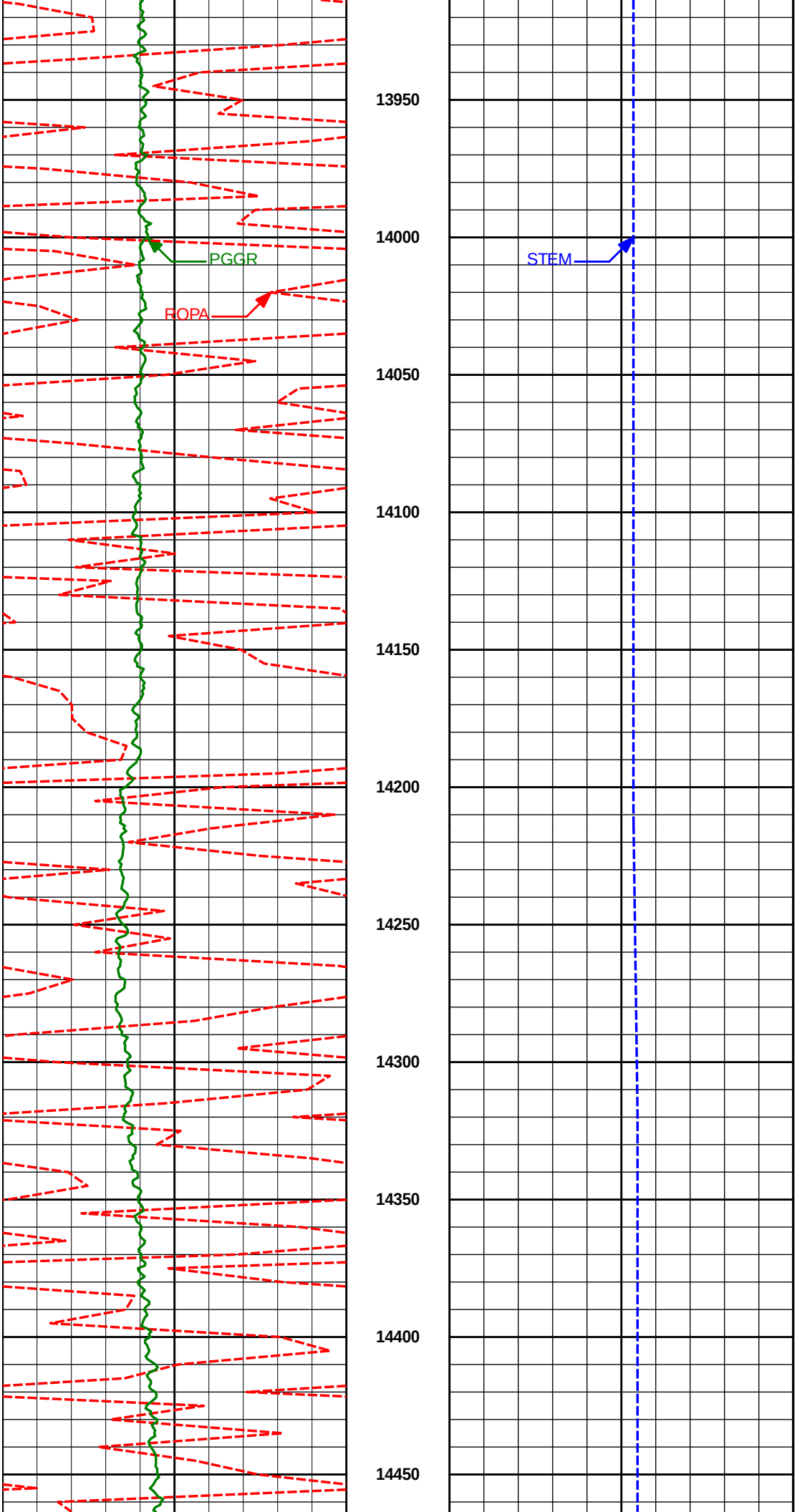


12836.00' MD 90.18° INC 181.25° A
7843.62' TVD 1128.02' VS 0.02DL

12925.00' MD 90.02° INC 180.40° A
7843.47' TVD 1213.16' VS 0.98DL

13192.00' MD 90.05° INC 180.52° A
7843.31' TVD 1469.06' VS 0.05DL


13400
13450
13500
13550
13600
13650
13700
13750
13800
13850
13900
13370.00' MD 90.33° INC 176.08° AZ
7842.71' TVD 1641.41' VS 2.50DL
13459.00' MD 89.98° INC 177.86° AZ
7842.47' TVD 1728.10' VS 2.04DL
13548.00' MD 89.79° INC 181.26° AZ
7842.65' TVD 1813.77' VS 3.82DL
13727.00' MD 89.82° INC 182.43° AZ
7843.26' TVD 1984.04' VS 0.66DL
13816.00' MD 89.86° INC 181.19° AZ
7843.51' TVD 2068.72' VS 1.39DL
13905.00' MD 89.87° INC 180.94° AZ
7843.72' TVD 2153.75' VS 0.28DL



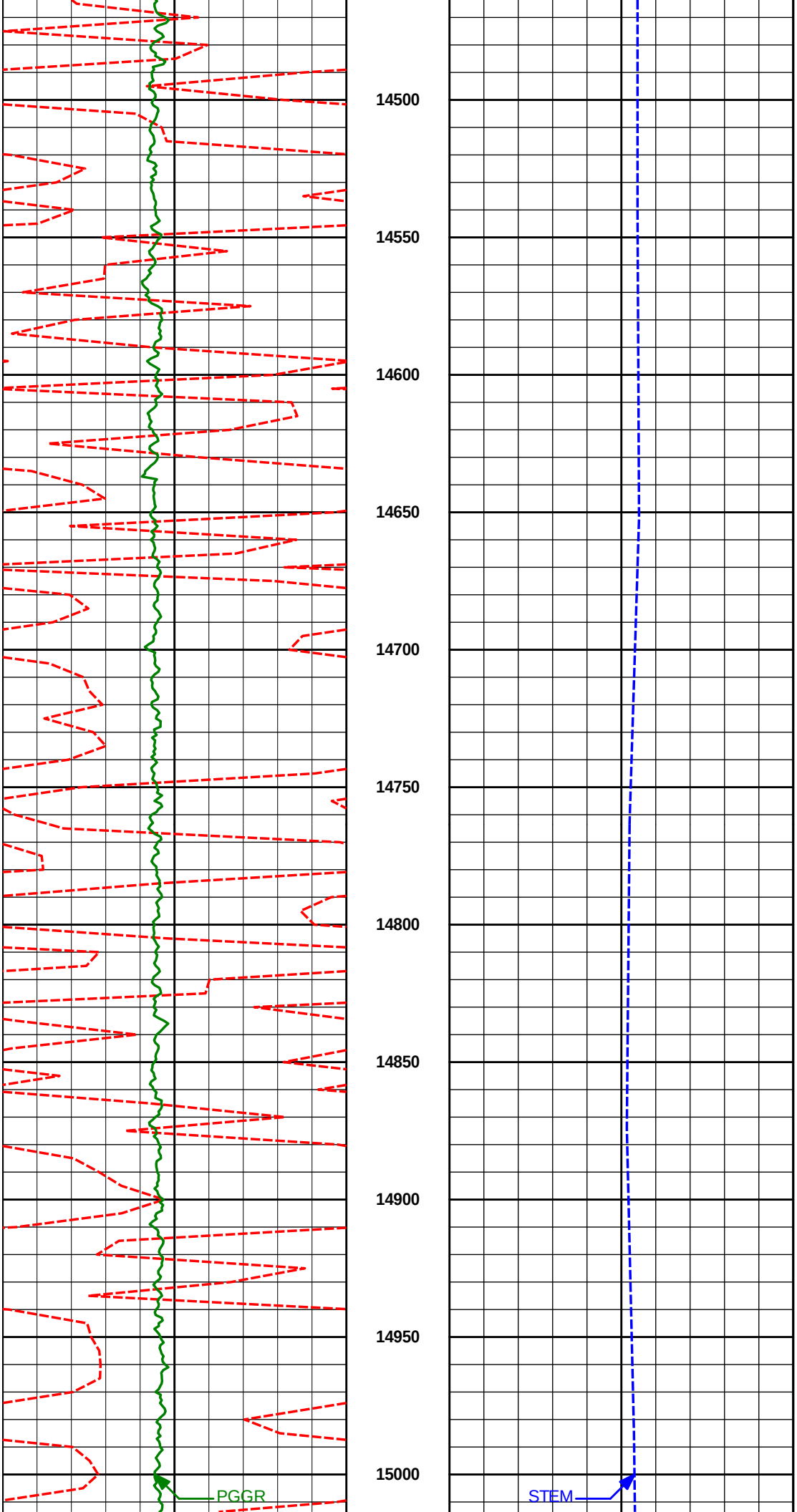
13994.00' MD 89.95° INC 180.20° AZ
7843.87' TVD 2239.00' VS 0.84DL

14083.00' MD 89.61° INC 181.14° AZ
7844.21' TVD 2324.20' VS 1.12DL

14172.00' MD 89.71° INC 180.37° AZ
7844.73' TVD 2409.37' VS 0.87DL

14350.00' MD 90.05° INC 178.05° AZ
7845.09' TVD 2581.02' VS 1.32DL

14439.00' MD 89.99° INC 179.15° AZ
7845.05' TVD 2667.10' VS 1.24DL

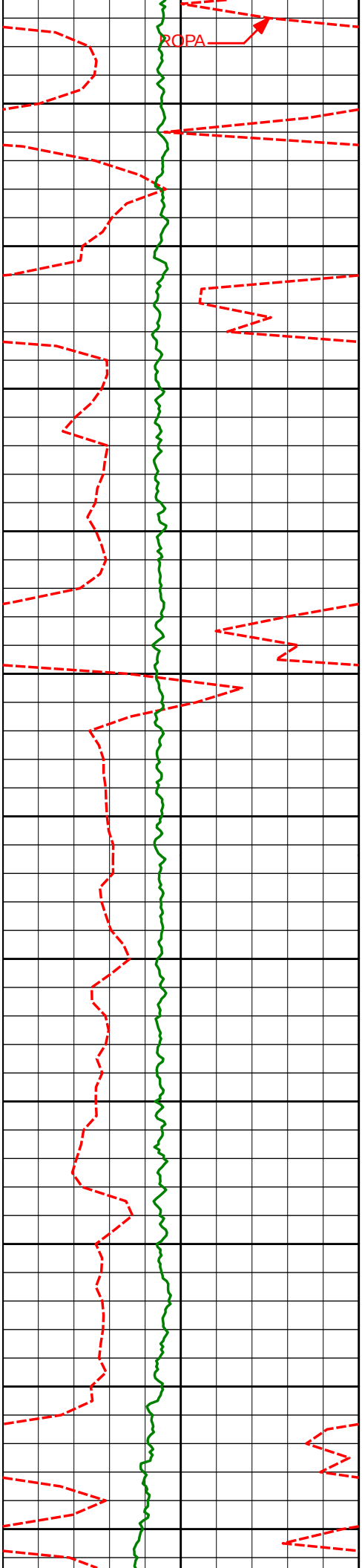


14618.00' MD 90.18° INC 181.10° A
7844.79' TVD 2838.95' VS 1.10DL

14707.00' MD 90.12° INC 179.68° A
7844.55' TVD 2924.28' VS 1.60DL

14796.00' MD 90.21° INC 179.63° A
7844.30' TVD 3009.93' VS 0.11DL

14974.00' MD 90.29° INC 177.76° A
7843.52' TVD 3182.01' VS 1.05DL



15050

15100

15150

15200

15250

15300

15350

15400

15450

15500

15550

15063.00' MD 90.05° INC 180.37° AZ
7843.25' TVD 3267.89' VS 2.95DL

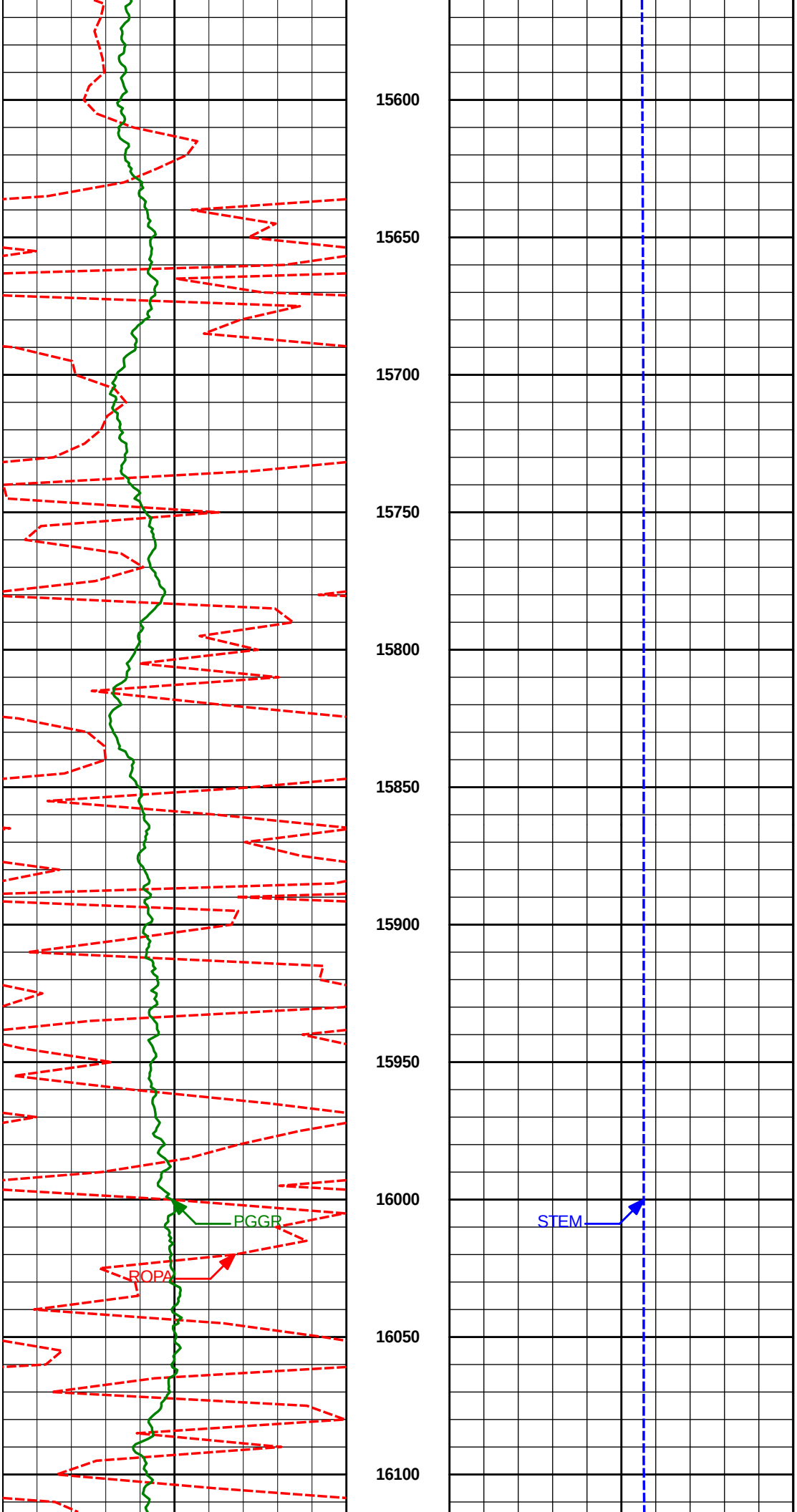
15153.00' MD 89.91° INC 180.70° AZ
7843.27' TVD 3354.11' VS 0.39DL

15242.00' MD 89.84° INC 181.06° AZ
7843.46' TVD 3439.22' VS 0.42DL

15331.00' MD 89.69° INC 178.26° AZ
7843.83' TVD 3524.86' VS 3.16DL

15420.00' MD 89.88° INC 178.48° AZ
7844.16' TVD 3611.03' VS 0.33DL

15509.00' MD 89.63° INC 178.44° AZ
7844.54' TVD 3697.16' VS 0.29DL



15598.00' MD 89.65° INC 178.10° AZ
7845.09' TVD 3783.37' VS 0.39DL

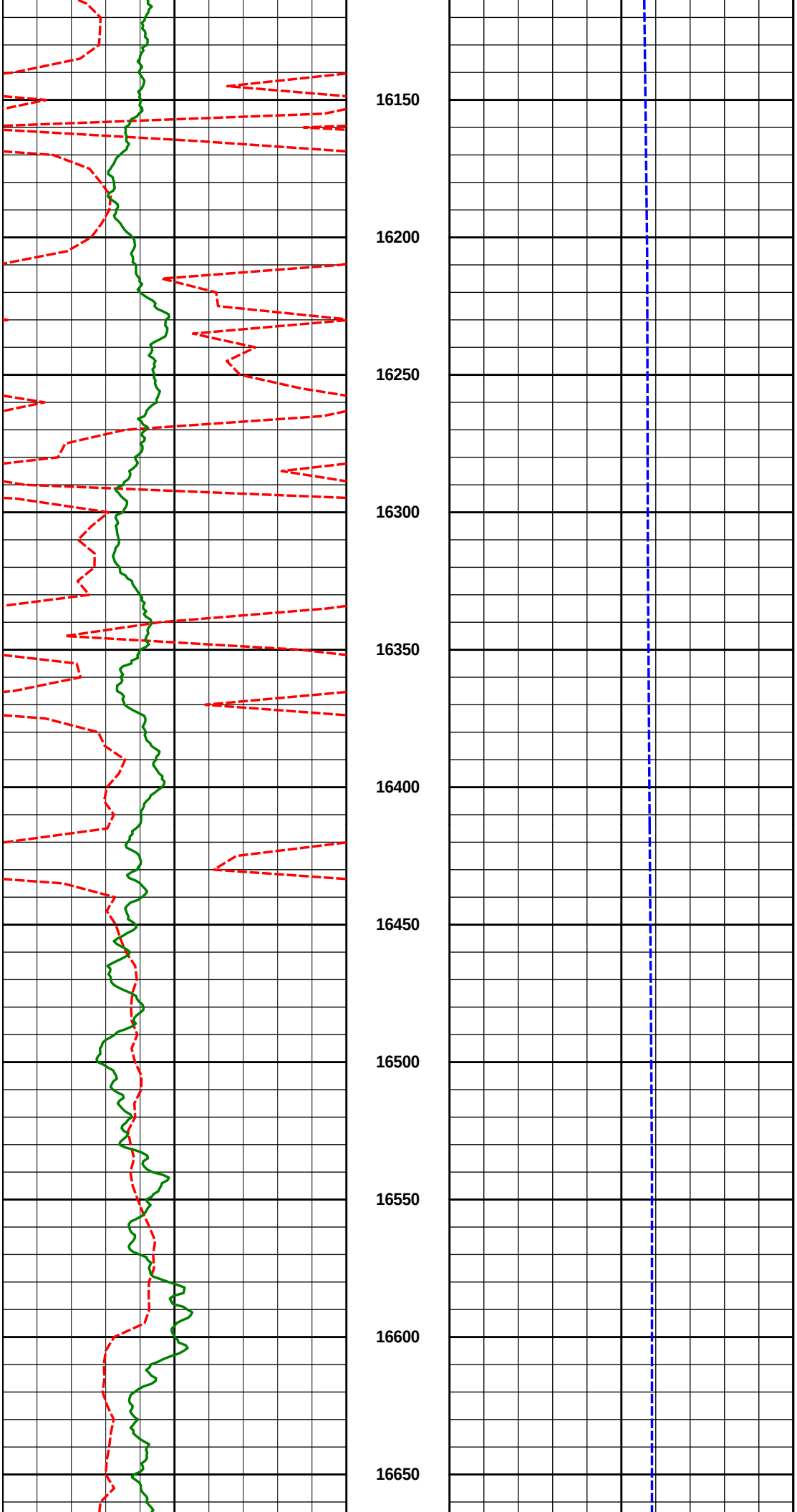
15687.00' MD 89.61° INC 179.33° AZ
7845.67' TVD 3869.40' VS 1.39DL

15776.00' MD 89.48° INC 178.14° AZ
7846.37' TVD 3955.42' VS 1.35DL

7847.10' TVD 4041.57' VS 0.58DL

15954.00' MD 89.41° INC 181.37° AZ
7847.88' TVD 4127.06' VS 3.07DL

16043.00' MD 89.65° INC 179.10° AZ
7848.62' TVD 4212.45' VS 2.57DL



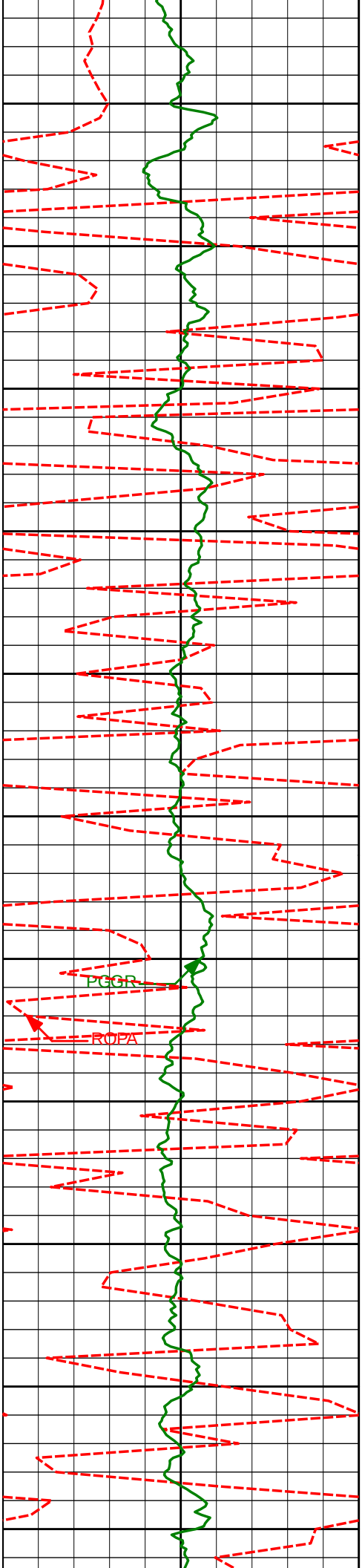
16132.00' MD 90.17° INC 179.34° A
7848.75' TVD 4298.28' VS 0.64DL

16221.00' MD 90.12° INC 180.41° A
7848.53' TVD 4383.83' VS 1.21DL

16310.00' MD 90.15° INC 179.01° A
7848.32' TVD 4469.46' VS 1.58DL

16399.00' MD 90.27° INC 179.38° A
7847.99' TVD 4555.29' VS 0.44DL

16577.00' MD 90.82° INC 179.38° A
7846.29' TVD 4726.81' VS 0.31DL



7845.14' TVD 4812.62' VS 0.33DL

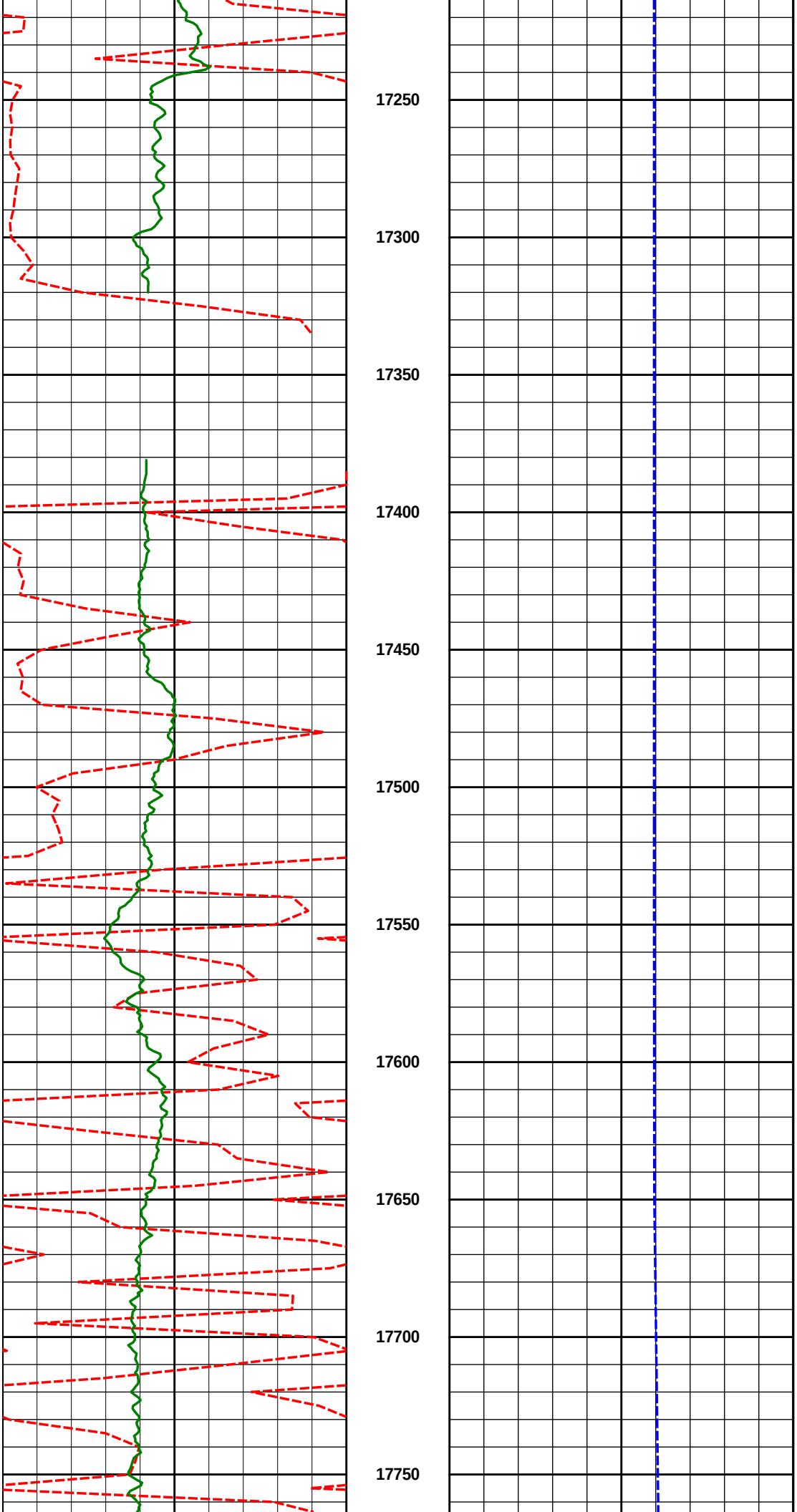
16755.00' MD 90.47° INC 179.29° A
7844.25' TVD 4898.45' VS 0.28DL

16934.00' MD 90.70° INC 179.09° A
7842.42' TVD 5071.08' VS 0.17DL

17023.00' MD 90.56° INC 179.45° A
7841.44' TVD 5156.88' VS 0.44DL

17112.00' MD 90.06° INC 179.45° A
7840.95' TVD 5242.62' VS 0.56DL

17201.00' MD 90.14° INC 179.15° A
7840.80' TVD 5328.41' VS 0.34DL



17290.00' MD 89.80° INC 181.17° AZ
7840.84' TVD 5413.84' VS 2.30DL

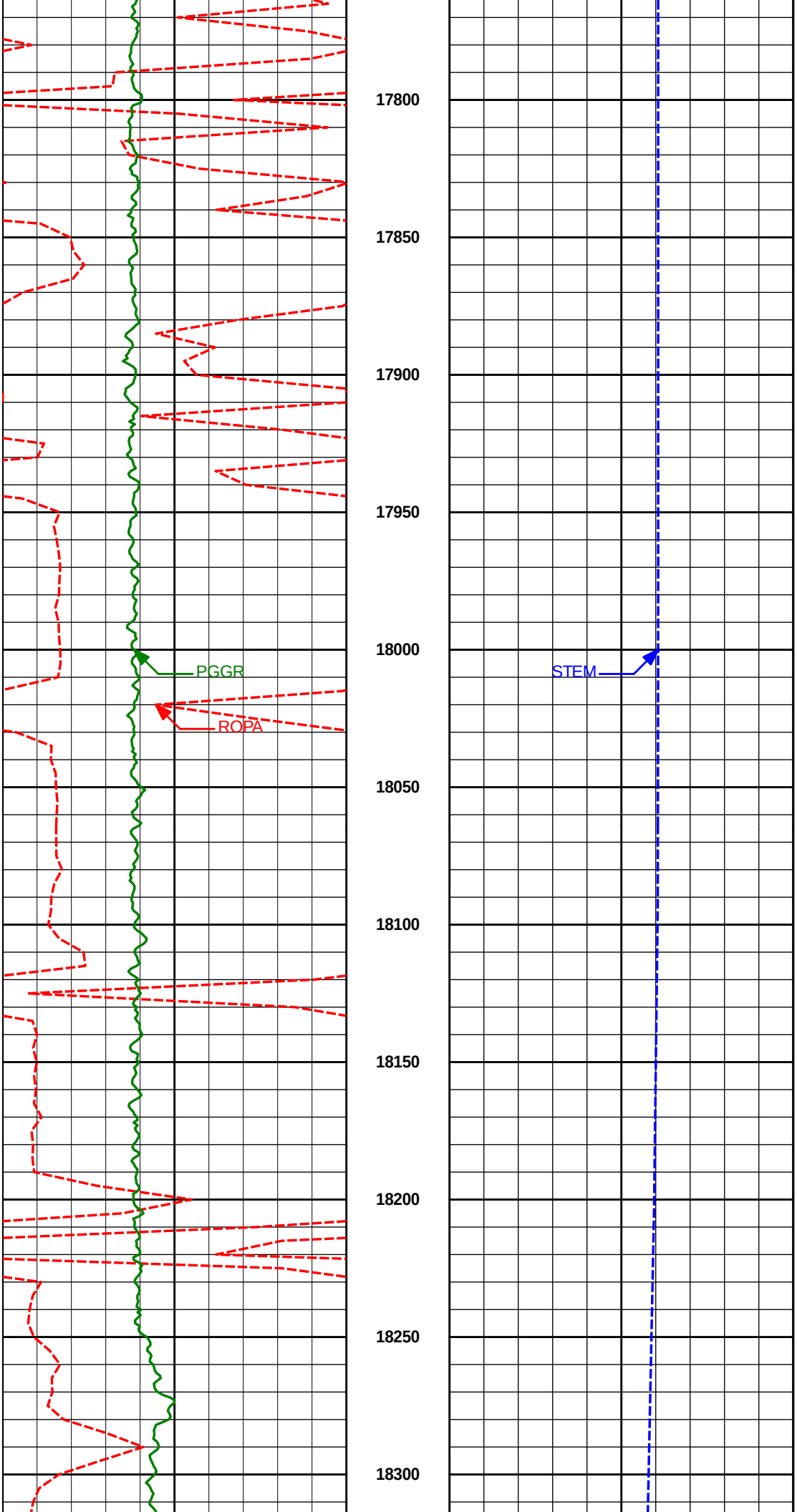
17379.00' MD 90.08° INC 179.47° AZ
7840.94' TVD 5499.20' VS 1.94DL

17468.00' MD 89.96° INC 180.81° AZ
7840.91' TVD 5584.64' VS 1.51DL

17557.00' MD 90.02° INC 180.44° AZ
7840.93' TVD 5669.86' VS 0.42DL

17646.00' MD 89.97° INC 179.46° AZ
7840.94' TVD 5755.38' VS 1.10DL

17735.00' MD 90.22° INC 181.87° AZ
7840.79' TVD 5840.58' VS 2.72DL



17824.00' MD 89.95° INC 180.77° AZ
7840.66' TVD 5925.49' VS 1.28DL

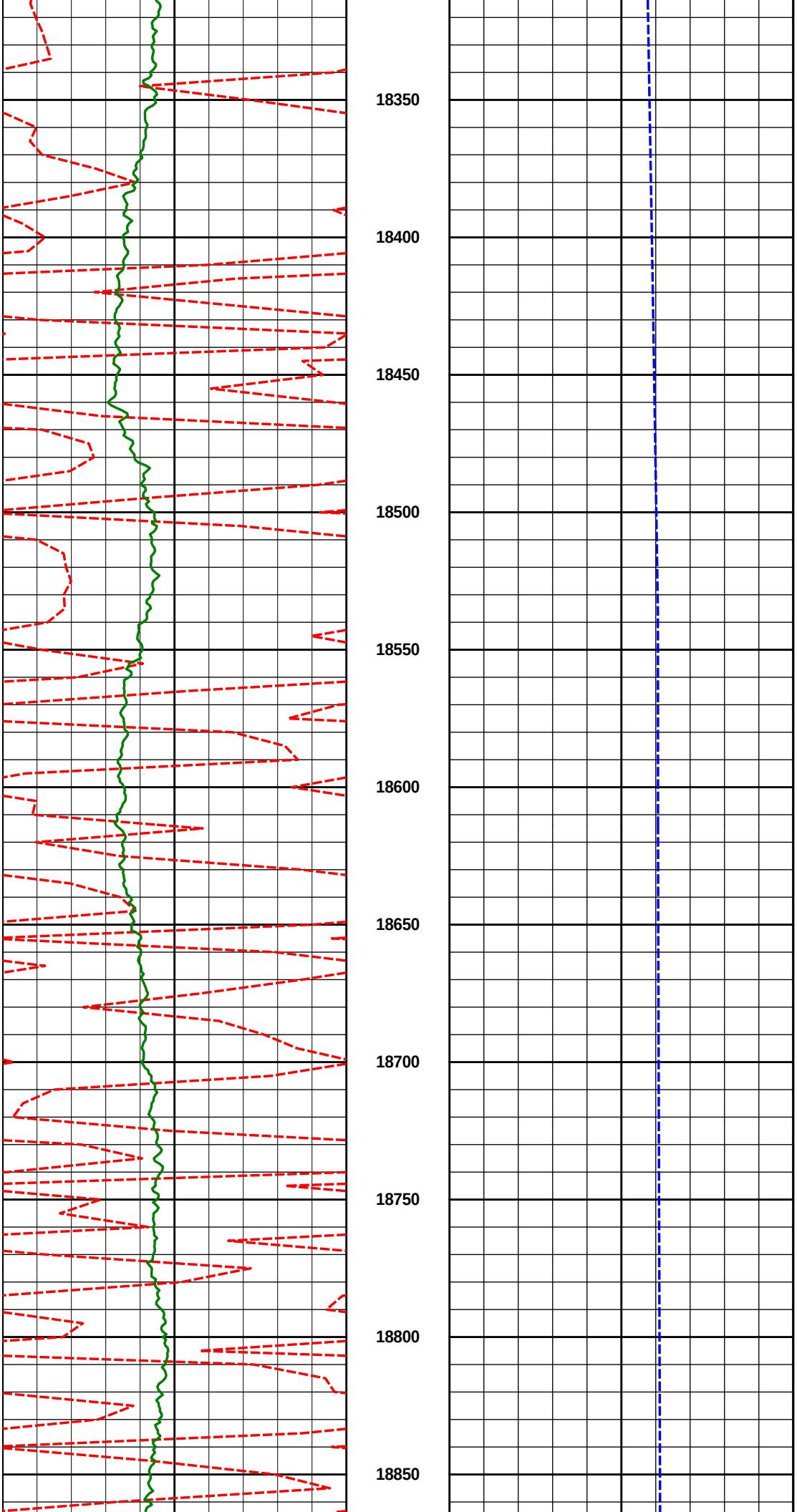
17913.00' MD 89.85° INC 180.60° AZ
7840.82' TVD 6010.69' VS 0.21DL

18002.00' MD 89.61° INC 181.73° AZ
7841.24' TVD 6095.67' VS 1.29DL

18091.00' MD 89.61° INC 180.56° AZ
7841.84' TVD 6180.65' VS 1.31DL

18180.00' MD 89.43° INC 181.29° AZ
7842.58' TVD 6265.74' VS 0.84DL

18269.00' MD 90.12° INC 179.63° AZ
7842.93' TVD 6351.03' VS 2.01DL



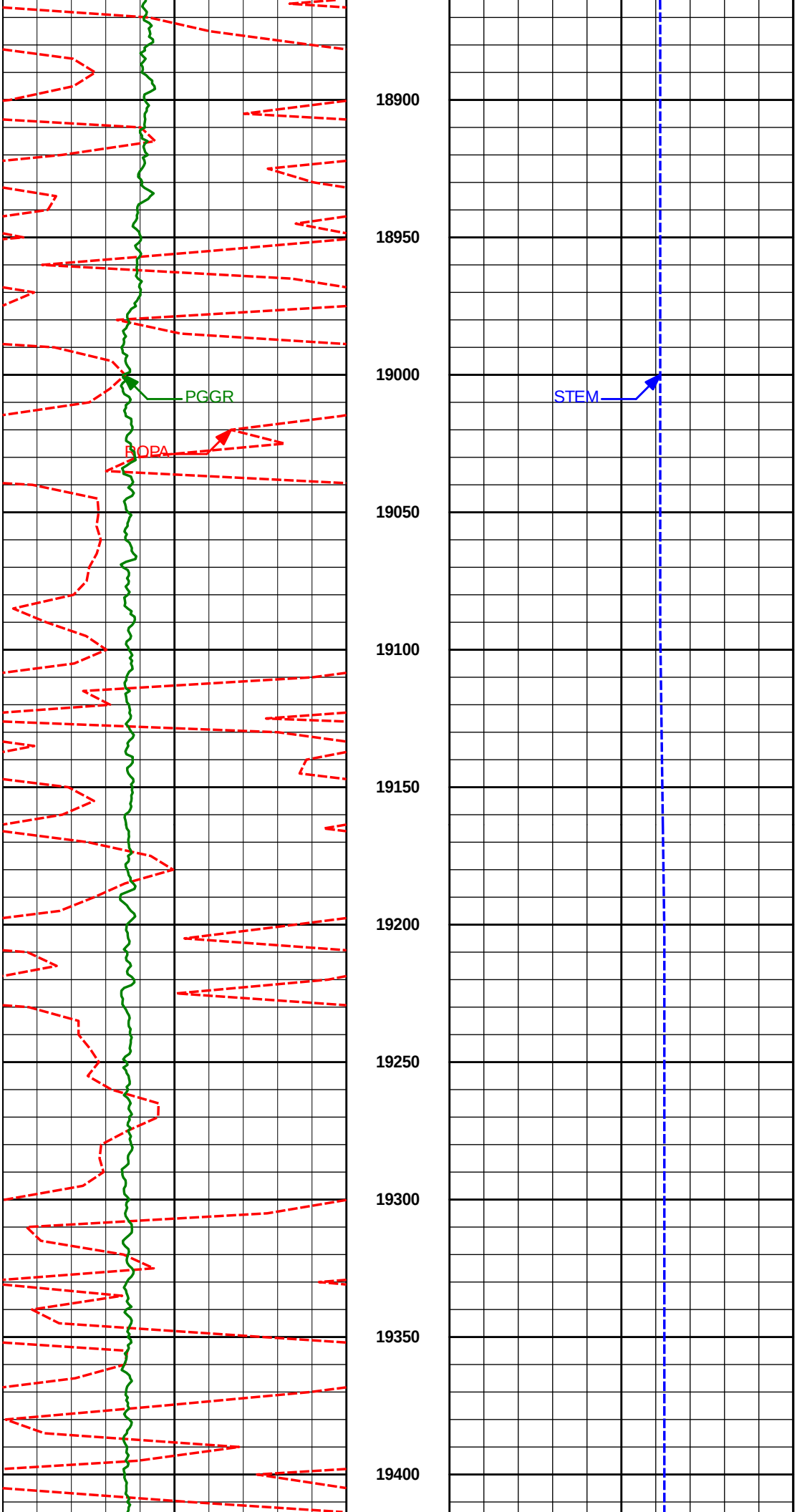
18358.00' MD 89.89° INC 181.51° A
7842.93' TVD 6436.28' VS 2.12DL

18447.00' MD 90.02° INC 178.93° A
7842.99' TVD 6521.68' VS 2.91DL

18536.00' MD 90.03° INC 179.47° A
7842.95' TVD 6607.52' VS 0.61DL

18625.00' MD 89.76° INC 180.53° A
7843.11' TVD 6693.01' VS 1.23DL

18714.00' MD 89.97° INC 179.43° A
7843.32' TVD 6778.52' VS 1.26DL



18892.00' MD 89.58° INC 180.17° AZ
7844.03' TVD 6949.69' VS 0.47DL

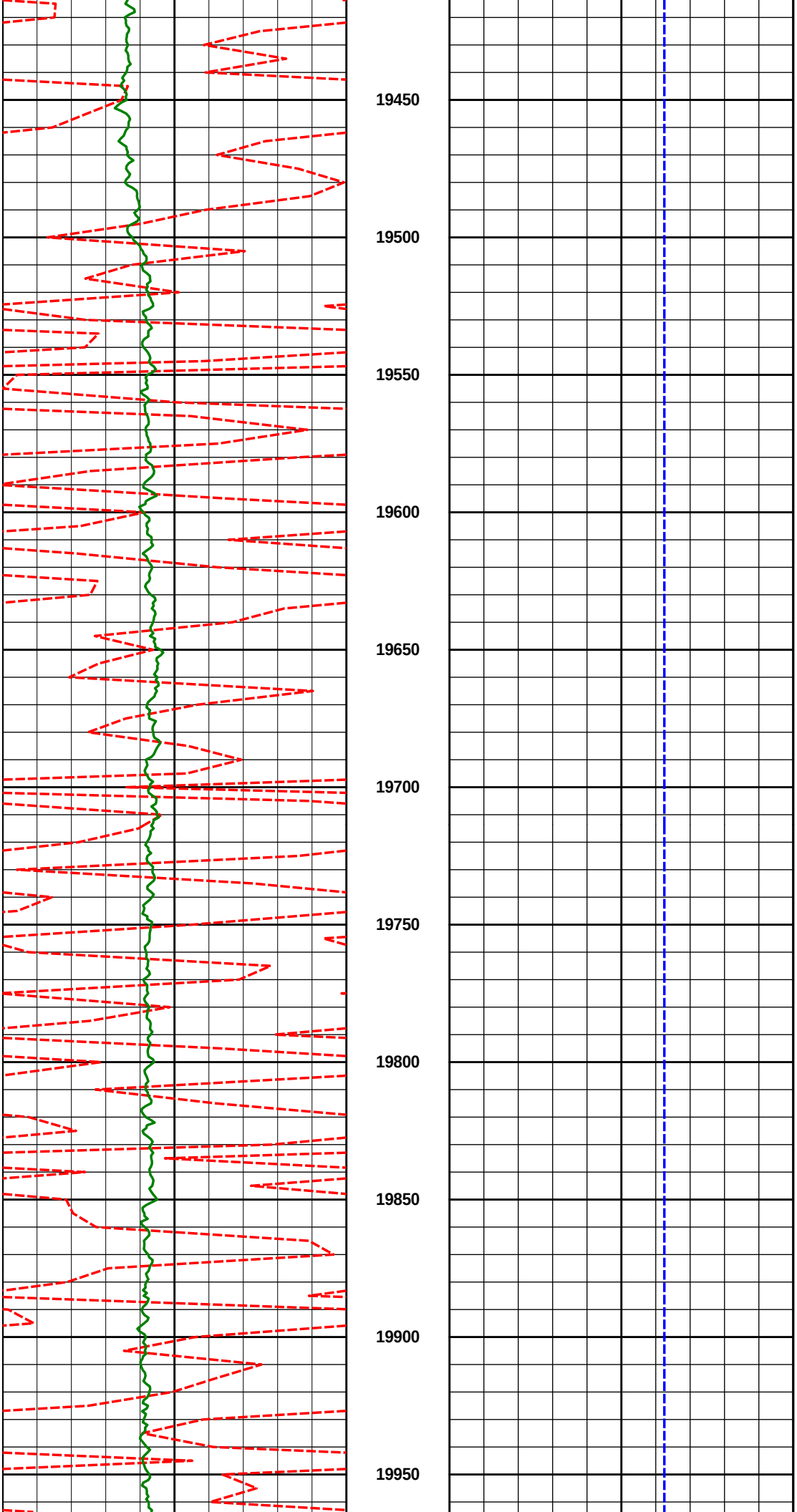
18981.00' MD 90.11° INC 179.15° AZ
7844.28' TVD 7035.33' VS 1.29DL

19070.00' MD 89.41° INC 179.92° AZ
7844.65' TVD 7121.03' VS 1.16DL

19159.00' MD 89.40° INC 179.48° AZ
7845.57' TVD 7206.65' VS 0.49DL

19249.00' MD 89.44° INC 178.96° AZ
7846.47' TVD 7293.44' VS 0.58DL

19338.00' MD 89.61° INC 179.19° AZ
7847.20' TVD 7379.33' VS 0.33DL



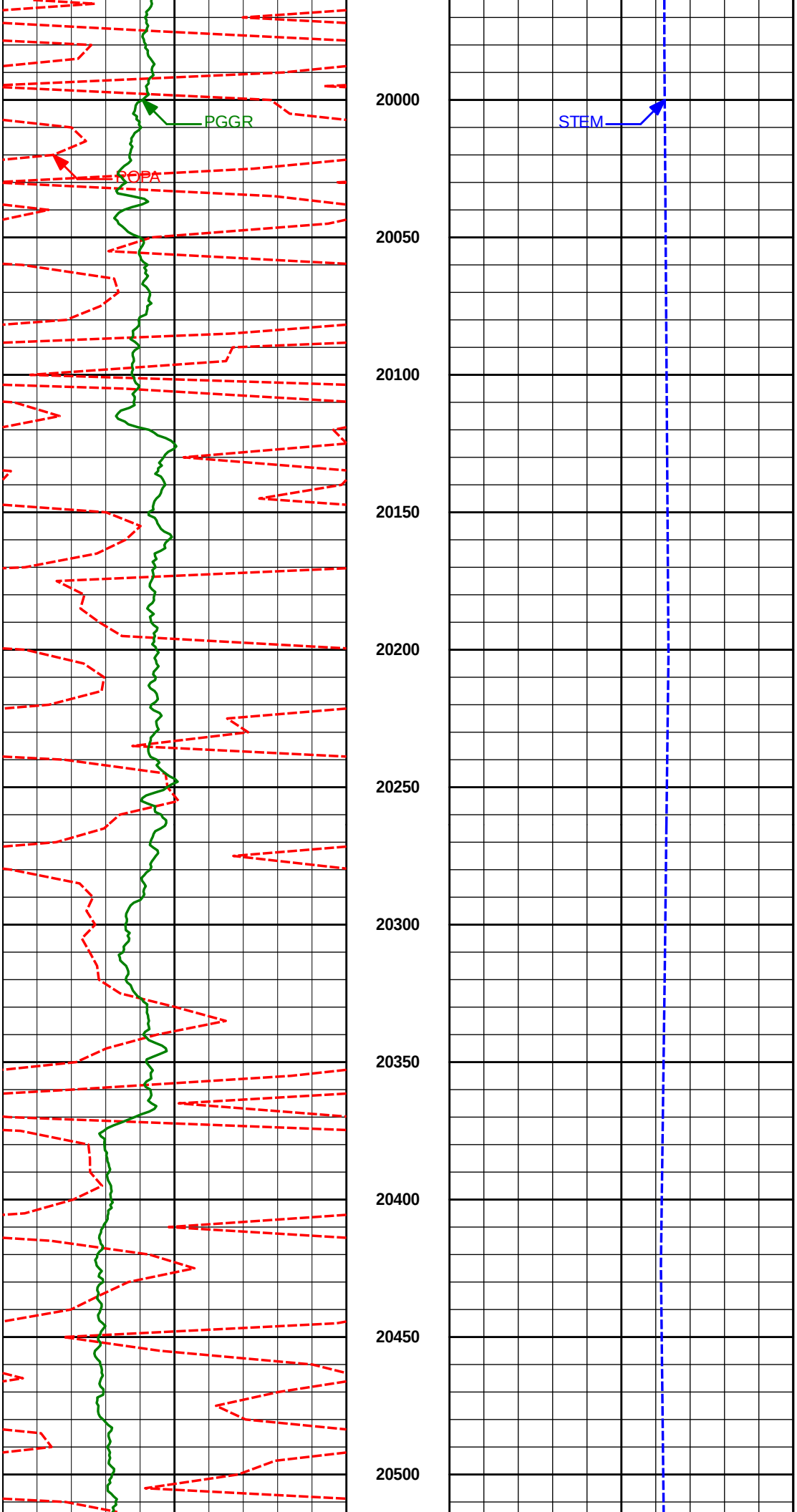
19427.00' MD 89.81° INC 180.16° AZ
7847.65' TVD 7464.96' VS 1.11DL

19516.00' MD 89.54° INC 178.45° AZ
7848.16' TVD 7550.75' VS 1.95DL

19783.00' MD 89.28° INC 179.82° AZ
7850.93' TVD 7808.33' VS 0.52DL

19872.00' MD 89.70° INC 179.24° AZ
7851.72' TVD 7894.02' VS 0.81DL

19961.00' MD 89.80° INC 179.93° AZ



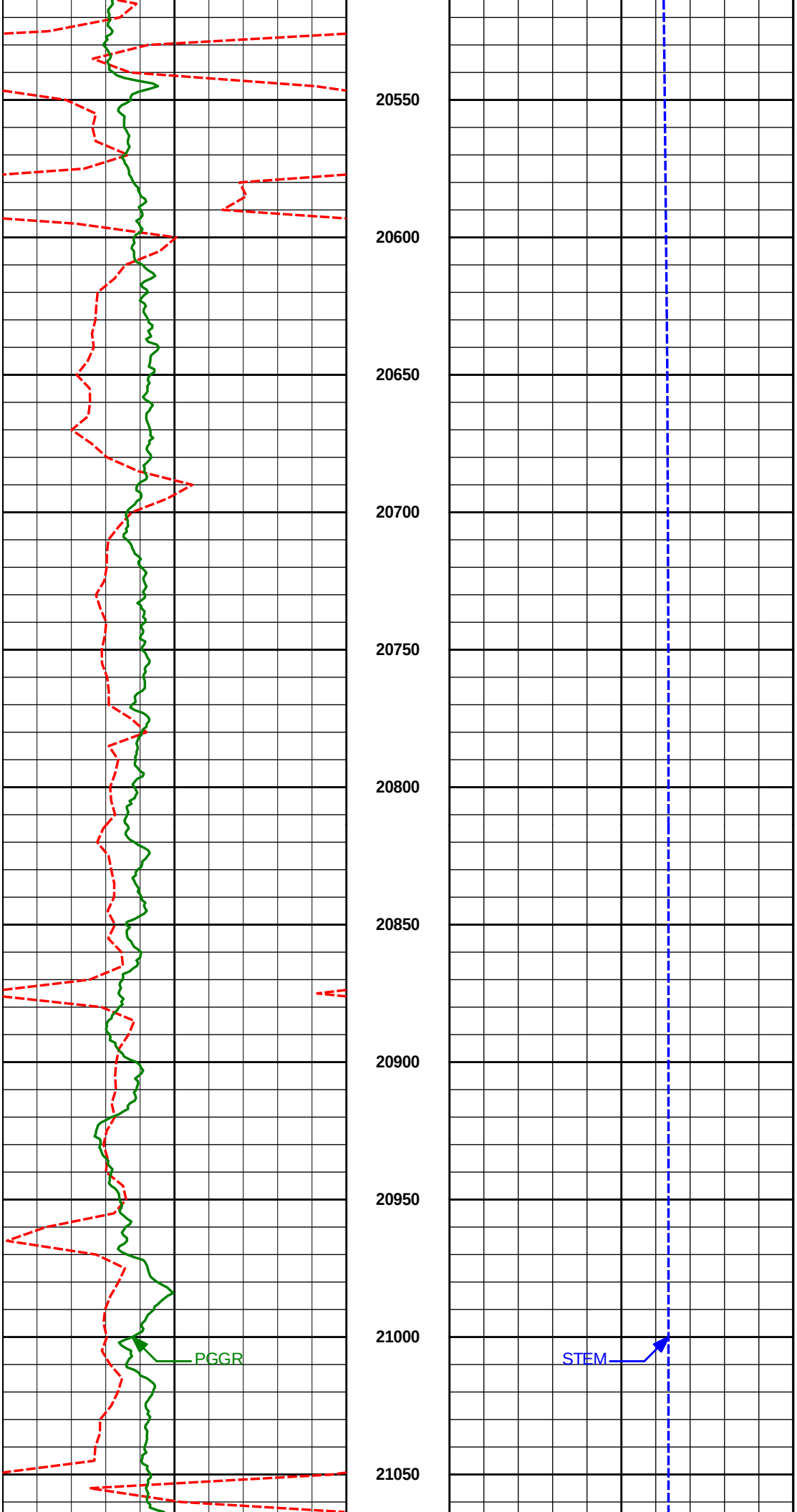
7852.11' TVD 7979.70' VS 0.78DL

20050.00' MD 90.10° INC 178.94° AZ
7852.19' TVD 8065.44' VS 1.17DL

20229.00' MD 89.52° INC 178.92° AZ
7852.78' TVD 8238.30' VS 0.32DL

20407.00' MD 89.66° INC 178.75° AZ
7854.05' TVD 8410.26' VS 0.12DL

20496.00' MD 89.74° INC 179.95° AZ
7854.51' TVD 8496.04' VS 1.35DL



20585.00' MD 89.75° INC 181.36° AZ
7854.90' TVD 8581.25' VS 1.59DL

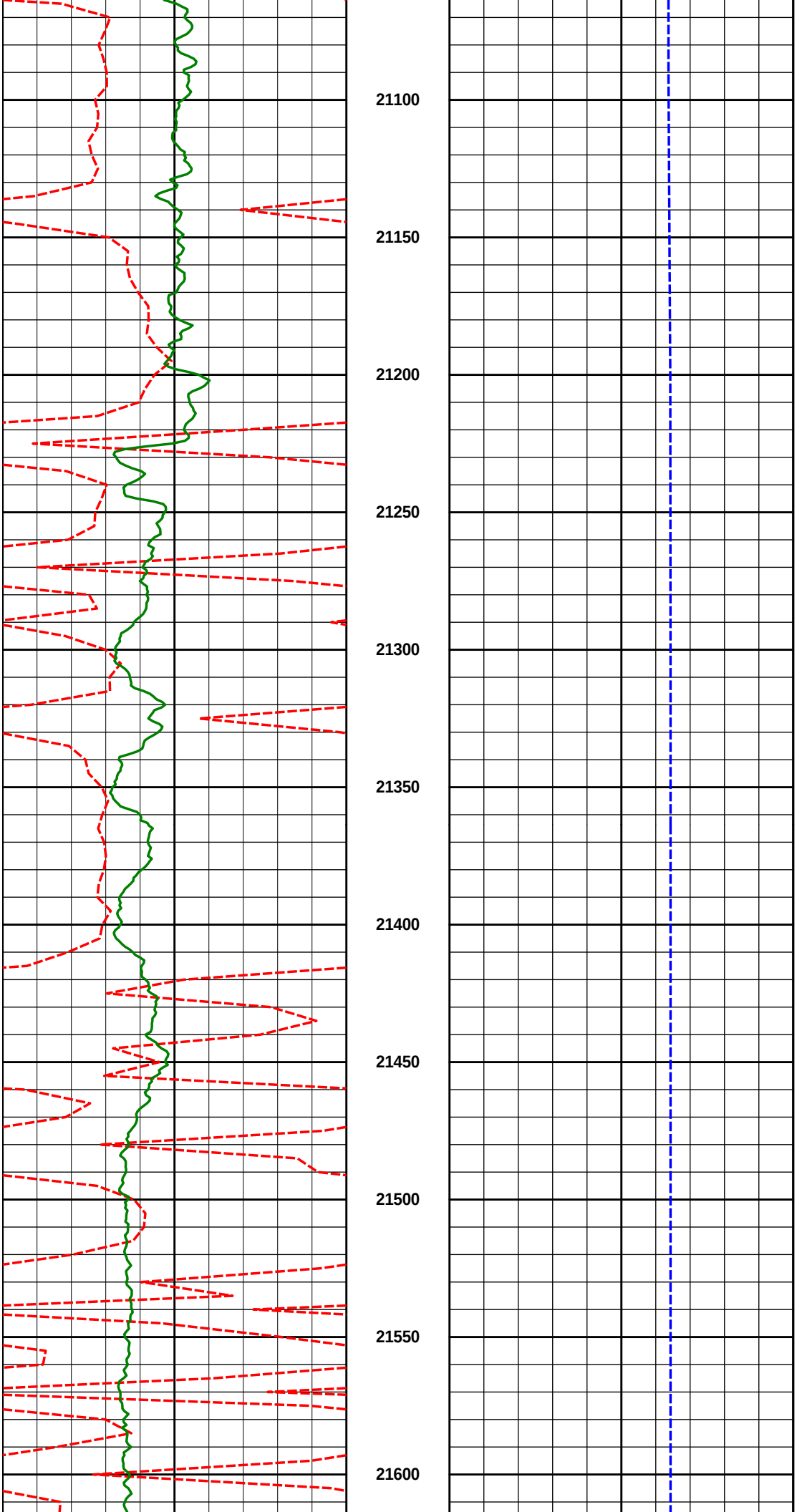
20674.00' MD 89.70° INC 178.85° AZ
7855.33' TVD 8666.70' VS 2.81DL

20763.00' MD 89.67° INC 180.45° AZ
7855.82' TVD 8752.34' VS 1.79DL

20852.00' MD 89.97° INC 178.95° AZ
7856.10' TVD 8837.97' VS 1.71DL

20941.00' MD 90.00° INC 180.67° AZ
7856.12' TVD 8923.55' VS 1.93DL

21030.00' MD 90.03° INC 179.30° AZ
7856.10' TVD 9009.06' VS 1.54DL



21119.00' MD 89.77° INC 181.20° AZ
7856.26' TVD 9094.45' VS 2.16DL

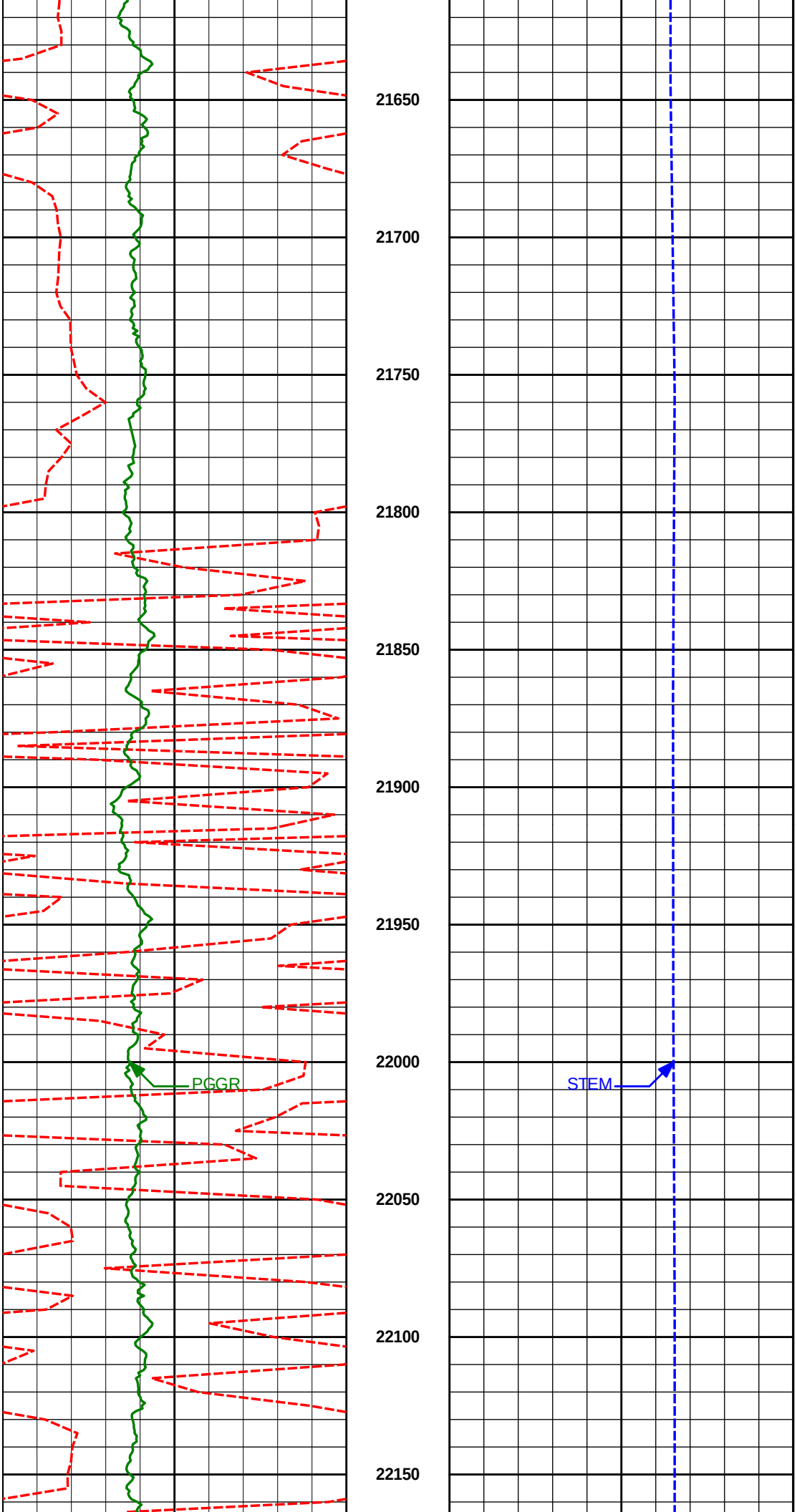
21208.00' MD 89.81° INC 179.84° AZ
7856.58' TVD 9179.72' VS 1.52DL

21297.00' MD 89.87° INC 180.38° AZ
7856.84' TVD 9265.17' VS 0.60DL

21386.00' MD 89.88° INC 179.73° AZ
7857.03' TVD 9350.65' VS 0.73DL

21475.00' MD 89.90° INC 179.82° AZ
7857.21' TVD 9436.24' VS 0.11DL

21564.00' MD 89.76° INC 180.20° AZ
7857.47' TVD 9521.74' VS 0.46DL



21653.00' MD 89.98° INC 180.70° AZ
7857.67' TVD 9607.04' VS 0.61DL

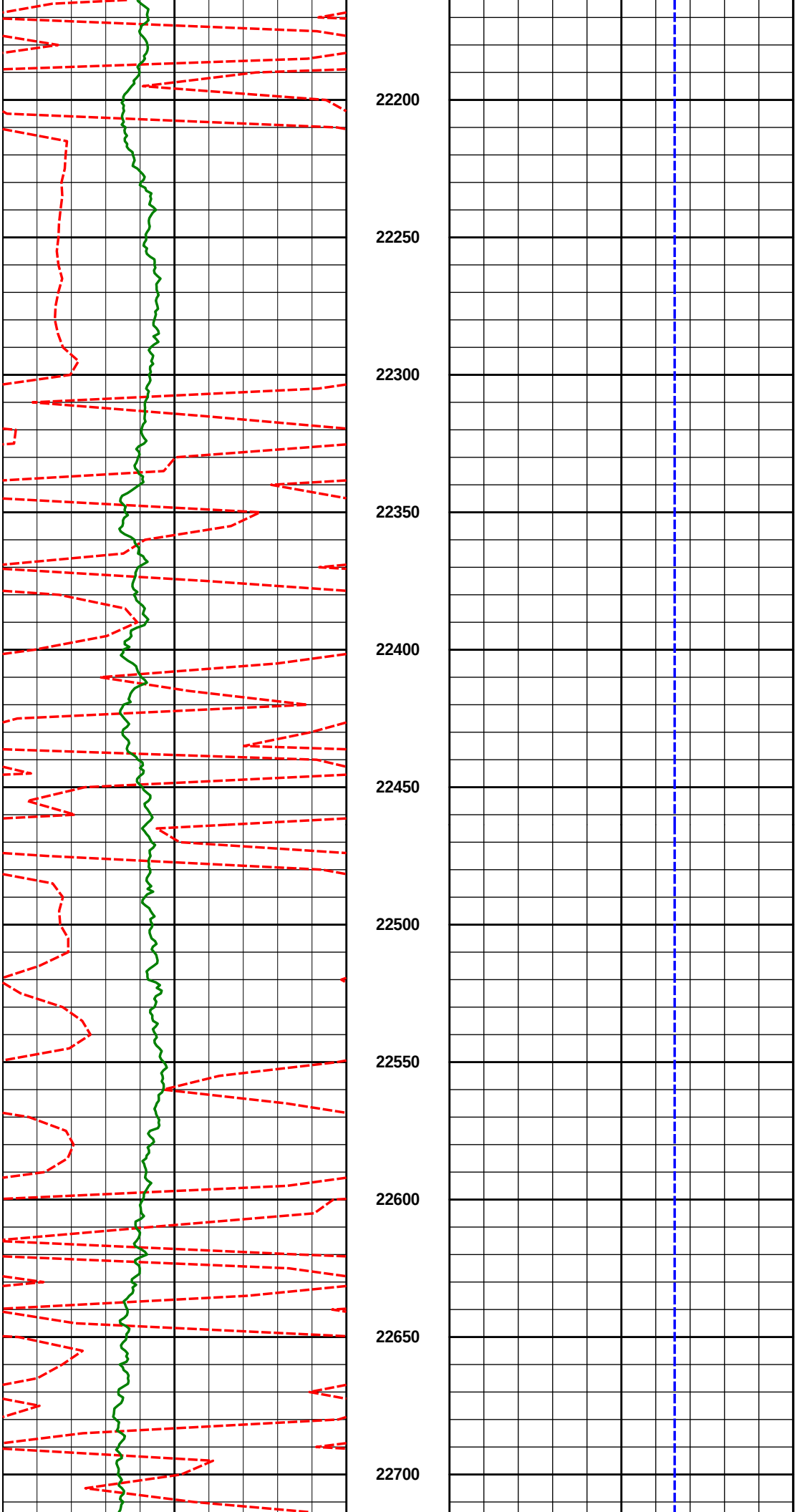
21742.00' MD 89.86° INC 180.65° AZ
7857.80' TVD 9692.24' VS 0.14DL

21831.00' MD 89.58° INC 180.08° AZ
7858.23' TVD 9777.58' VS 0.72DL

21920.00' MD 89.69° INC 180.77° AZ
7858.80' TVD 9862.90' VS 0.79DL

22009.00' MD 89.81° INC 179.78° AZ
7859.18' TVD 9948.28' VS 1.12DL

22099.00' MD 89.58° INC 180.01° AZ
7859.65' TVD 10034.78' VS 0.36DL



22187.00' MD 89.83° INC 180.98° A
7860.10' TVD 10119.10' VS 1.14DL

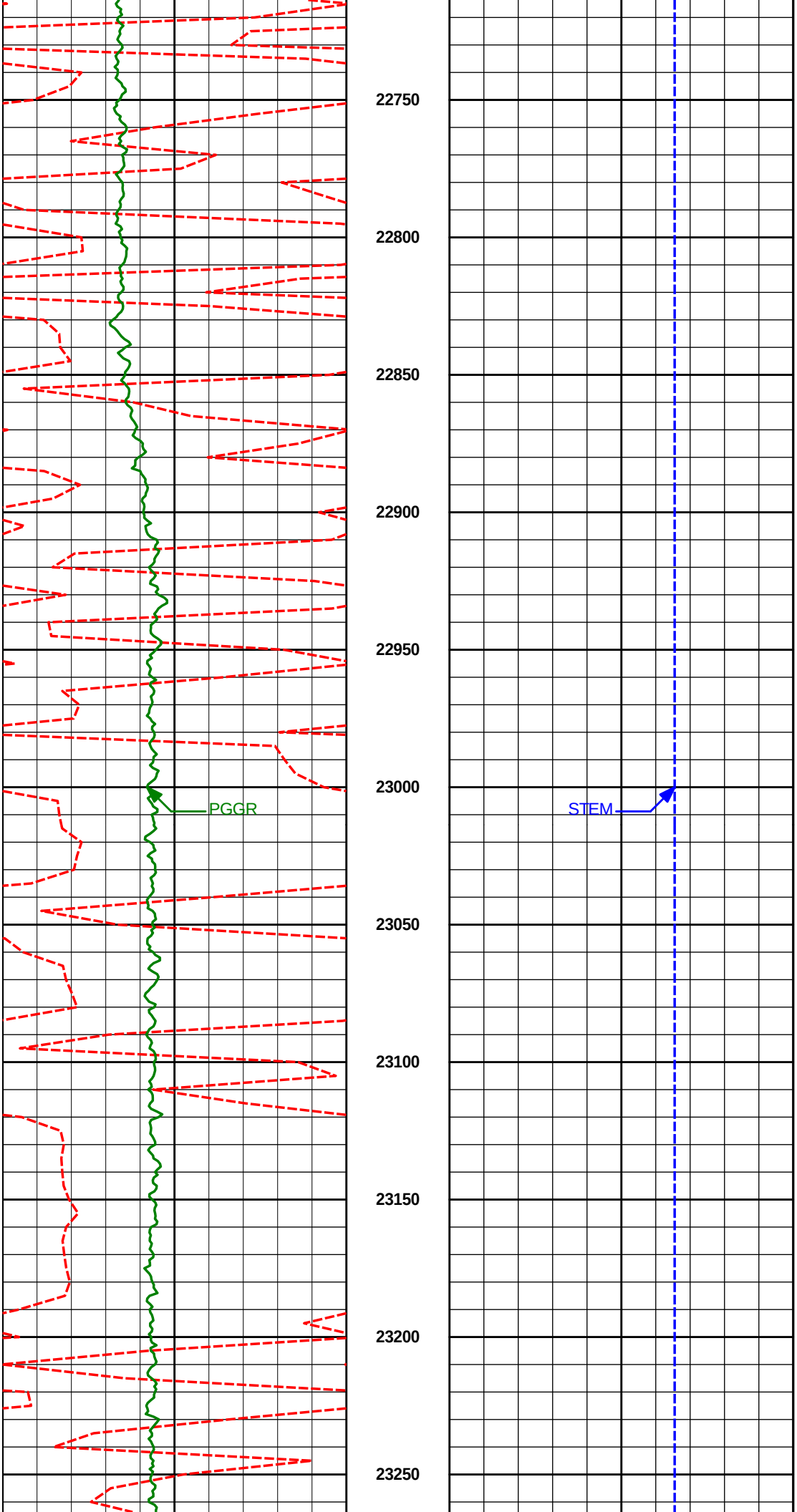
22276.00' MD 89.76° INC 180.06° A
7860.42' TVD 10204.37' VS 1.04DL

22365.00' MD 89.95° INC 180.92° A
7860.64' TVD 10289.66' VS 1.00DL

22454.00' MD 89.68° INC 179.22° A
7860.93' TVD 10375.12' VS 1.94DL

22543.00' MD 89.88° INC 180.54° A
7861.27' TVD 10460.67' VS 1.50DL

22633.00' MD 89.82° INC 180.74° A
7861.50' TVD 10546.85' VS 0.22DL



22722.00' MD 90.39° INC 180.67° A
7861.34' TVD 10632.04' VS 0.64DL

22811.00' MD 89.92° INC 178.83° A
7861.10' TVD 10717.64' VS 2.13DL

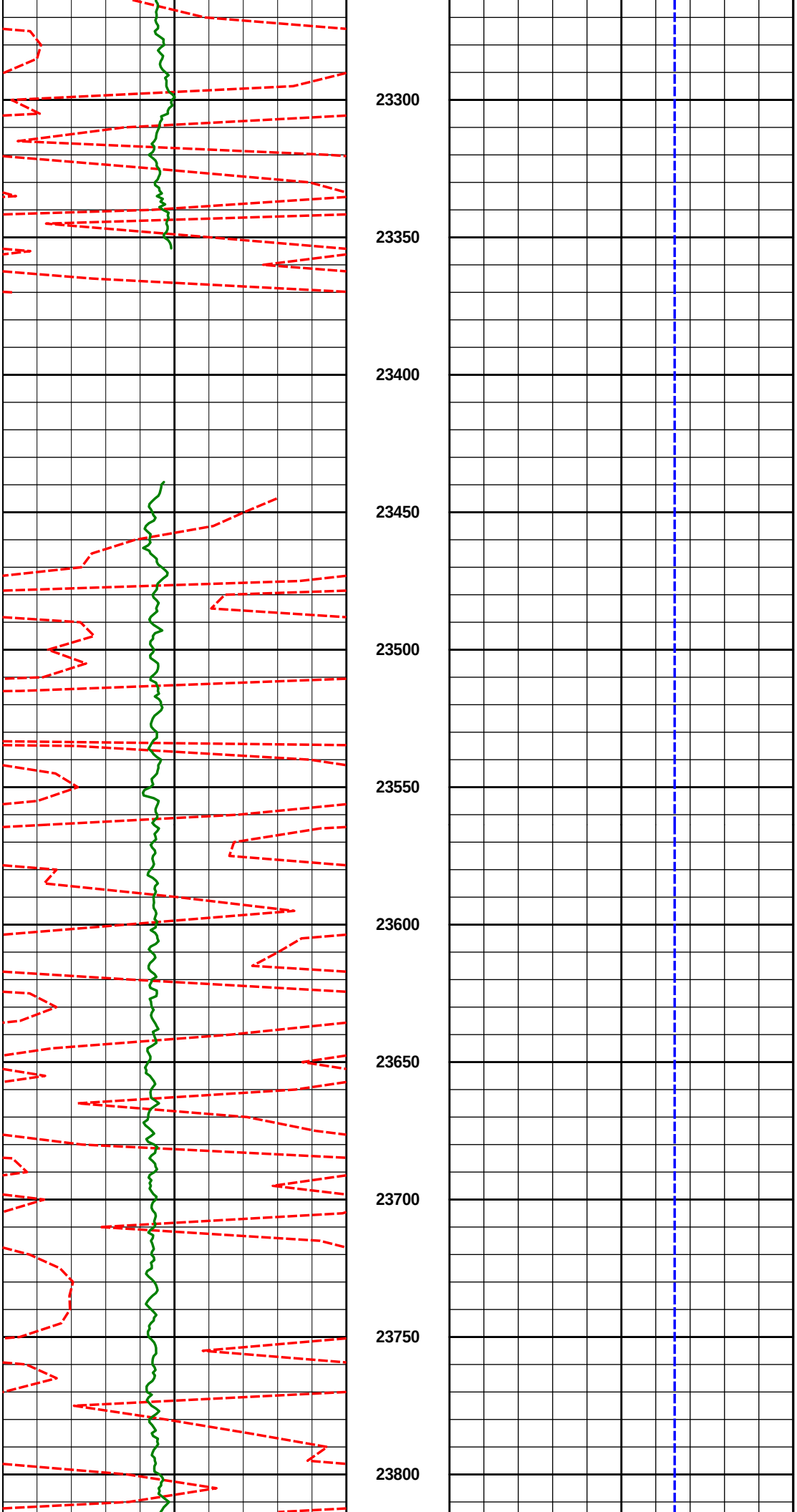
22900.00' MD 90.35° INC 180.32° A
7860.89' TVD 10803.32' VS 1.74DL

22989.00' MD 90.19° INC 179.55° A
7860.48' TVD 10888.85' VS 0.88DL

23077.00' MD 90.19° INC 179.28° A
7860.19' TVD 10973.63' VS 0.32DL

23166.00' MD 90.32° INC 179.14° A
7859.79' TVD 11059.47' VS 0.21DL

23256.00' MD 89.87° INC 180.48° A
7859.65' TVD 11146.01' VS 1.57DL



23345.00' MD 89.98° INC 179.18° AZ
7859.76' TVD 11231.58' VS 1.47DL

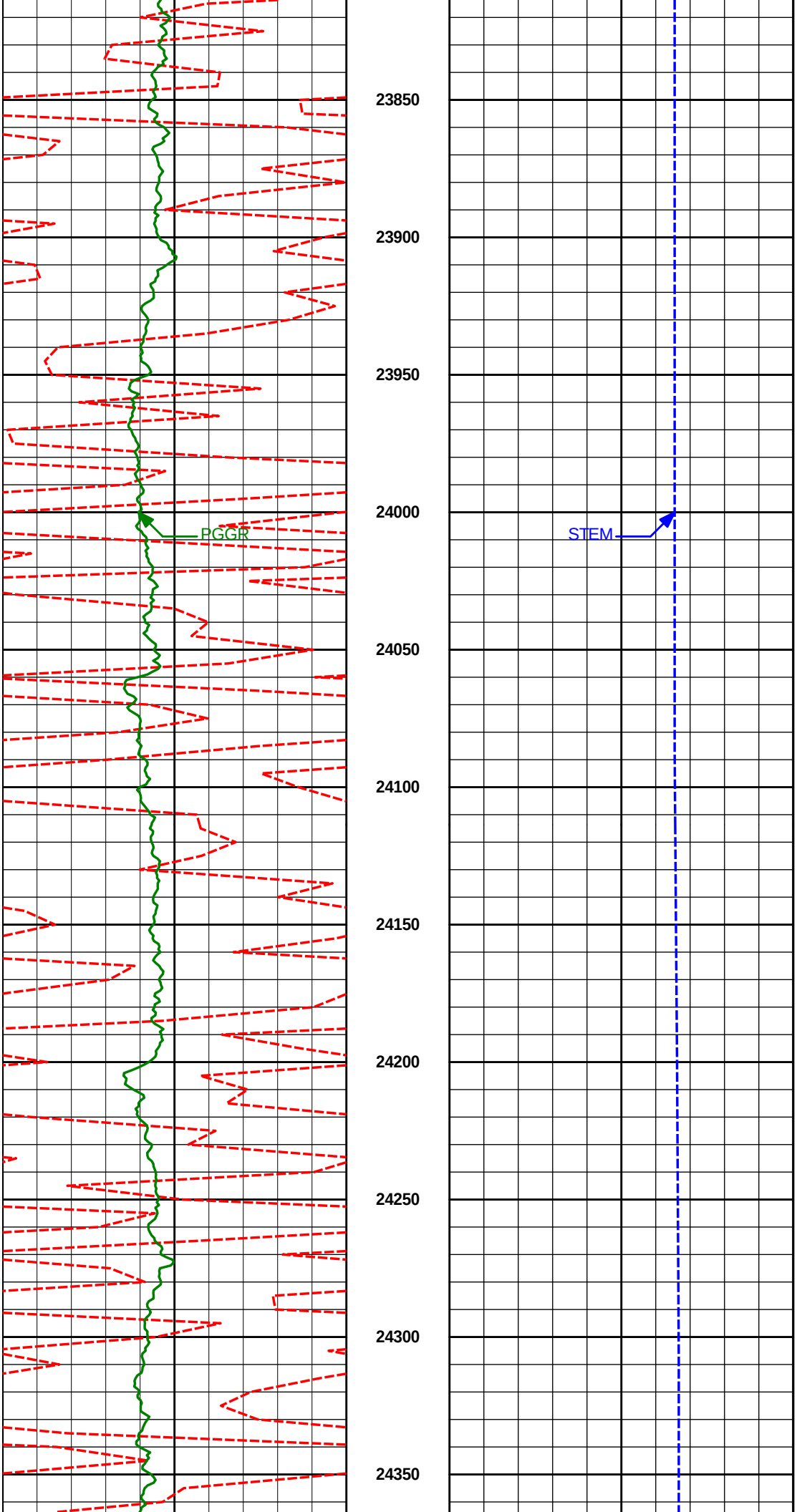
23434.00' MD 89.88° INC 179.27° AZ
7859.87' TVD 11317.40' VS 0.16DL

23523.00' MD 89.92° INC 178.70° AZ
7860.03' TVD 11403.33' VS 0.64DL

23612.00' MD 90.02° INC 179.91° AZ
7860.08' TVD 11489.12' VS 1.36DL

23701.00' MD 90.08° INC 179.41° AZ
7860.00' TVD 11574.76' VS 0.57DL

23790.00' MD 90.10° INC 178.91° AZ
7859.85' TVD 11660.62' VS 0.56DL



23879.00' MD 90.03° INC 179.86° A
7859.75' TVD 11746.38' VS 1.06DL

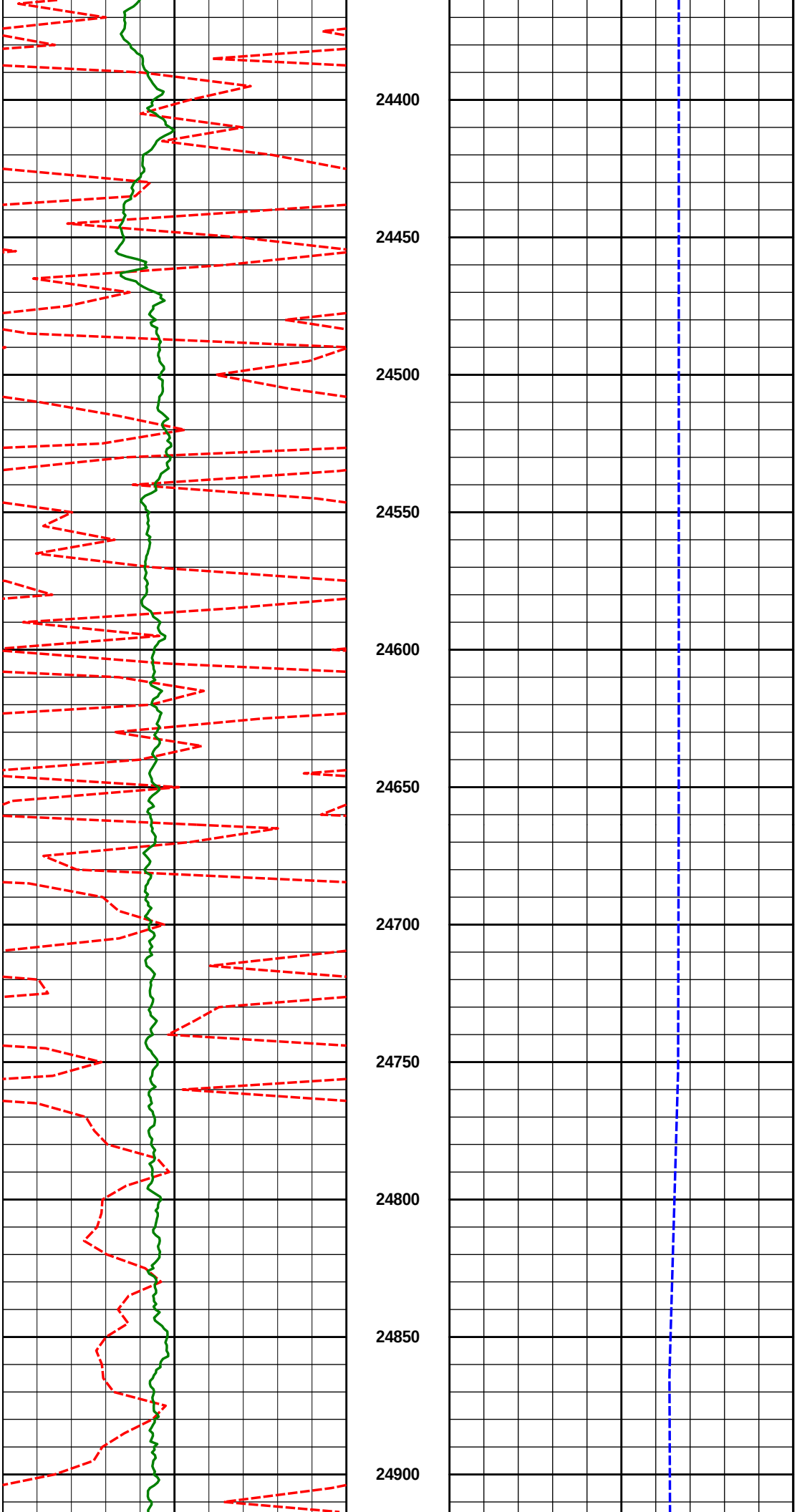
23968.00' MD 89.91° INC 179.16° A
7859.79' TVD 11832.08' VS 0.79DL

24057.00' MD 89.98° INC 179.83° A
7859.87' TVD 11917.80' VS 0.76DL

24147.00' MD 89.99° INC 179.15° A
7859.89' TVD 12004.48' VS 0.76DL

24236.00' MD 90.16° INC 180.22° A
7859.77' TVD 12090.11' VS 1.22DL

24325.00' MD 89.98° INC 178.44° A
7859.66' TVD 12175.89' VS 2.01DL



24414.00' MD 90.03° INC 181.29° AZ
7859.66' TVD 12261.44' VS 3.20DL

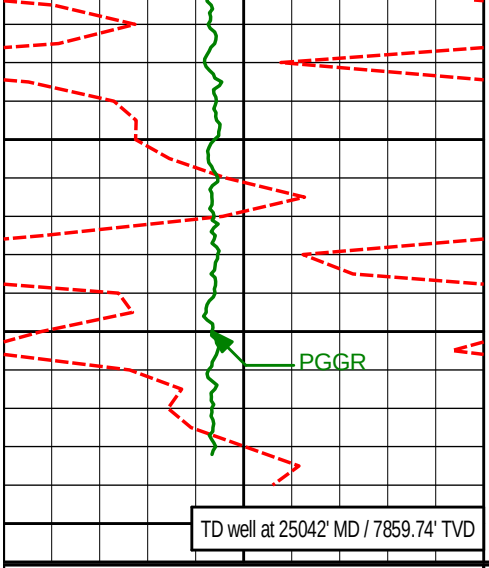
24503.00' MD 89.93° INC 178.81° AZ
7859.69' TVD 12346.91' VS 2.78DL

24592.00' MD 89.98° INC 179.95° AZ
7859.76' TVD 12432.67' VS 1.28DL

24680.00' MD 89.88° INC 181.35° AZ
7859.86' TVD 12516.93' VS 1.59DL

24770.00' MD 89.90° INC 178.90° AZ
7860.03' TVD 12603.33' VS 2.72DL

24858.00' MD 89.89° INC 180.38° AZ
7860.19' TVD 12688.02' VS 1.68DL



24950

25000

25050

24947.00' MD 90.26° INC 178.63° AZ
7860.08' TVD 12773.73' VS 2.01DL

25024.00' MD 90.17° INC 178.88° AZ
7859.79' TVD 12848.15' VS 0.34DL

25042.00' MD 90.17° INC 178.88° AZ
7859.74' TVD 12865.53' VS 0.00DL

Rate of Penetration | **MD** | **Temperature** | **Surveys**

ROPA | **ft** | **STEM**

500 feet per hr 0 | 1 : 600 | 100 fahrenheit 400

Gamma Ray

PGGR

0 api 300

Final LWD Data - Field Copy

Extraction

HALLIBURTON
Sperry Drilling

Well: Interchange B S22-30-20N

Scale 1:240 MD

Plot Range: 11976 ft to 25050 ft

Gamma Ray

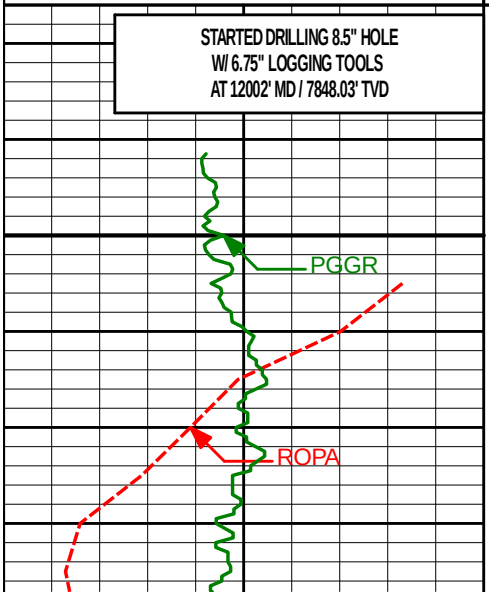
PGGR

0 api 300

Rate of Penetration | **MD** | **Temperature** | **Surveys**

ROPA | **ft** | **STEM**

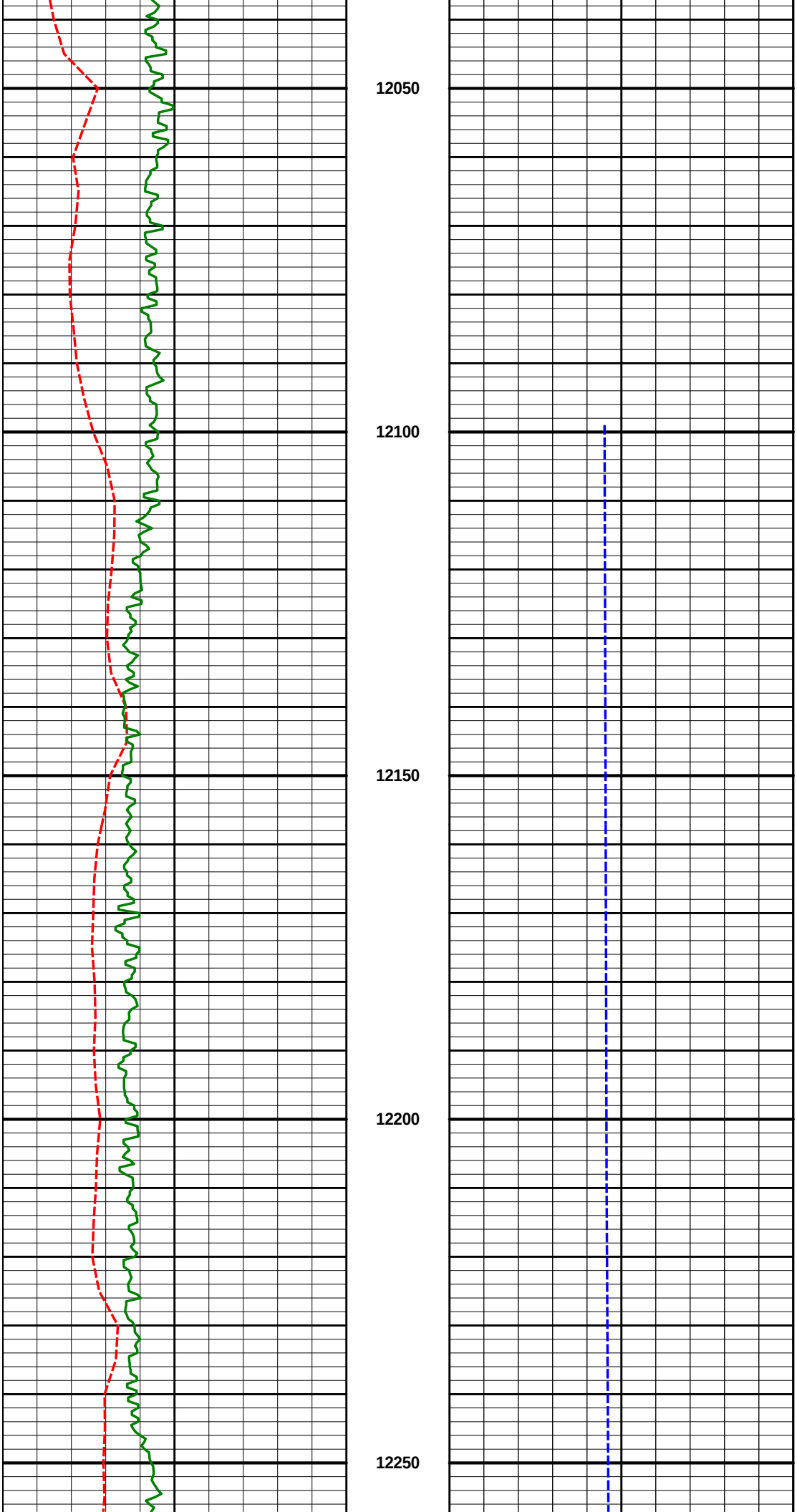
500 feet per hr 0 | 1 : 240 | 100 fahrenheit 400



12000

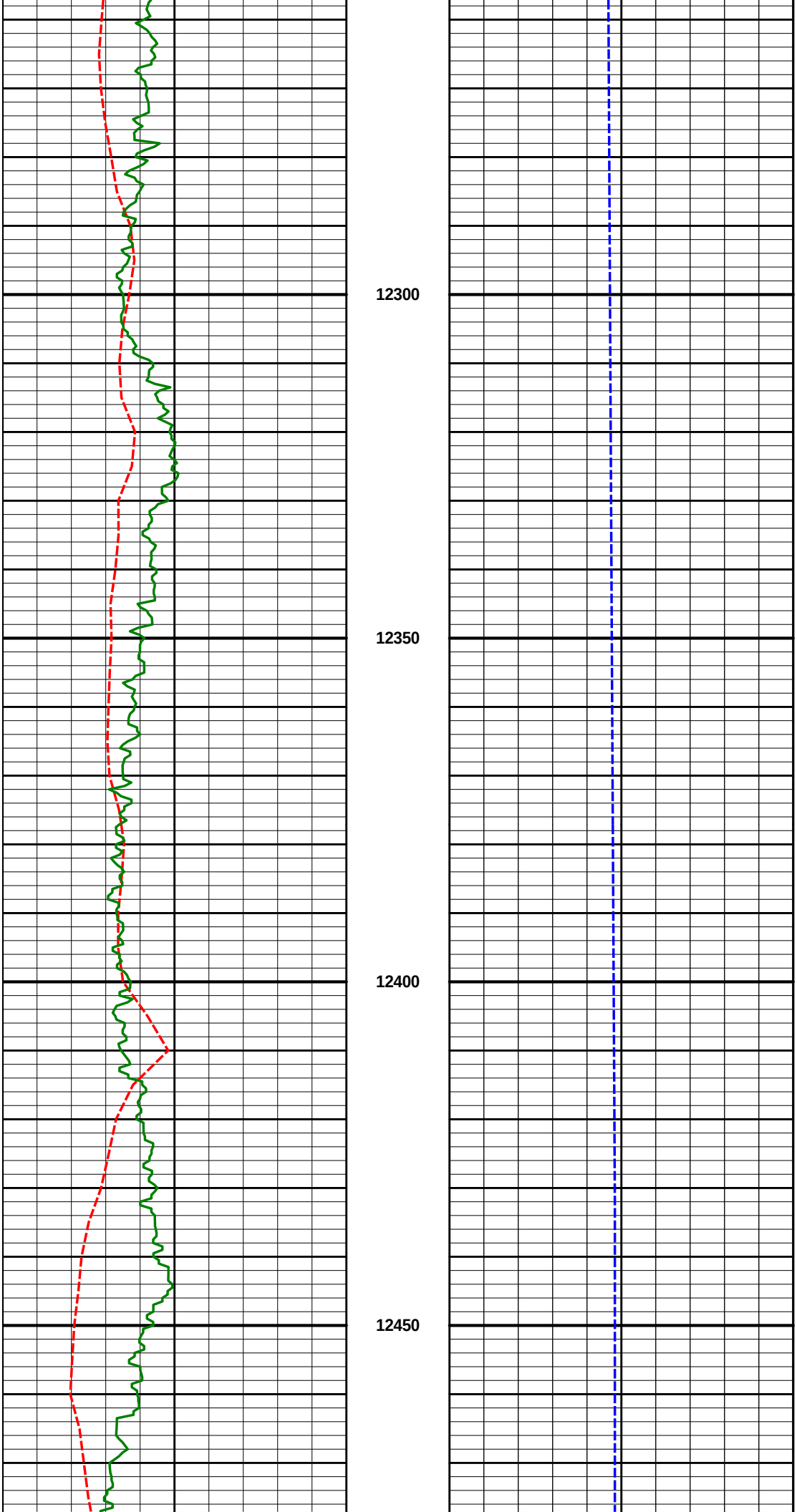
<Run 200>

12035.00' MD 90.71° INC 180.50° AZ
7845.21' TVD 360.69' VS 0.70DL



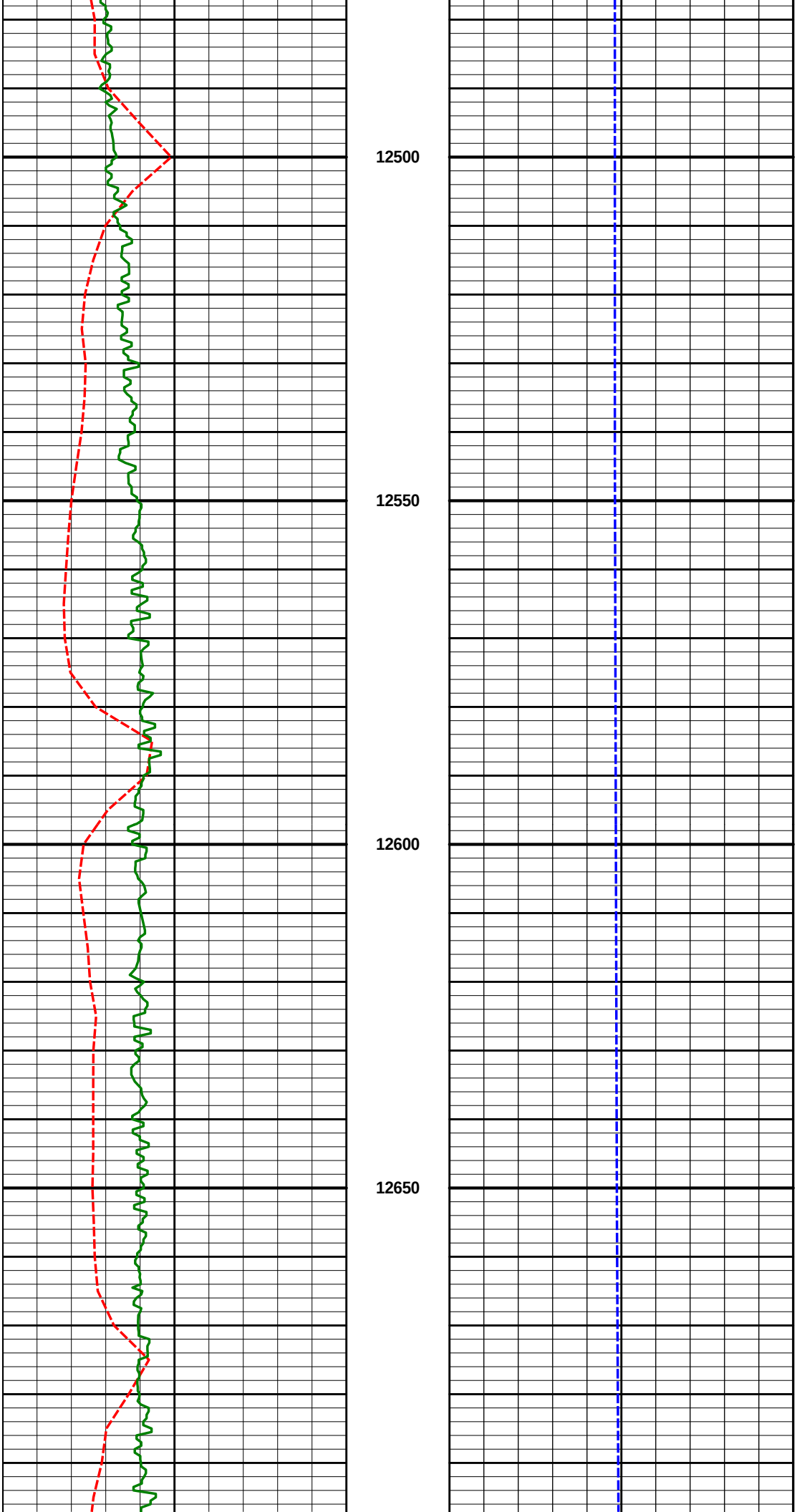
12124.00' MD 89.98° INC 178.94° AZ
7844.67' TVD 446.31' VS 1.93DL

12213.00' MD 90.21° INC 179.25° AZ
7844.52' TVD 532.19' VS 0.43DL



12302.00' MD 90.19° INC 179.56° AZ
7844.21' TVD 617.94' VS 0.35DL

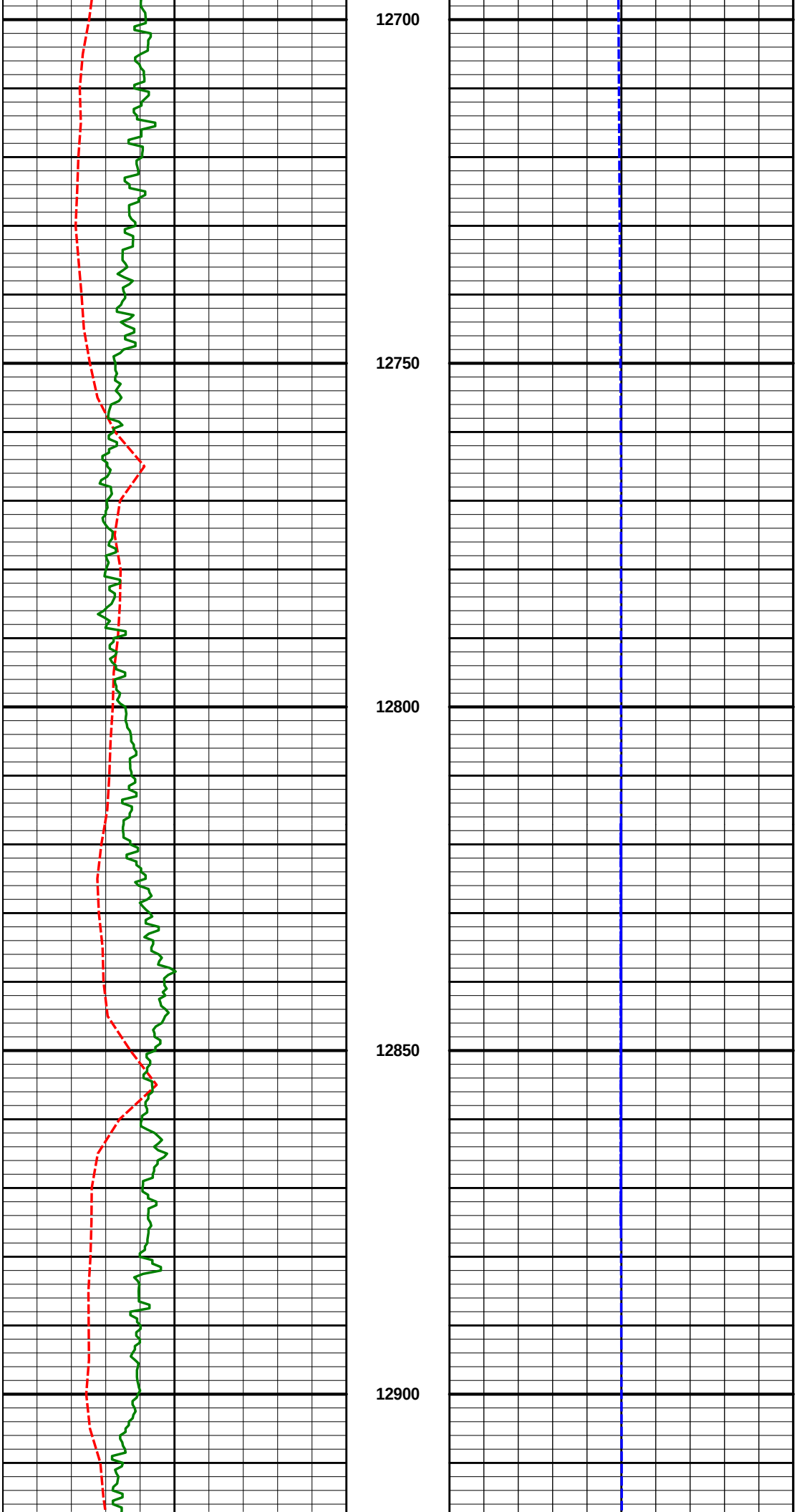
12391.00' MD 89.87° INC 179.27° AZ
7844.16' TVD 703.68' VS 0.49DL



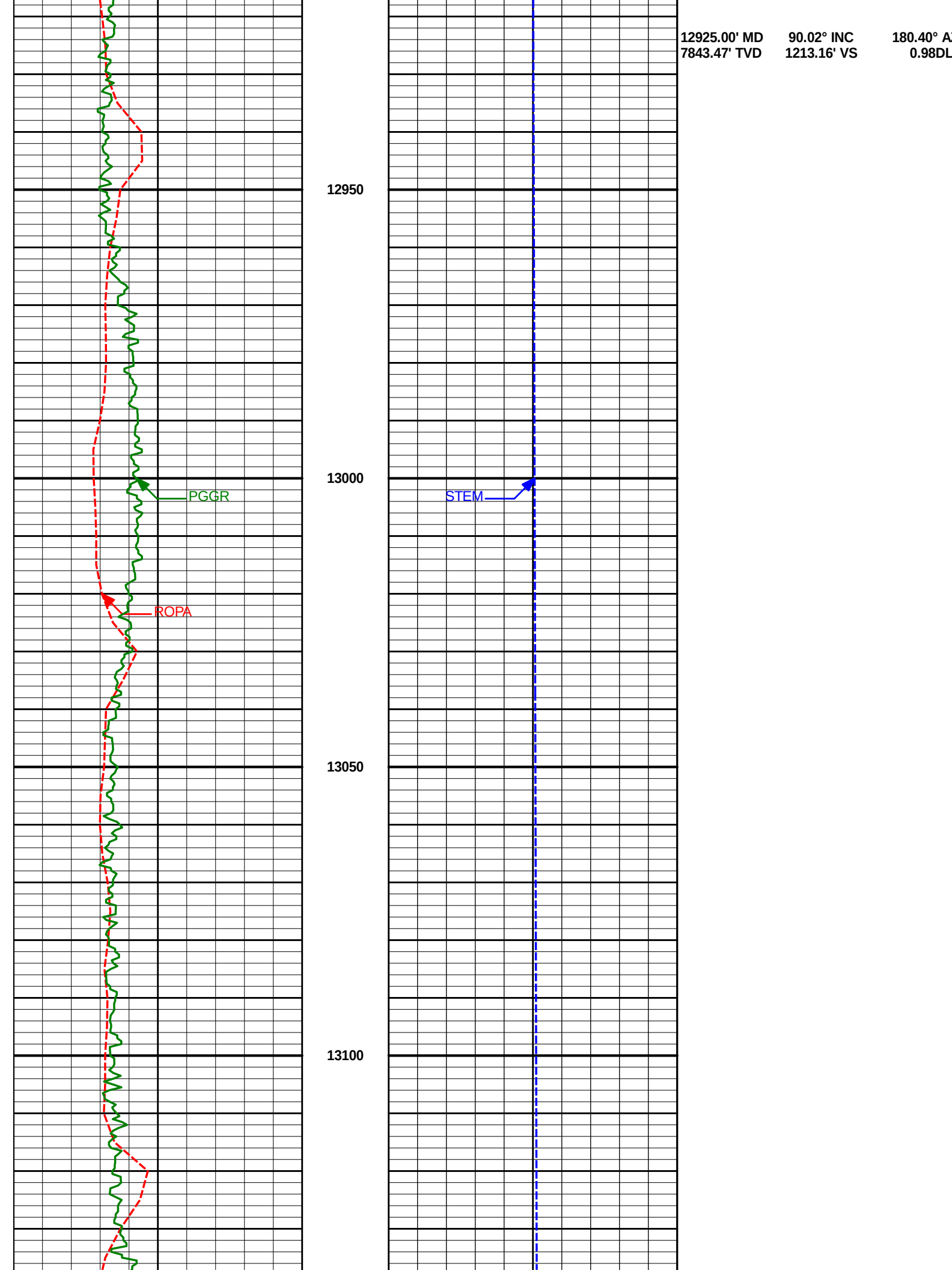
12480.00' MD 89.96° INC 181.94° A
7844.29' TVD 788.91' VS 2.99DL

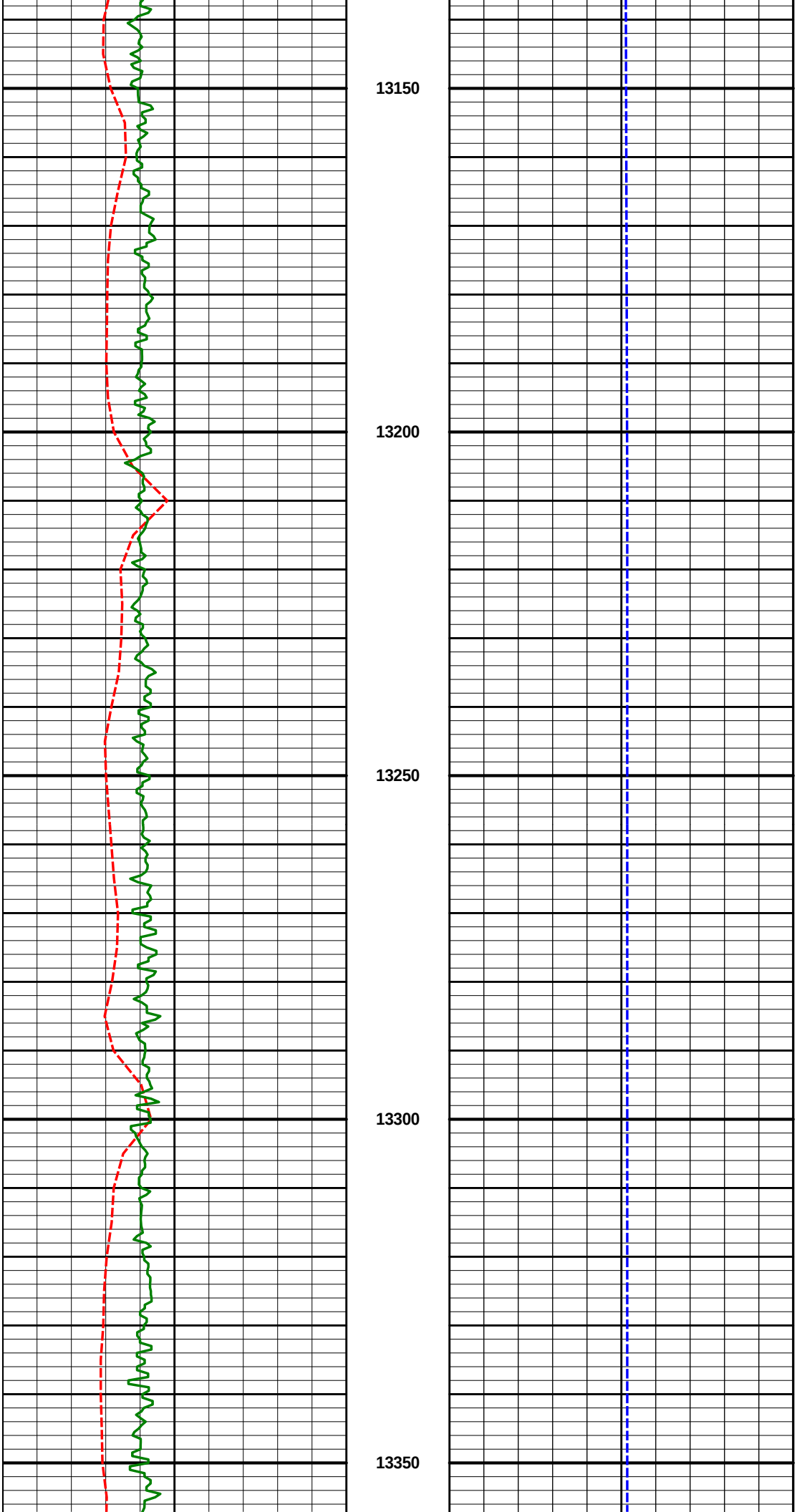
12569.00' MD 90.05° INC 182.23° A
7844.28' TVD 873.46' VS 0.35DL

12658.00' MD 90.15° INC 181.28° A
7844.12' TVD 958.16' VS 1.07DL

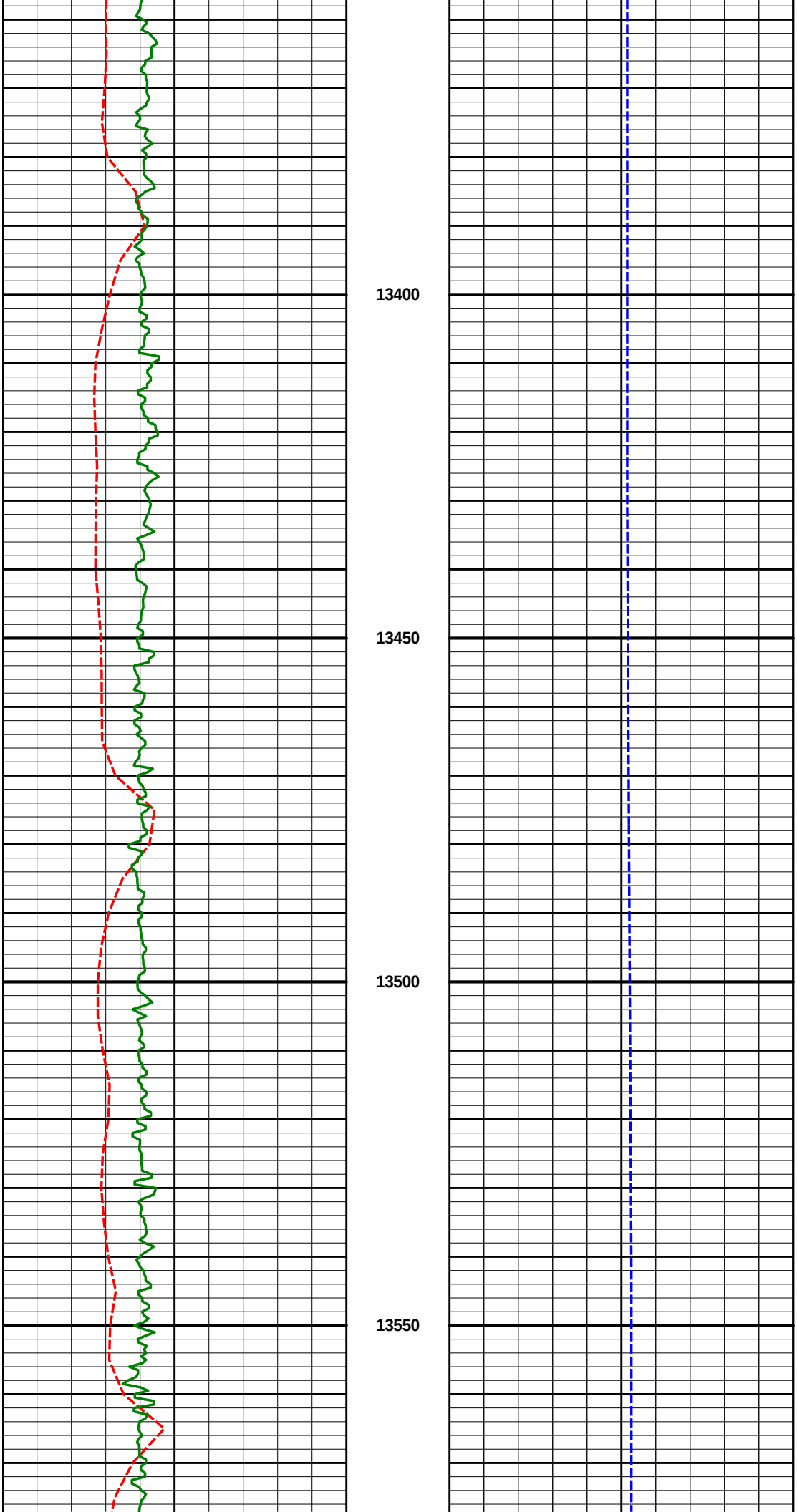


12836.00' MD 90.18° INC 181.25° AZ
7843.62' TVD 1128.02' VS 0.02DL


12925.00' MD
90.02° INC
180.40° AZ
7843.47' TVD
1213.16' VS
0.98DL
12950
13000
13050
13100
PGGR
ROPA
STEM



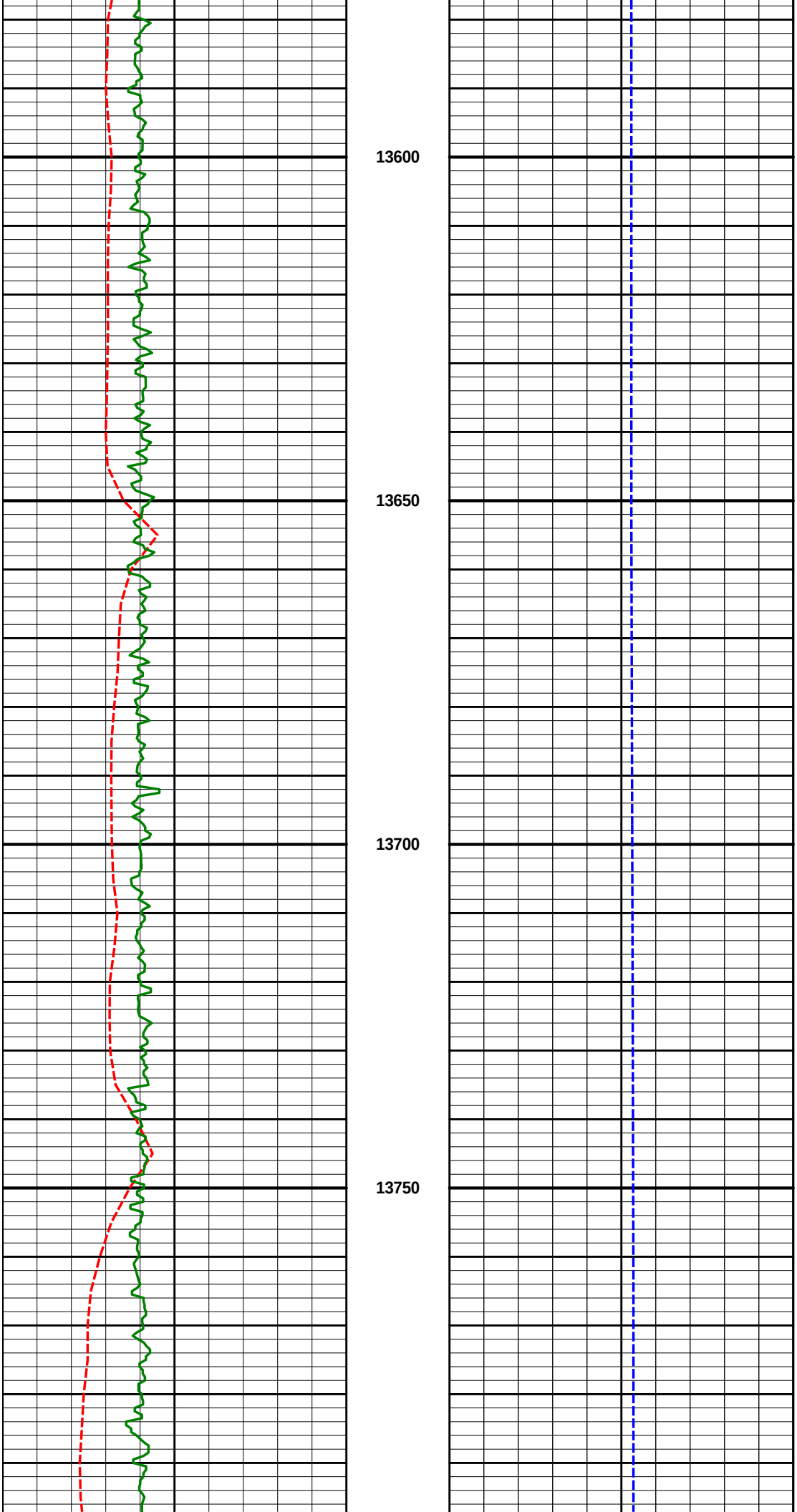
13192.00' MD 90.05° INC 180.52° A
7843.31' TVD 1469.06' VS 0.05DL



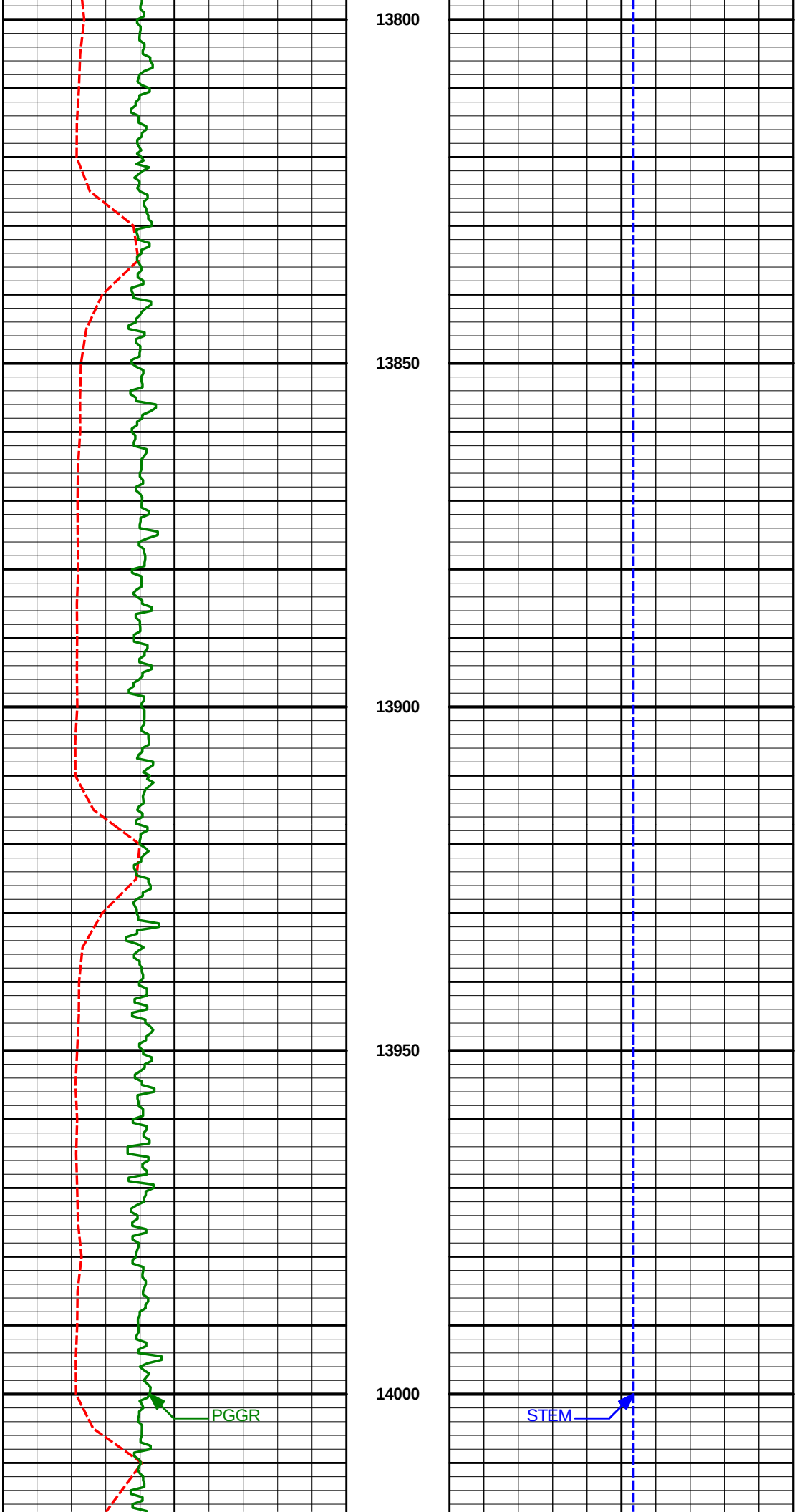
13370.00' MD 90.33° INC 176.08° AZ
7842.71' TVD 1641.41' VS 2.50DL

13459.00' MD 89.98° INC 177.86° AZ
7842.47' TVD 1728.10' VS 2.04DL

13548.00' MD 89.79° INC 181.26° AZ
7842.65' TVD 1813.77' VS 3.82DL



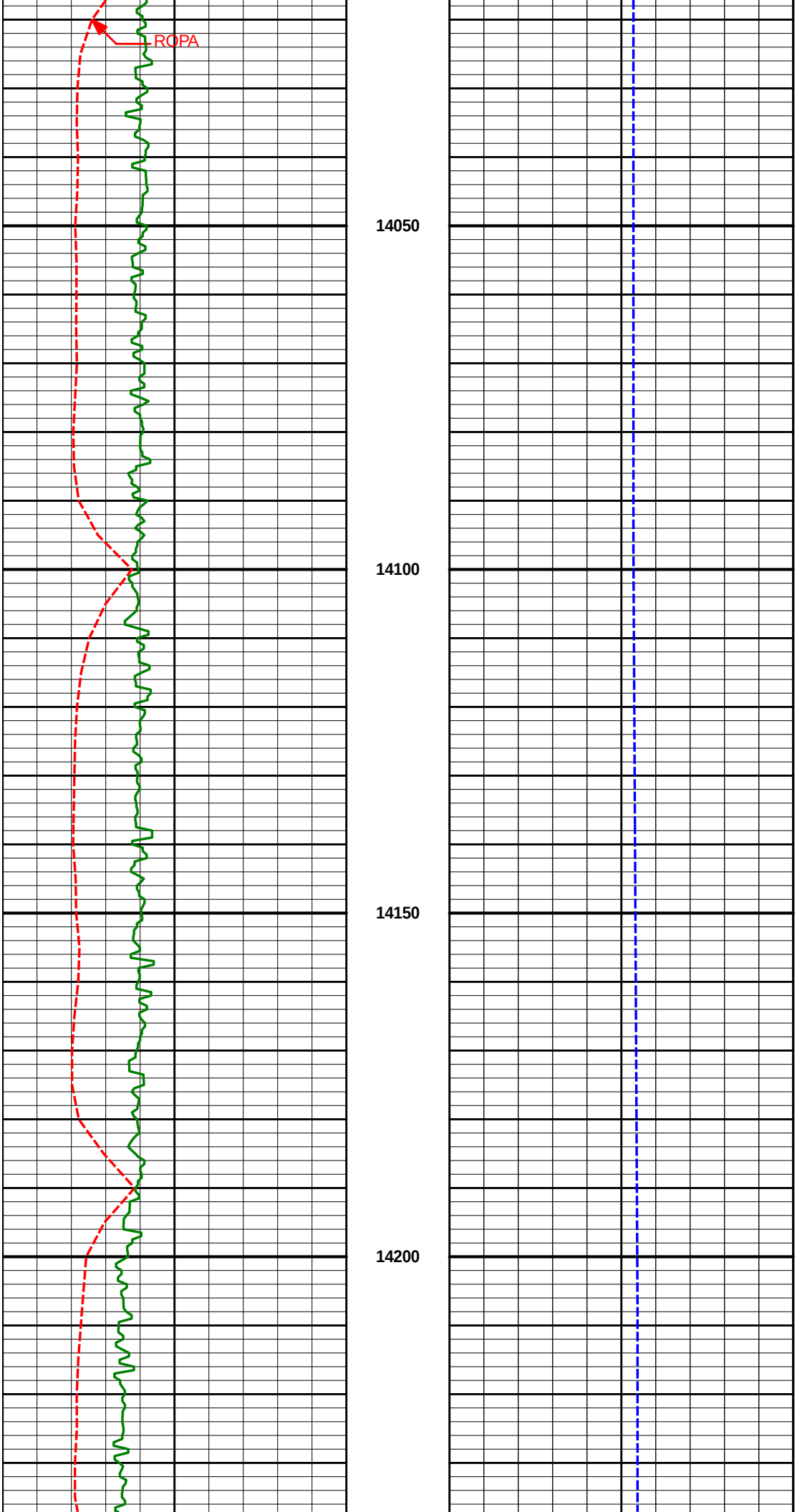
13727.00' MD 89.82° INC 182.43° A
7843.26' TVD 1984.04' VS 0.66DL



13816.00' MD 89.86° INC 181.19° A
7843.51' TVD 2068.72' VS 1.39DL

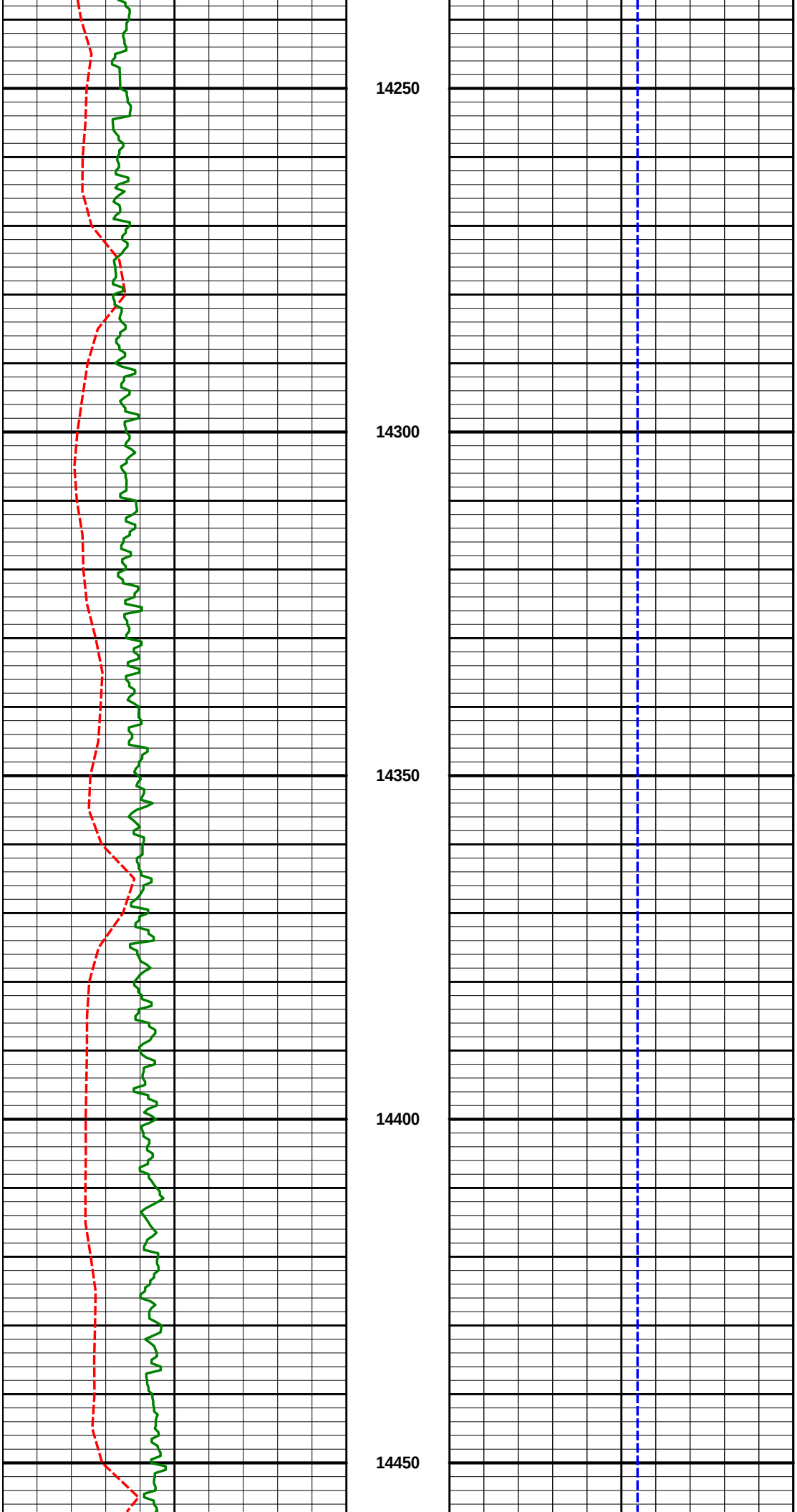
13905.00' MD 89.87° INC 180.94° A
7843.72' TVD 2153.75' VS 0.28DL

13994.00' MD 89.95° INC 180.20° A
7843.87' TVD 2239.00' VS 0.84DL



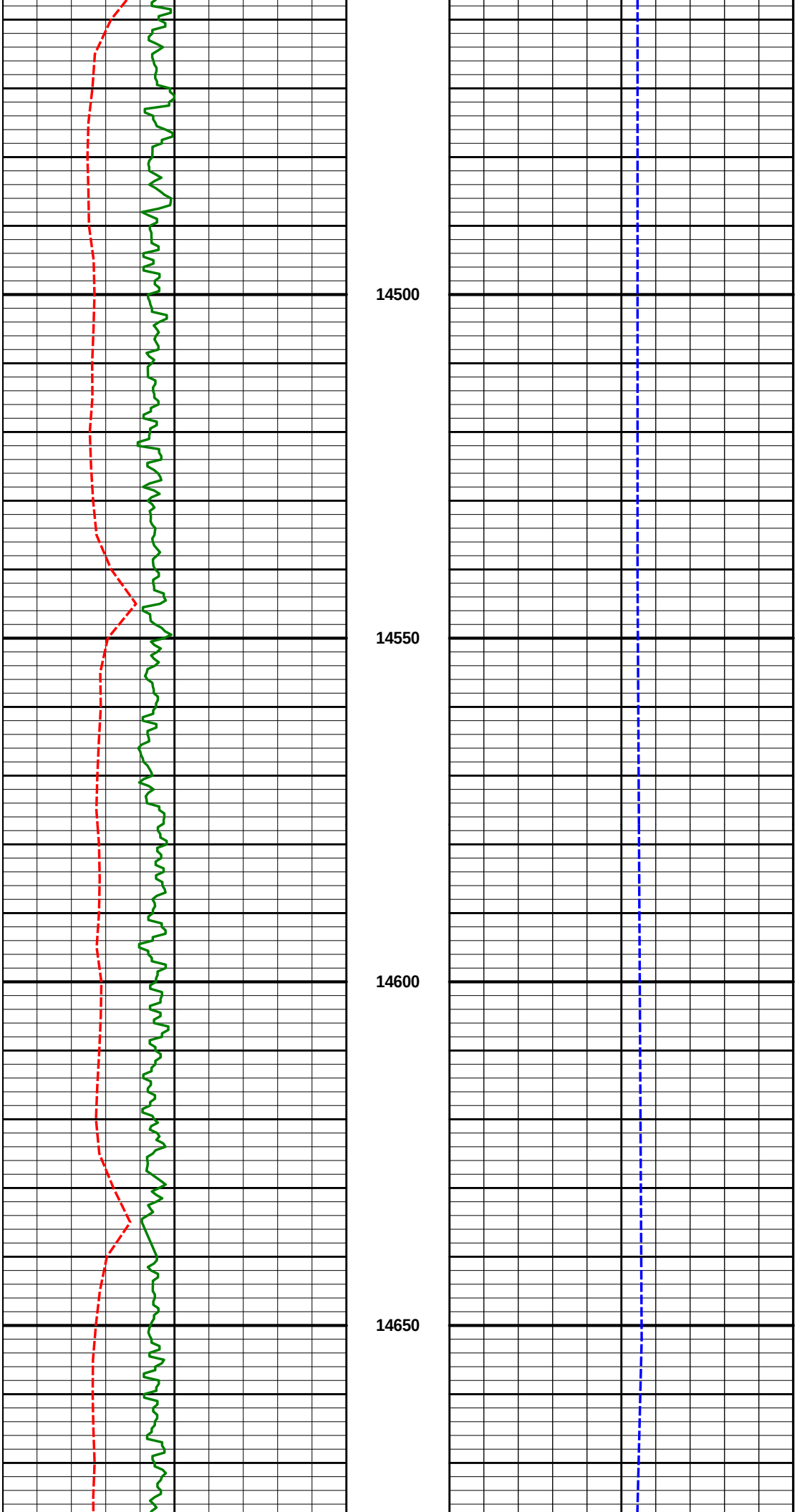
14083.00' MD 89.61° INC 181.14° AZ
7844.21' TVD 2324.20' VS 1.12DL

14172.00' MD 89.71° INC 180.37° AZ
7844.73' TVD 2409.37' VS 0.87DL

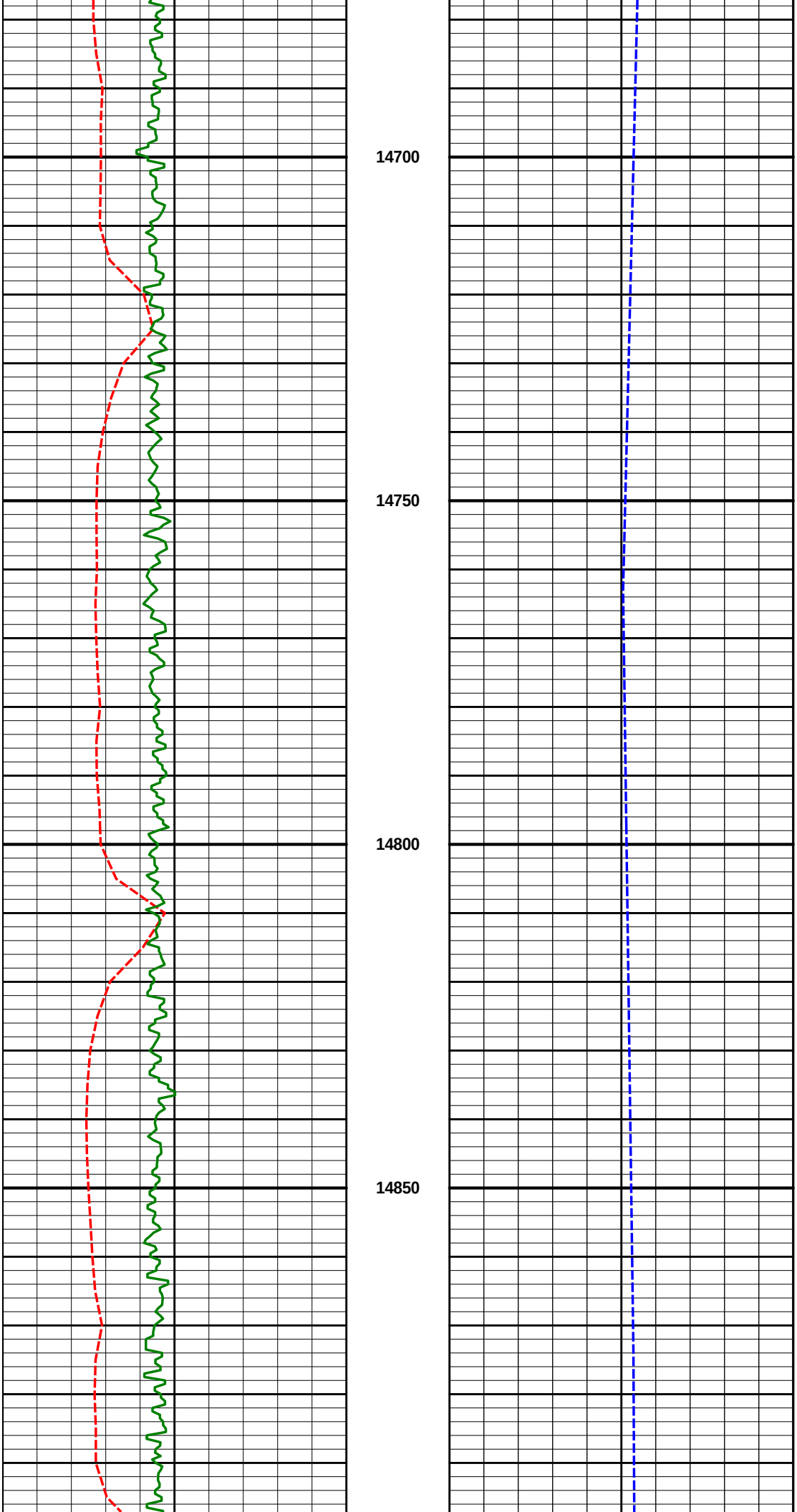


14350.00' MD 90.05° INC 178.05° AZ
7845.09' TVD 2581.02' VS 1.32DL

14439.00' MD 89.99° INC 179.15° AZ
7845.05' TVD 2667.10' VS 1.24DL

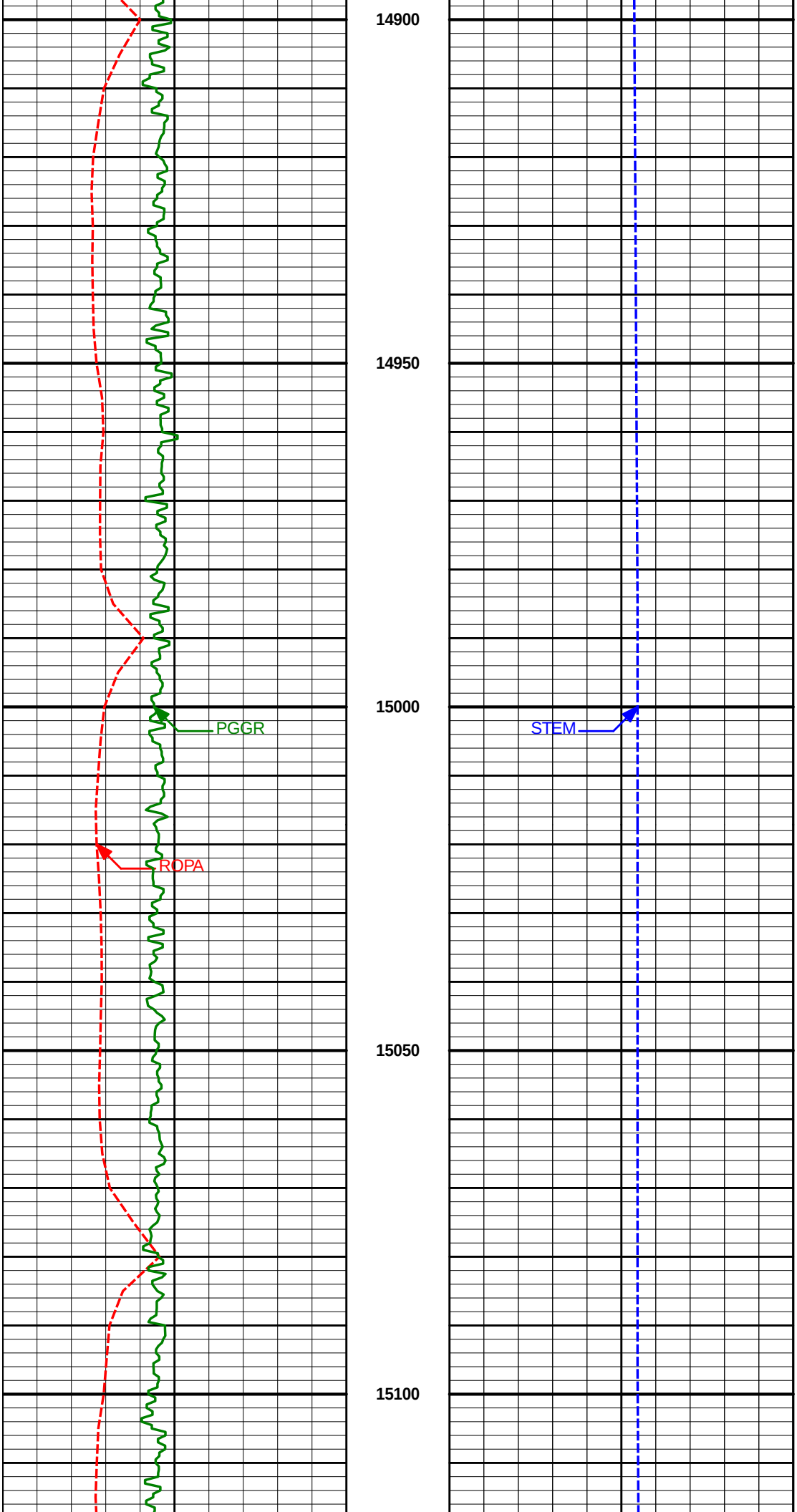


14618.00' MD 90.18° INC 181.10° A
7844.79' TVD 2838.95' VS 1.10DL



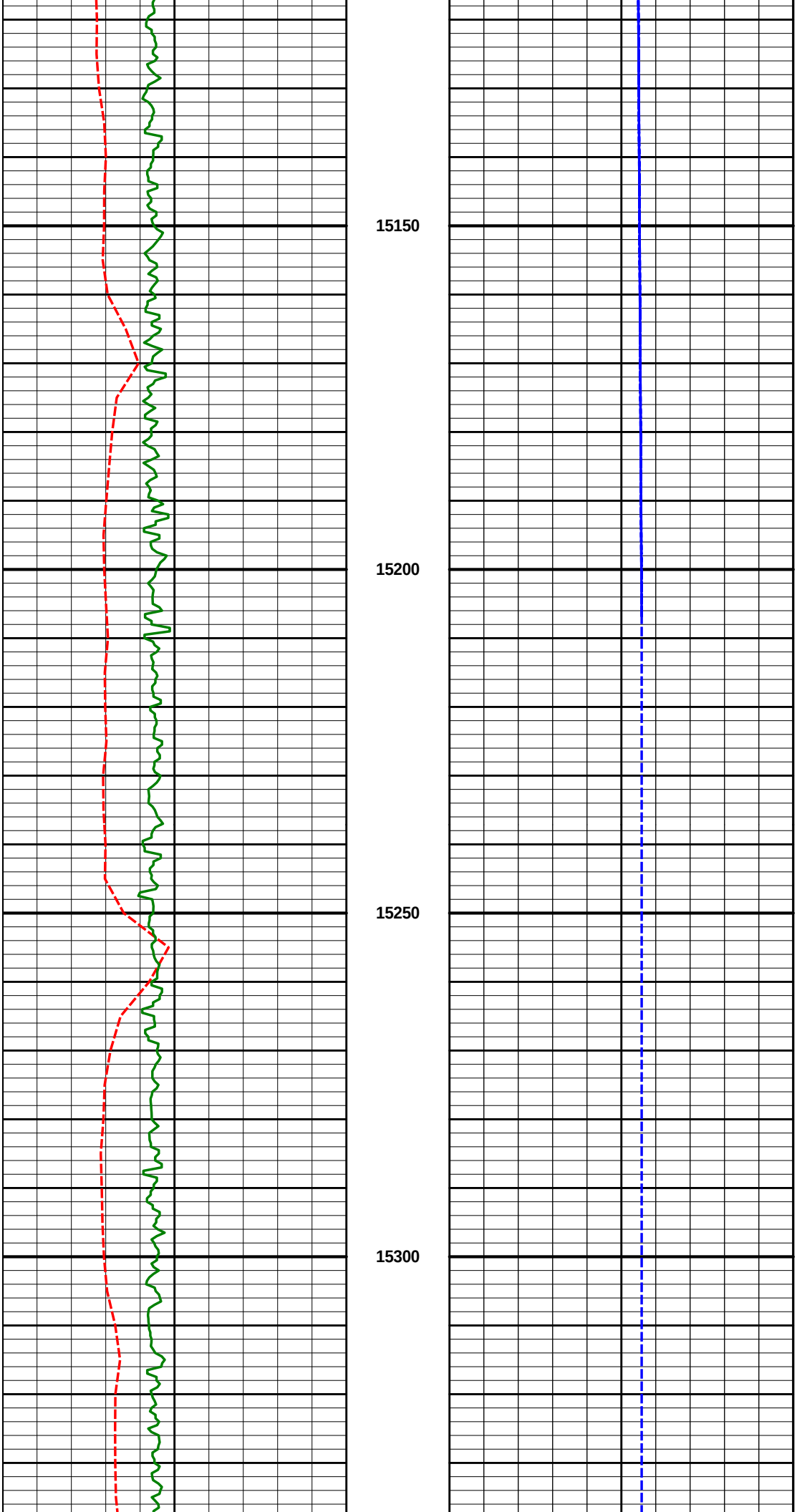
14707.00' MD 90.12° INC 179.68° AZ
7844.55' TVD 2924.28' VS 1.60DL

14796.00' MD 90.21° INC 179.63° AZ
7844.30' TVD 3009.93' VS 0.11DL



14974.00' MD 90.29° INC 177.76° AZ
7843.52' TVD 3182.01' VS 1.05DL

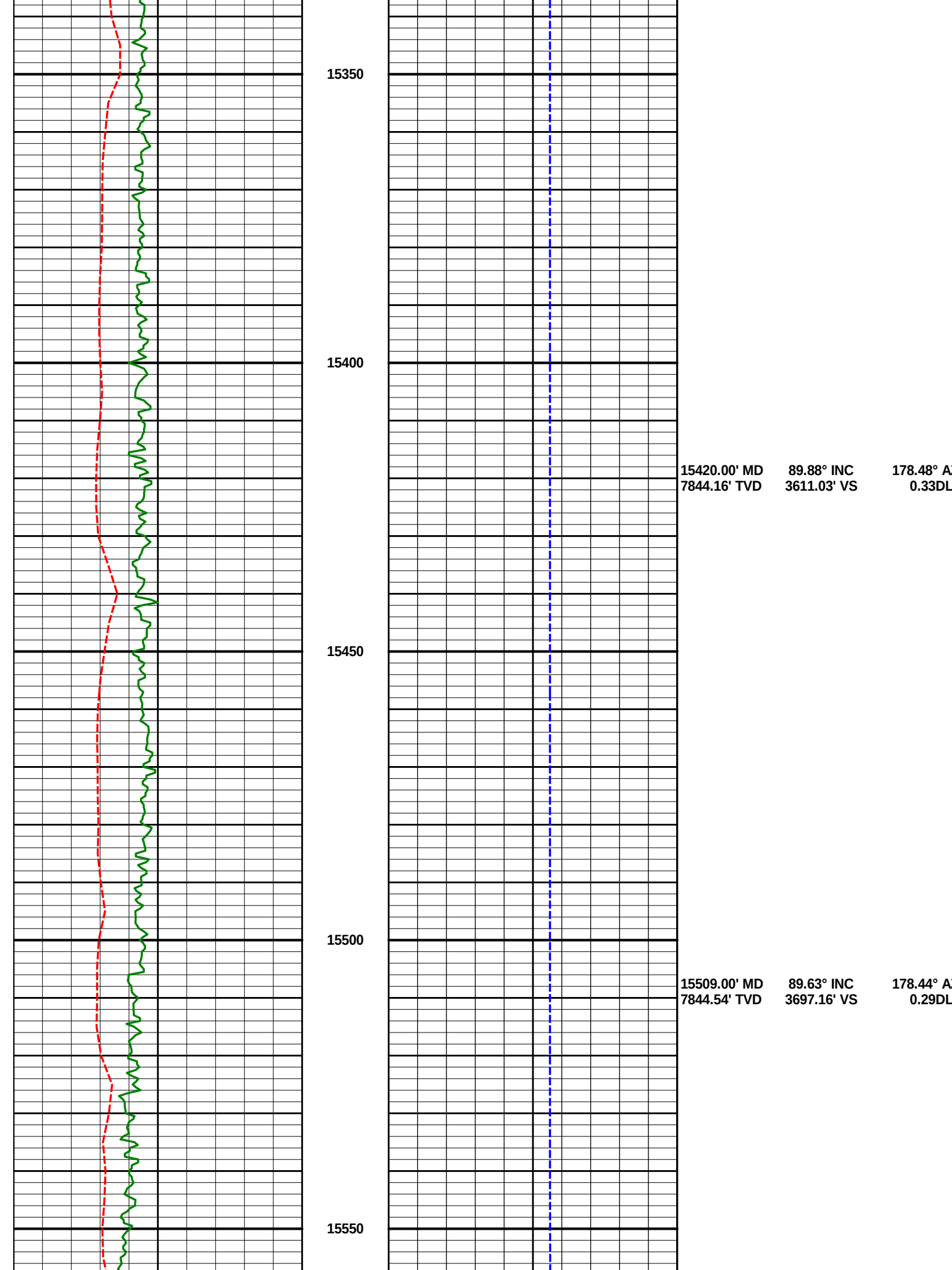
15063.00' MD 90.05° INC 180.37° AZ
7843.25' TVD 3267.89' VS 2.95DL

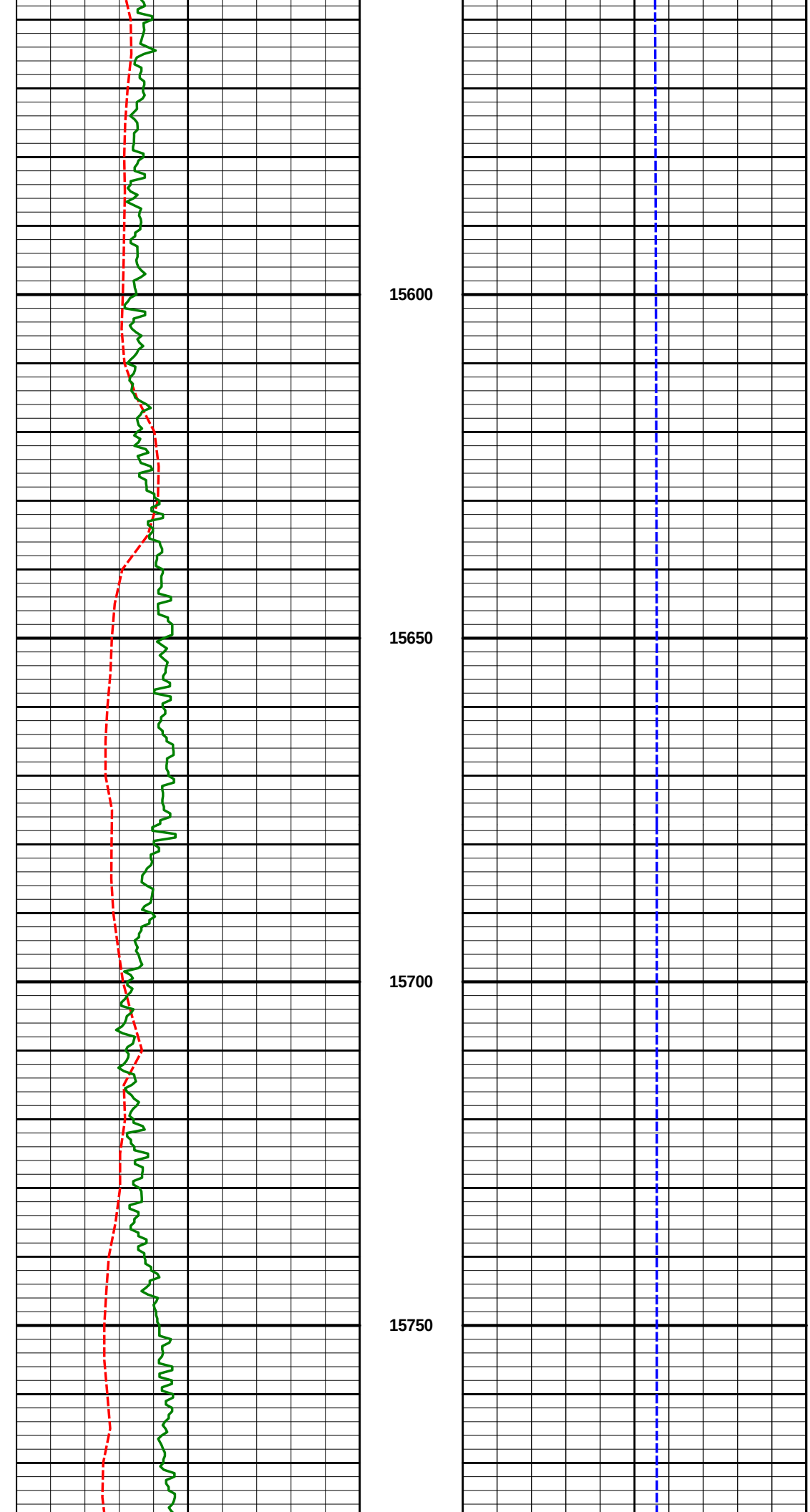


15153.00' MD 89.91° INC 180.70° AZ
7843.27' TVD 3354.11' VS 0.39DL

15242.00' MD 89.84° INC 181.06° AZ
7843.46' TVD 3439.22' VS 0.42DL

15331.00' MD 89.69° INC 178.26° AZ
7843.83' TVD 3524.86' VS 3.16DL

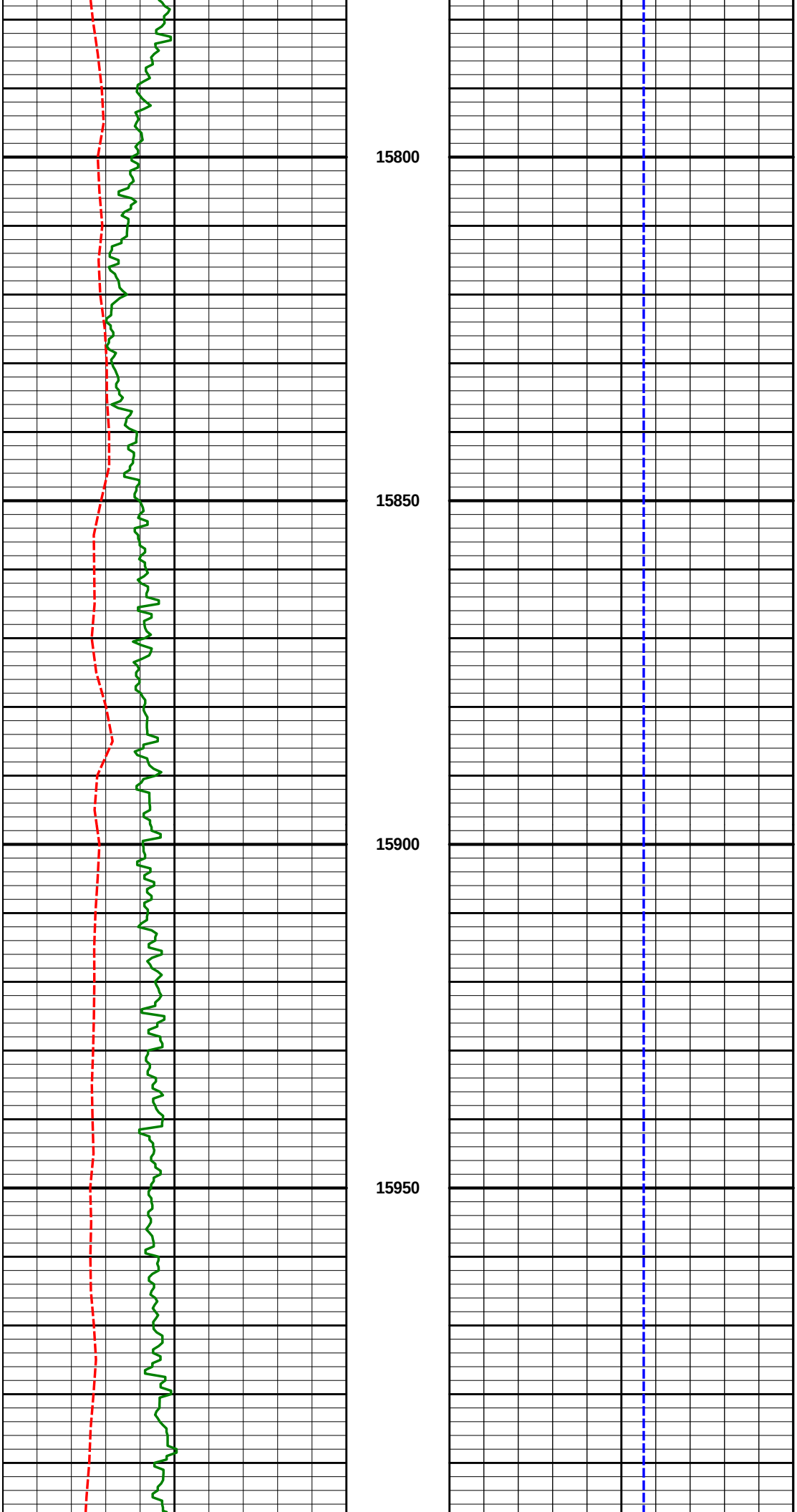

15350
15400
15420.00' MD
89.88° INC
178.48° A
7844.16' TVD
3611.03' VS
0.33DL
15450
15500
15509.00' MD
89.63° INC
178.44° A
7844.54' TVD
3697.16' VS
0.29DL
15550



15598.00' MD 89.65° INC 178.10° AZ
7845.09' TVD 3783.37' VS 0.39DL

15687.00' MD 89.61° INC 179.33° AZ
7845.67' TVD 3869.40' VS 1.39DL

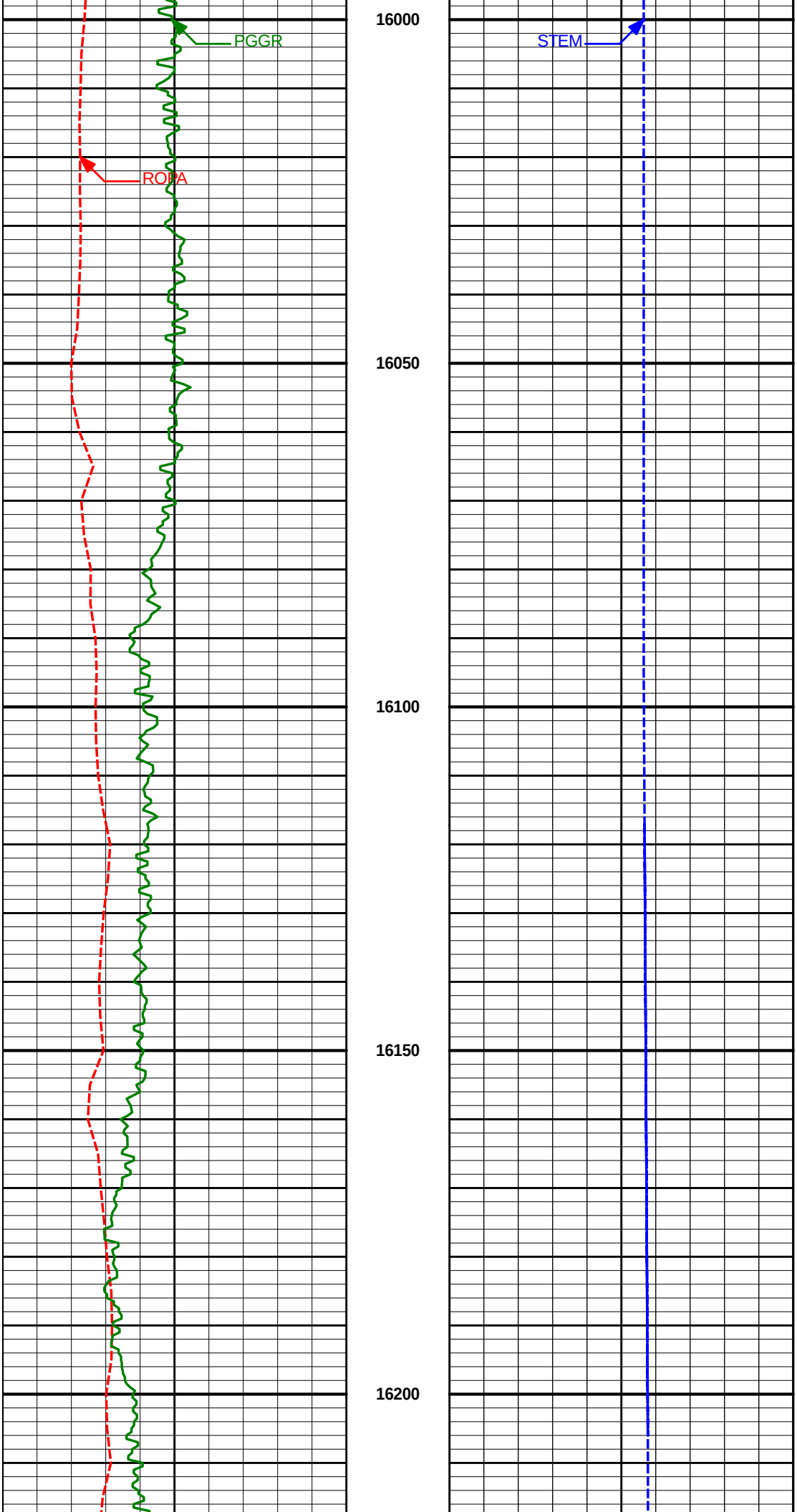
15776.00' MD 89.48° INC 178.14° AZ



7846.37' TVD 3955.42' VS 1.35DL

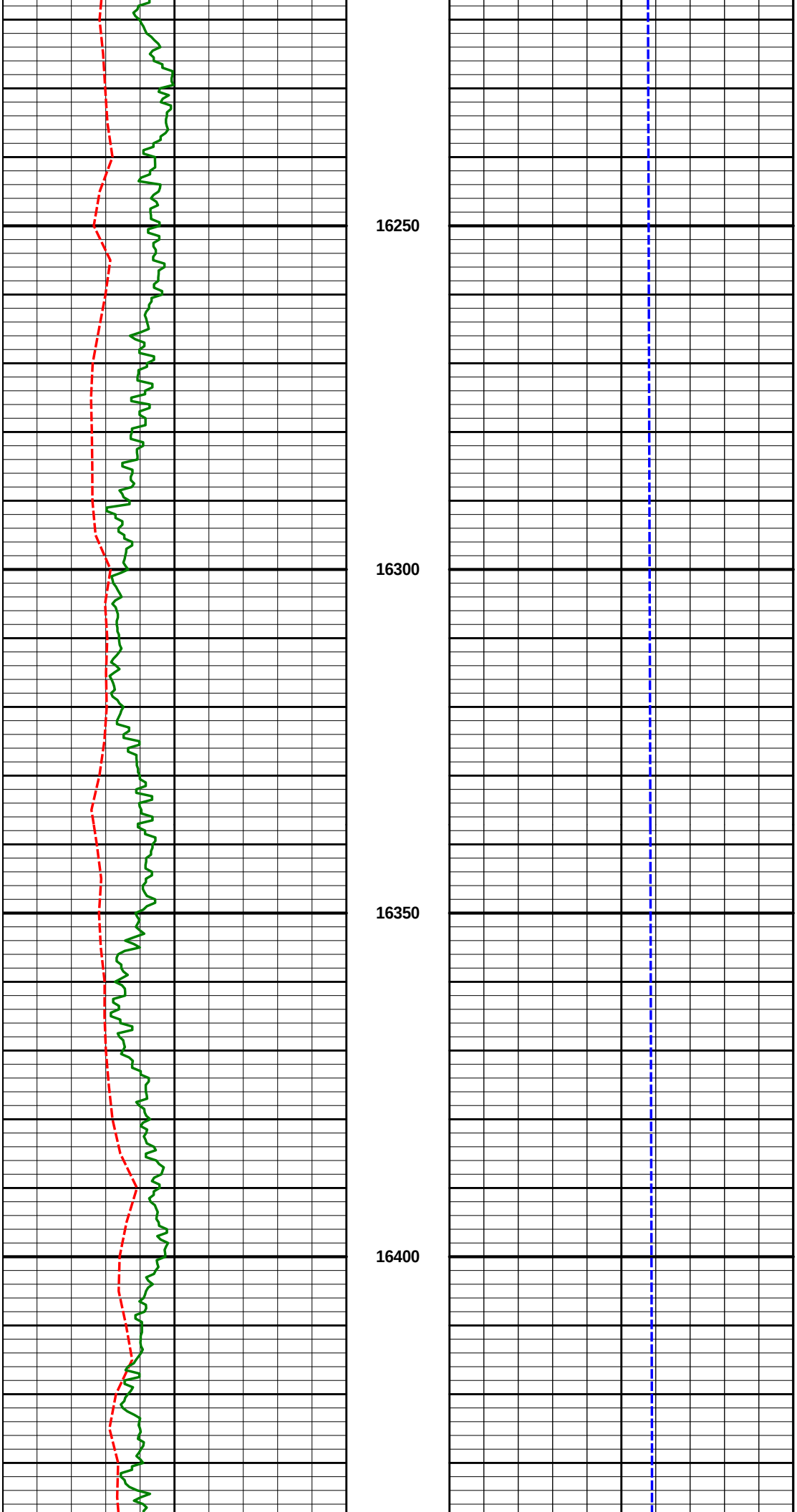
15865.00' MD 89.58° INC 178.65° AZ
7847.10' TVD 4041.57' VS 0.58DL

15954.00' MD 89.41° INC 181.37° AZ
7847.88' TVD 4127.06' VS 3.07DL



16043.00' MD 89.65° INC 179.10° AZ
7848.62' TVD 4212.45' VS 2.57DL

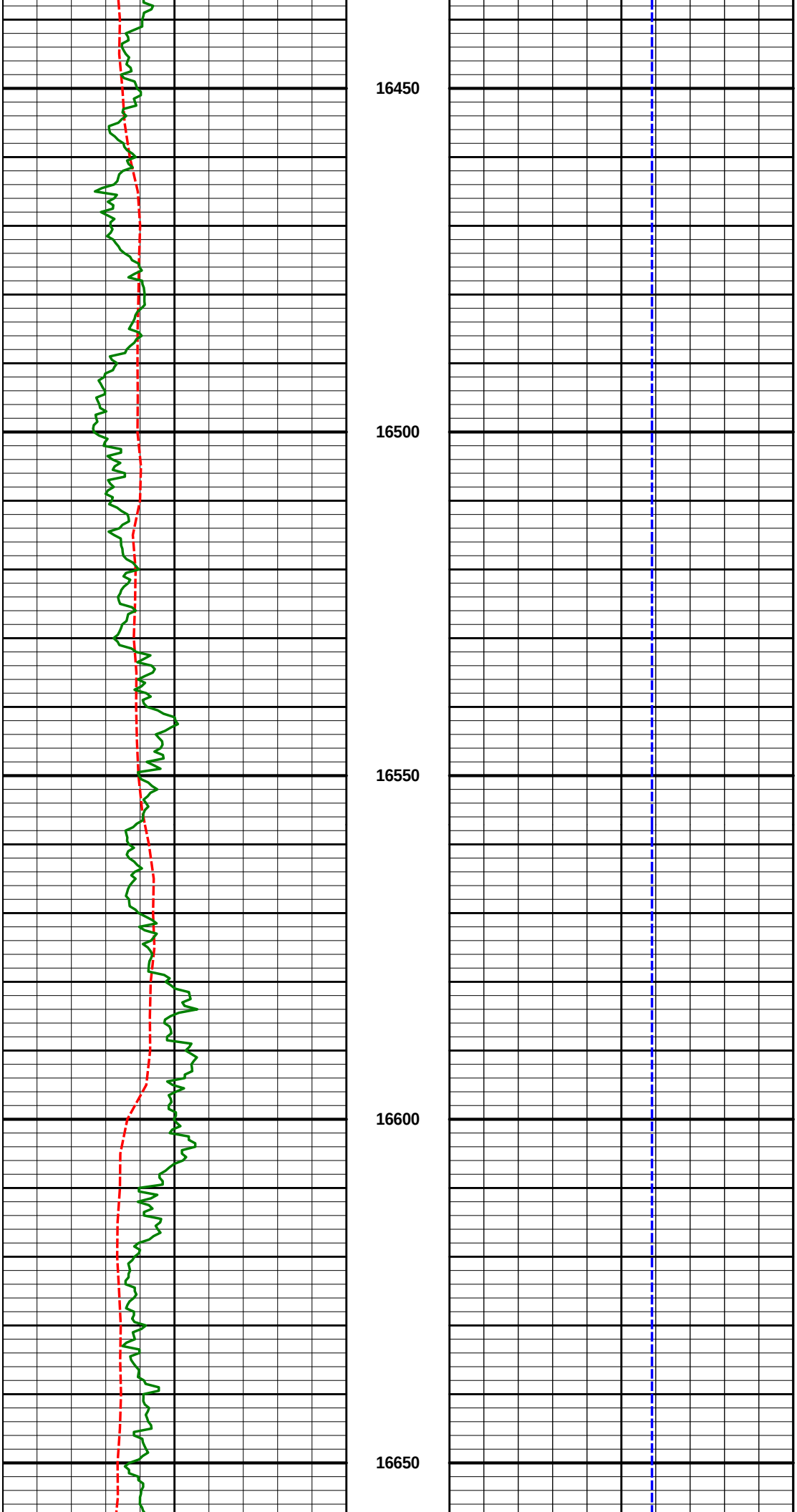
16132.00' MD 90.17° INC 179.34° AZ
7848.75' TVD 4298.28' VS 0.64DL



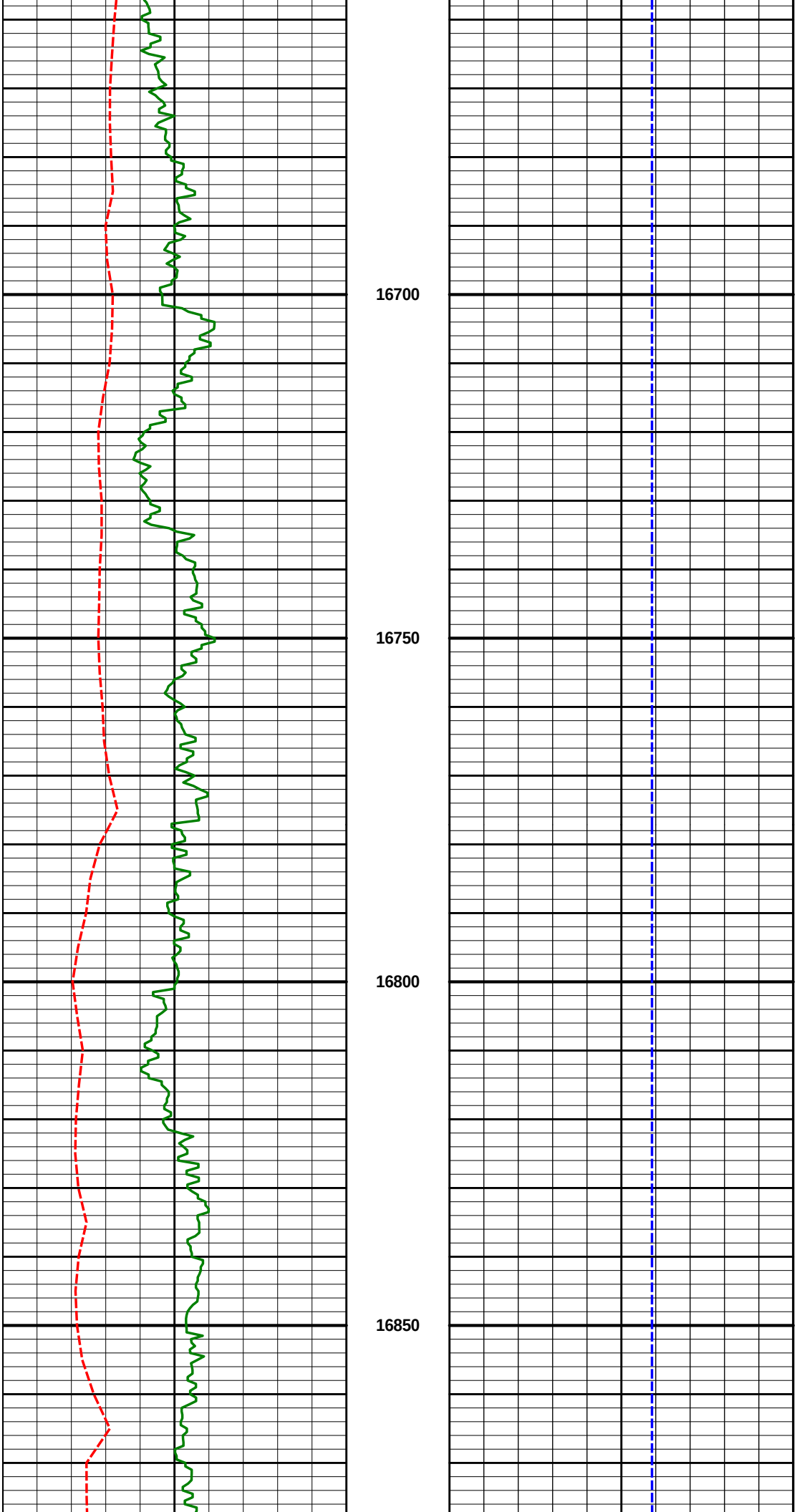
16221.00' MD 90.12° INC 180.41° A
7848.53' TVD 4383.83' VS 1.21DL

16310.00' MD 90.15° INC 179.01° A
7848.32' TVD 4469.46' VS 1.58DL

16399.00' MD 90.27° INC 179.38° A
7847.99' TVD 4555.29' VS 0.44DL

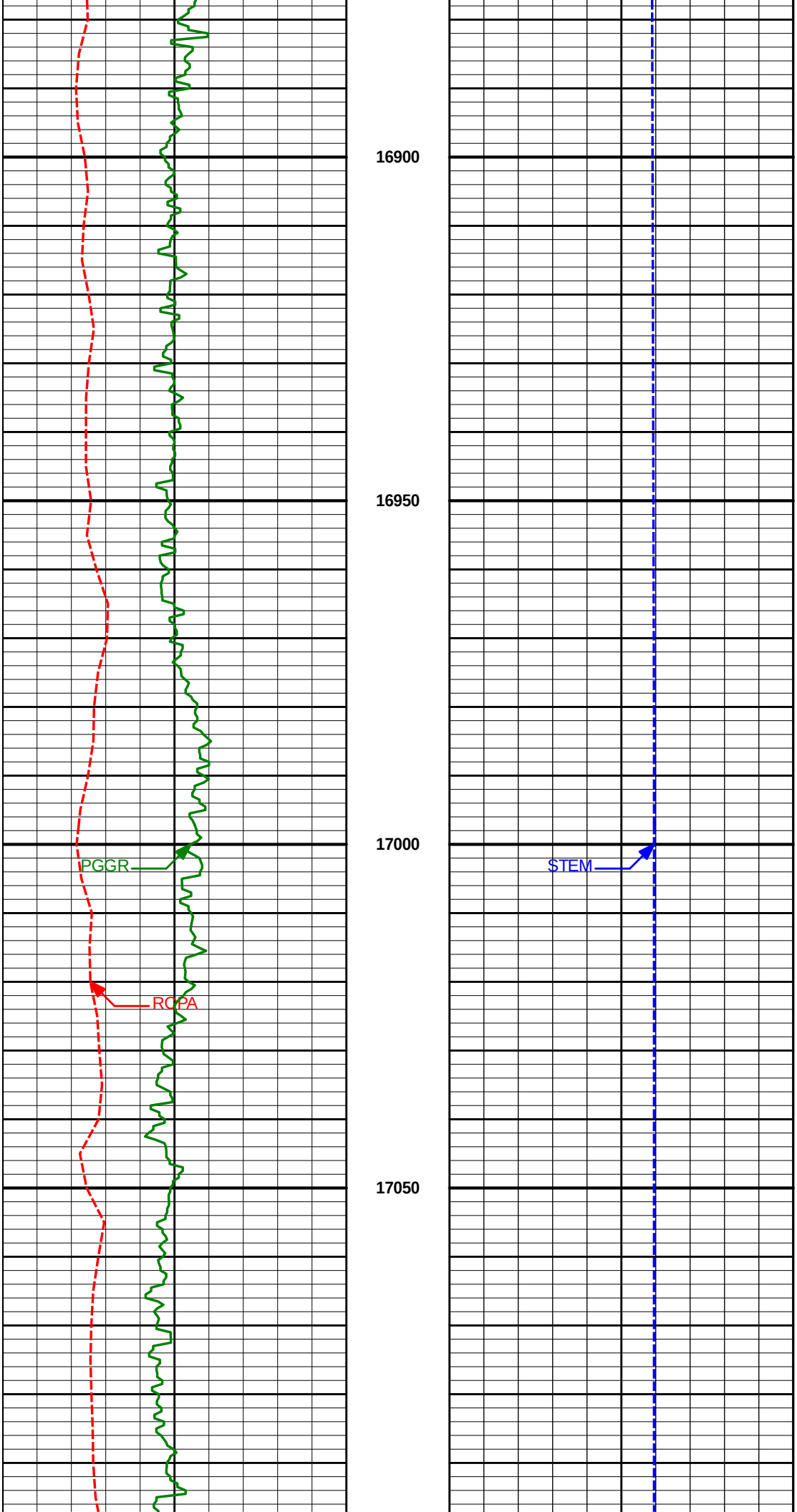


16577.00' MD 90.82° INC 179.38° A
7846.29' TVD 4726.81' VS 0.31DL



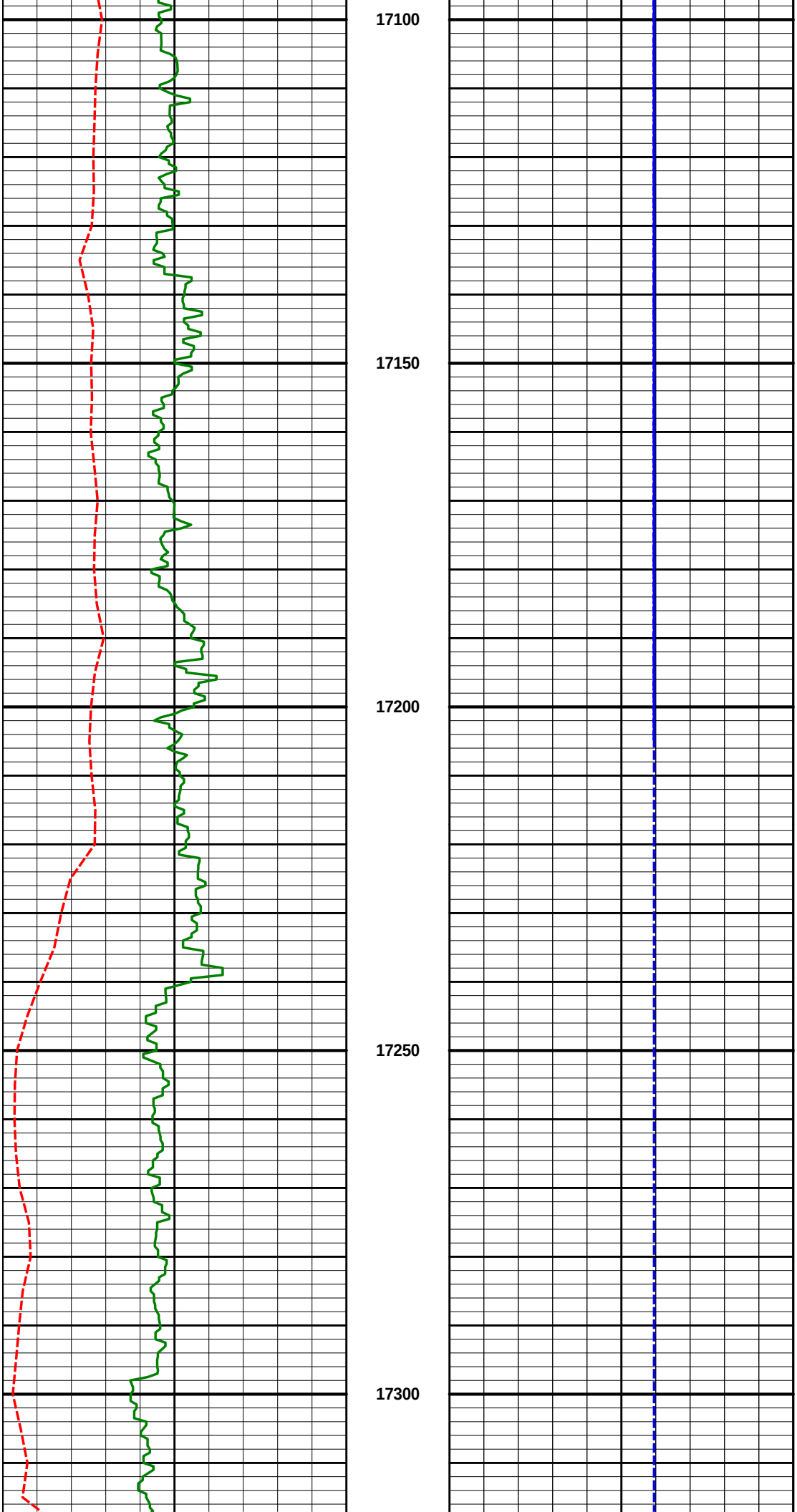
16666.00' MD 90.67° INC 179.14° AZ
7845.14' TVD 4812.62' VS 0.33DL

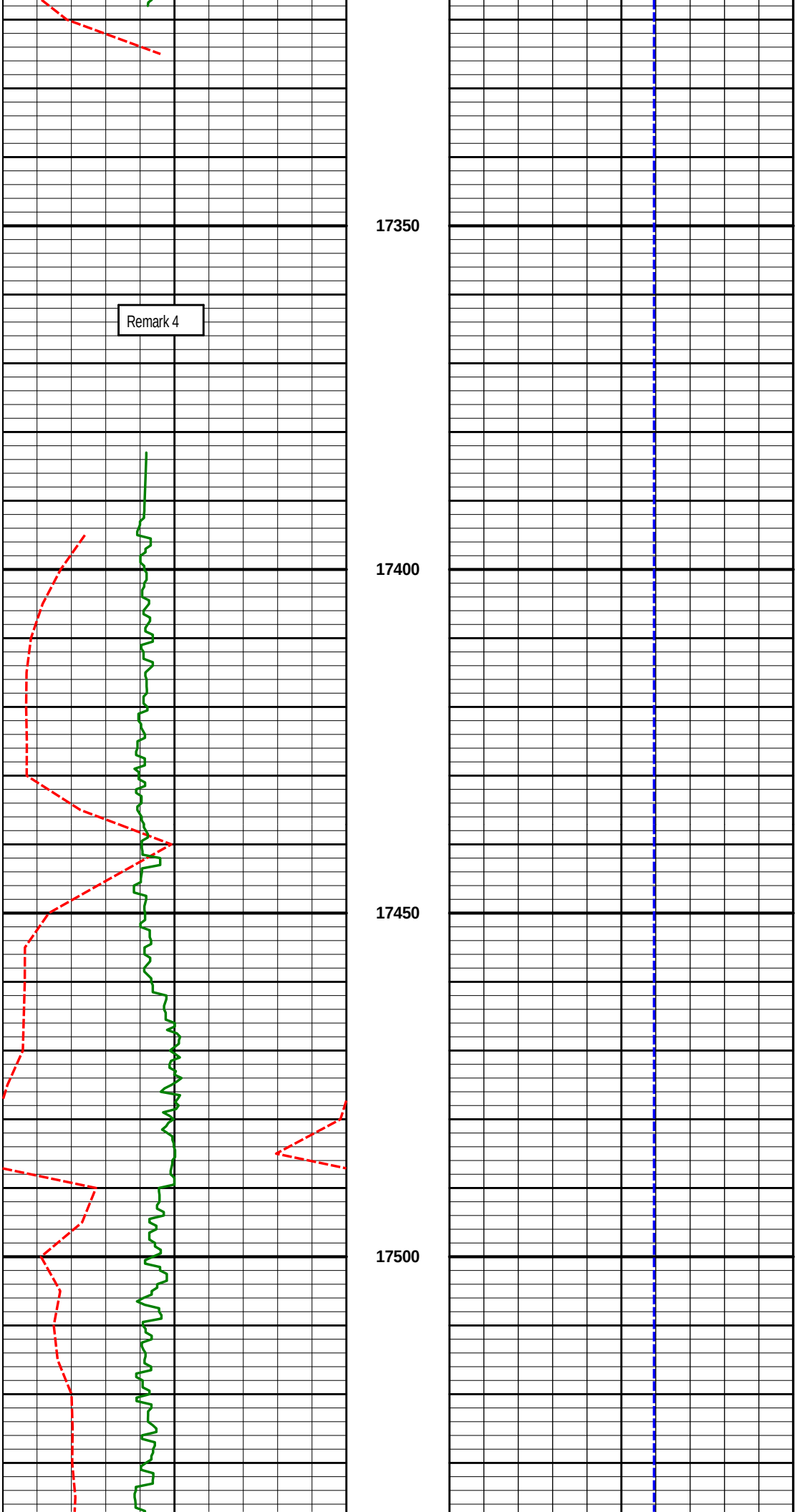
16755.00' MD 90.47° INC 179.29° AZ
7844.25' TVD 4898.45' VS 0.28DL



16934.00' MD 90.70° INC 179.09° A
7842.42' TVD 5071.08' VS 0.17DL

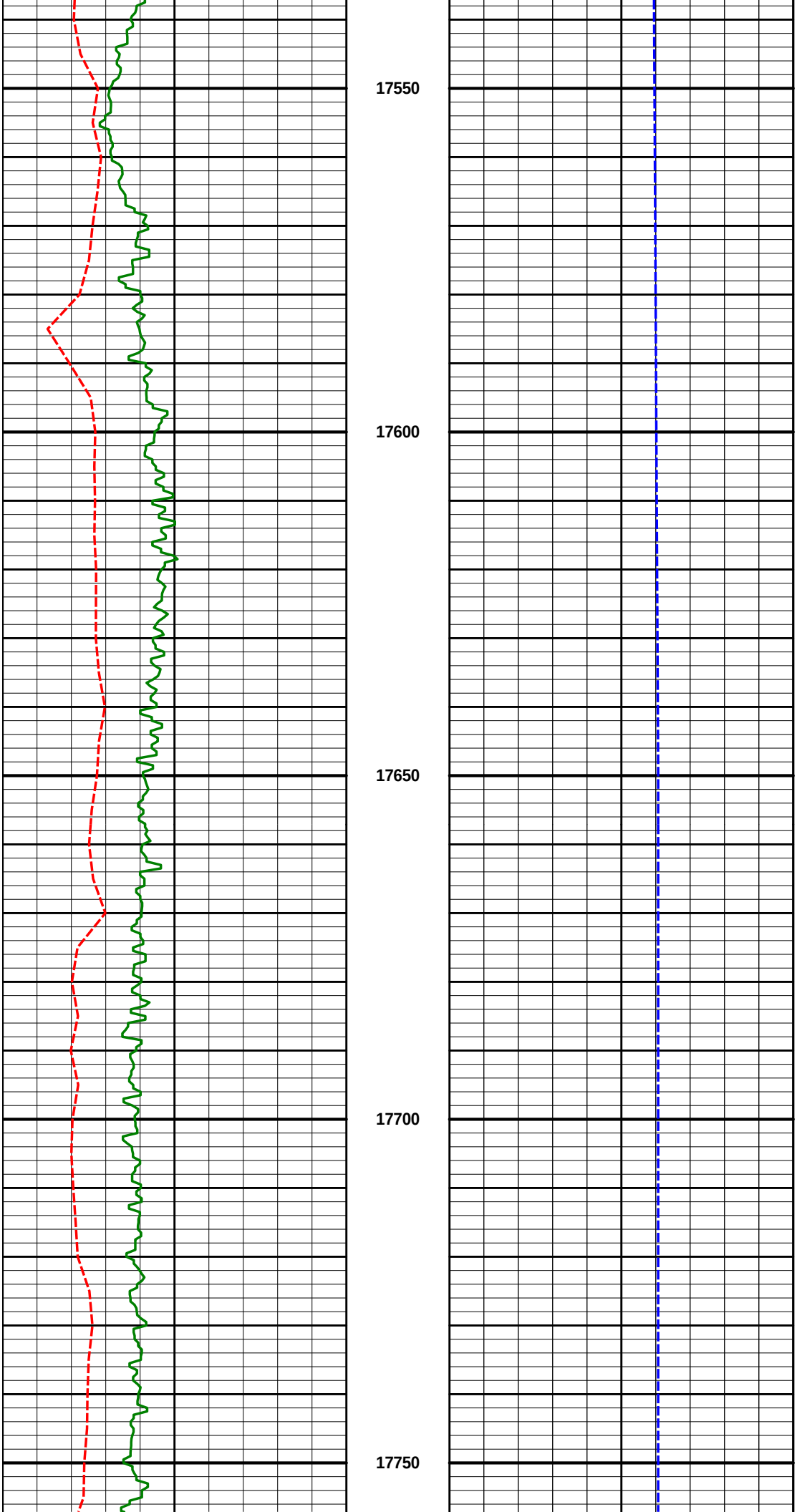
17023.00' MD 90.56° INC 179.45° A
7841.44' TVD 5156.88' VS 0.44DL

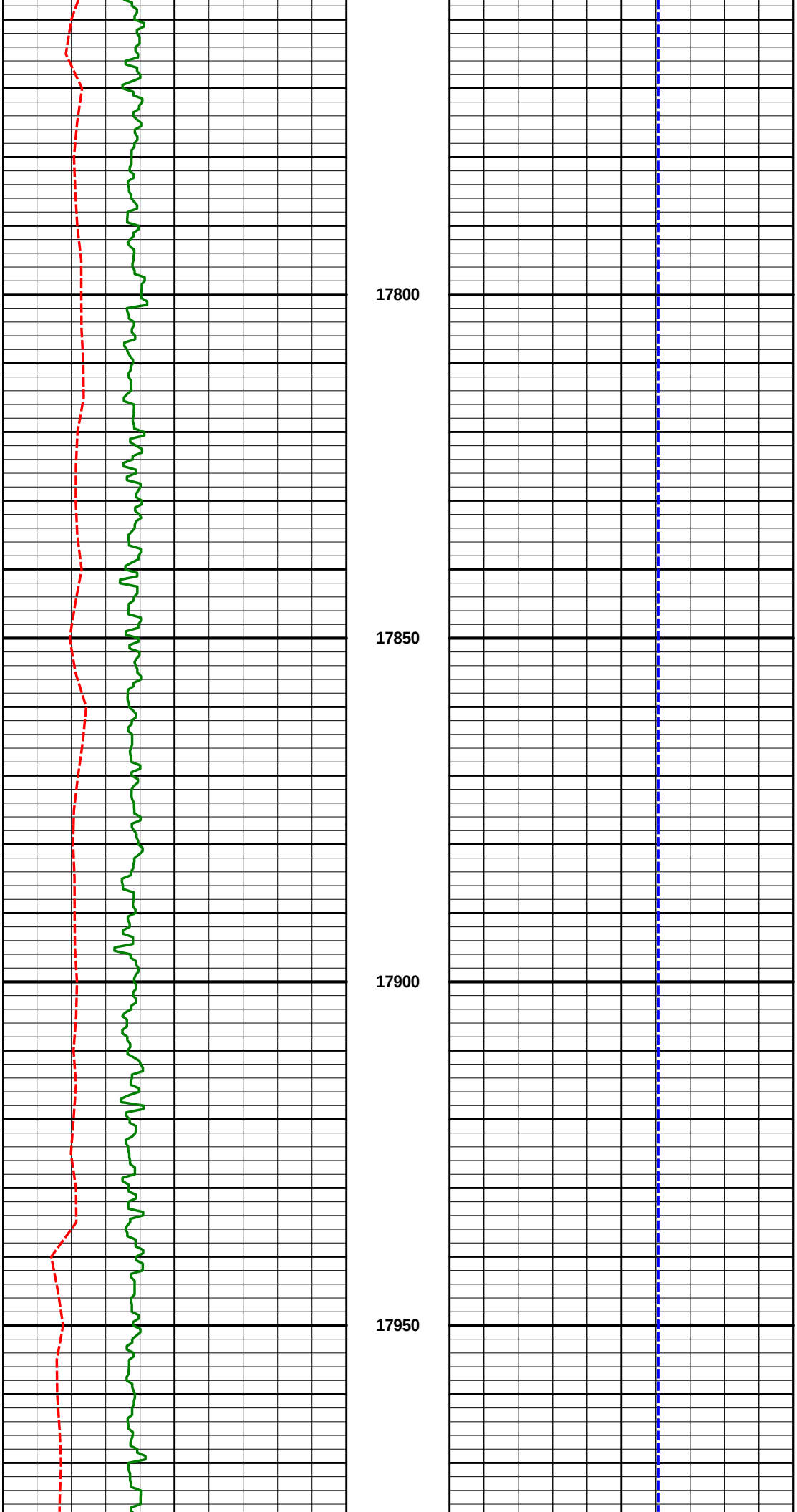

17100
17150
17200
17250
17300
17112.00' MD
7840.95' TVD
90.06° INC
5242.62' VS
179.45° AZ
0.56DL
17201.00' MD
7840.80' TVD
90.14° INC
5328.41' VS
179.15° AZ
0.34DL
17290.00' MD
7840.84' TVD
89.80° INC
5413.84' VS
181.17° AZ
2.30DL

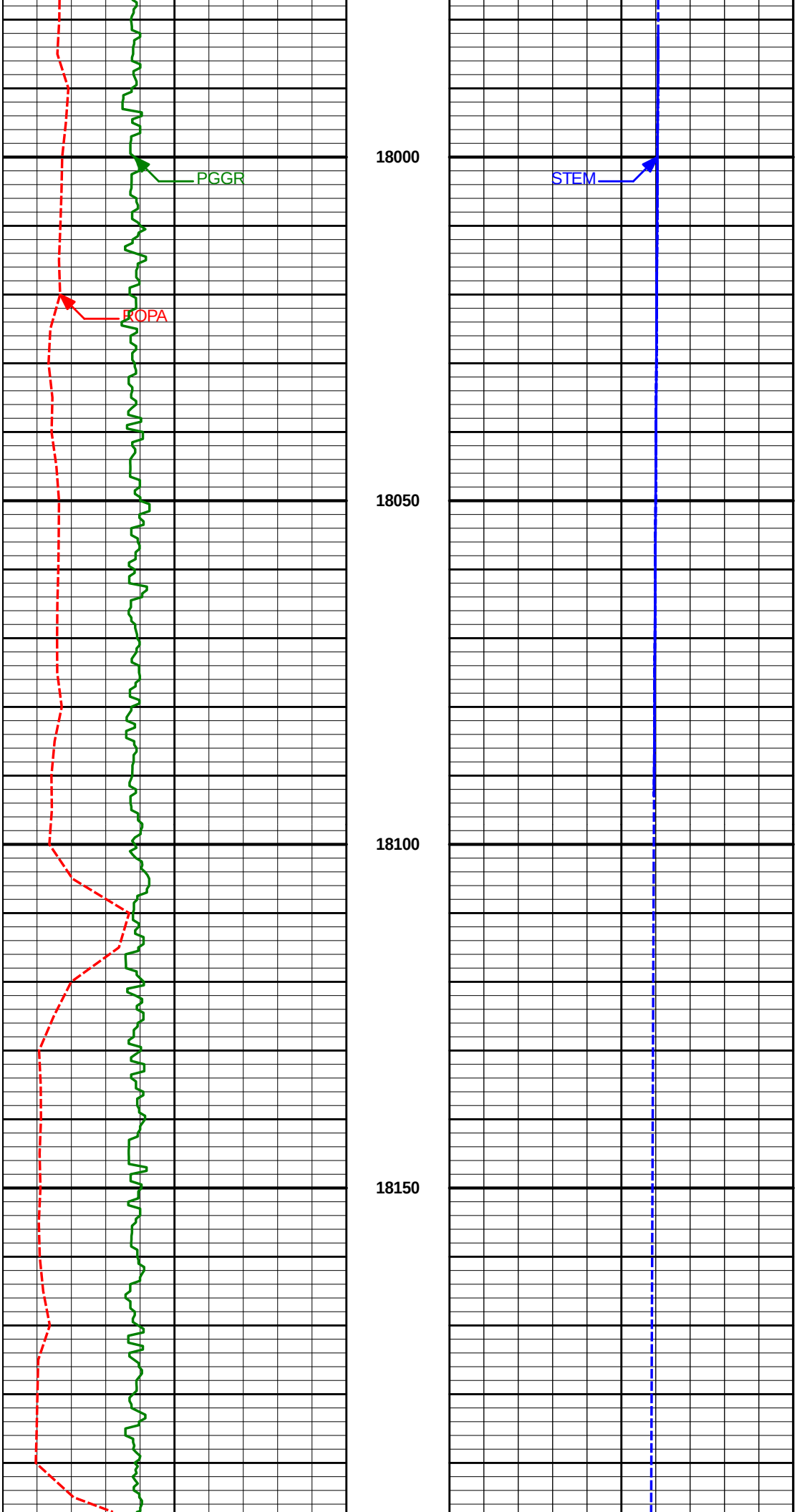


17379.00' MD 90.08° INC 179.47° AZ
7840.94' TVD 5499.20' VS 1.94DL

17468.00' MD 89.96° INC 180.81° AZ
7840.91' TVD 5584.64' VS 1.51DL


17550
17600
17650
17700
17750
17557.00' MD
7840.93' TVD
90.02° INC
5669.86' VS
180.44° AZ
0.42DL
17646.00' MD
7840.94' TVD
89.97° INC
5755.38' VS
179.46° AZ
1.10DL
17735.00' MD
7840.79' TVD
90.22° INC
5840.58' VS
181.87° AZ
2.72DL

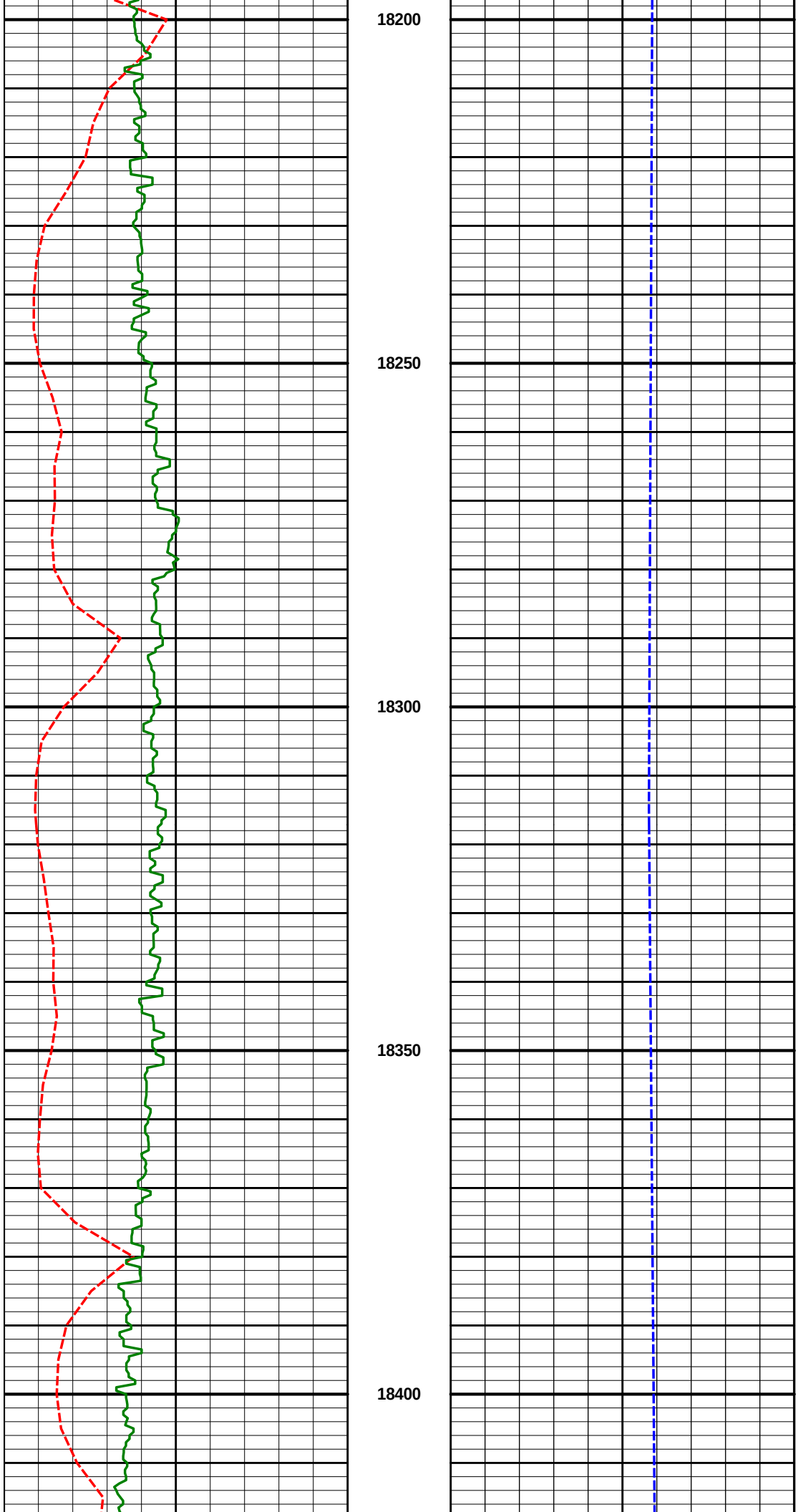

17800
17824.00' MD
7840.66' TVD
89.95° INC
5925.49' VS
180.77° AZ
1.28DL
17850
17900
17913.00' MD
7840.82' TVD
89.85° INC
6010.69' VS
180.60° AZ
0.21DL
17950



18002.00' MD 89.61° INC 181.73° AZ
7841.24' TVD 6095.67' VS 1.29DL

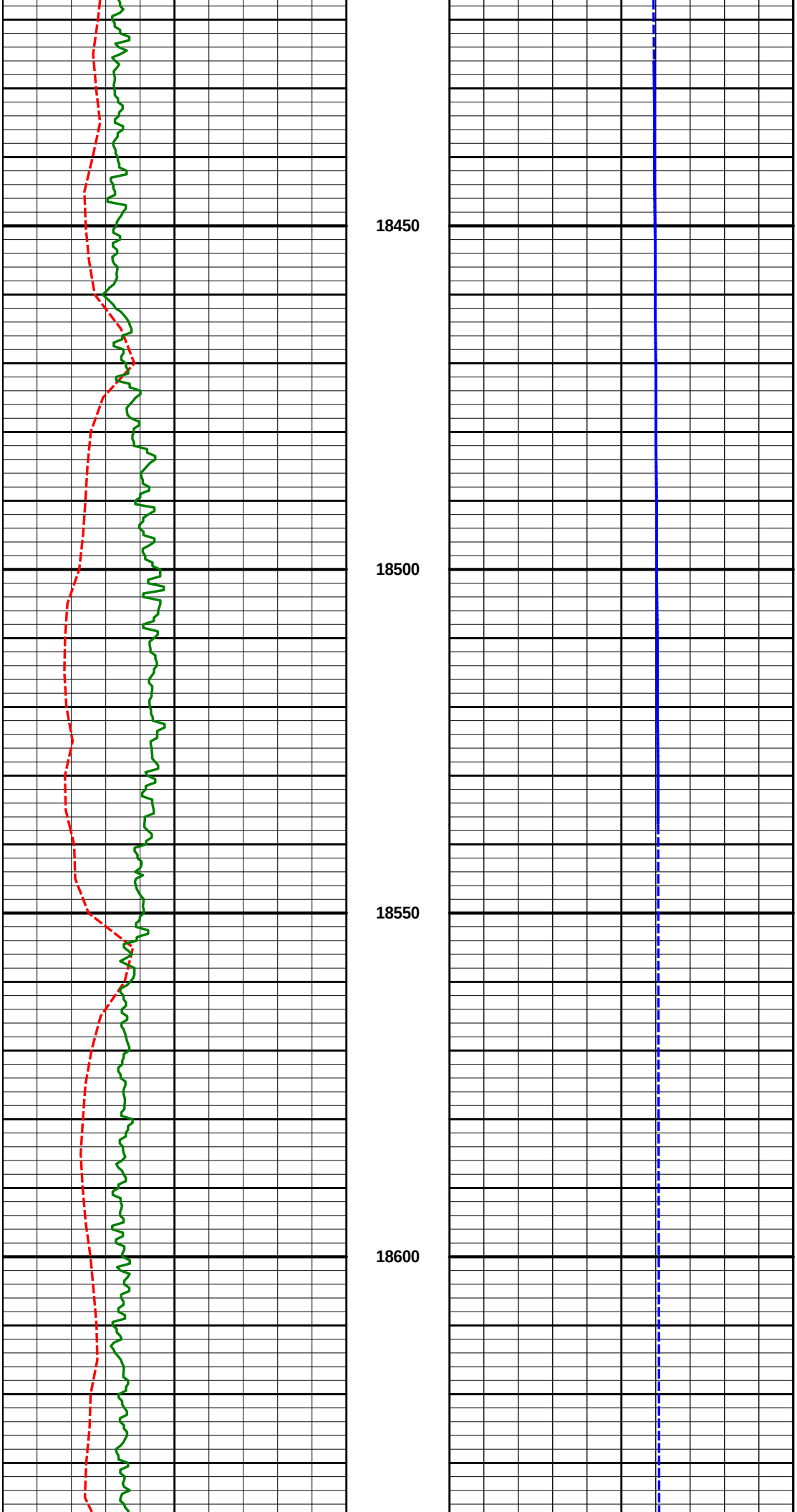
18091.00' MD 89.61° INC 180.56° AZ
7841.84' TVD 6180.65' VS 1.31DL

18180.00' MD 89.43° INC 181.29° AZ
7842.58' TVD 6265.74' VS 0.84DL



18269.00' MD 90.12° INC 179.63° AZ
7842.93' TVD 6351.03' VS 2.01DL

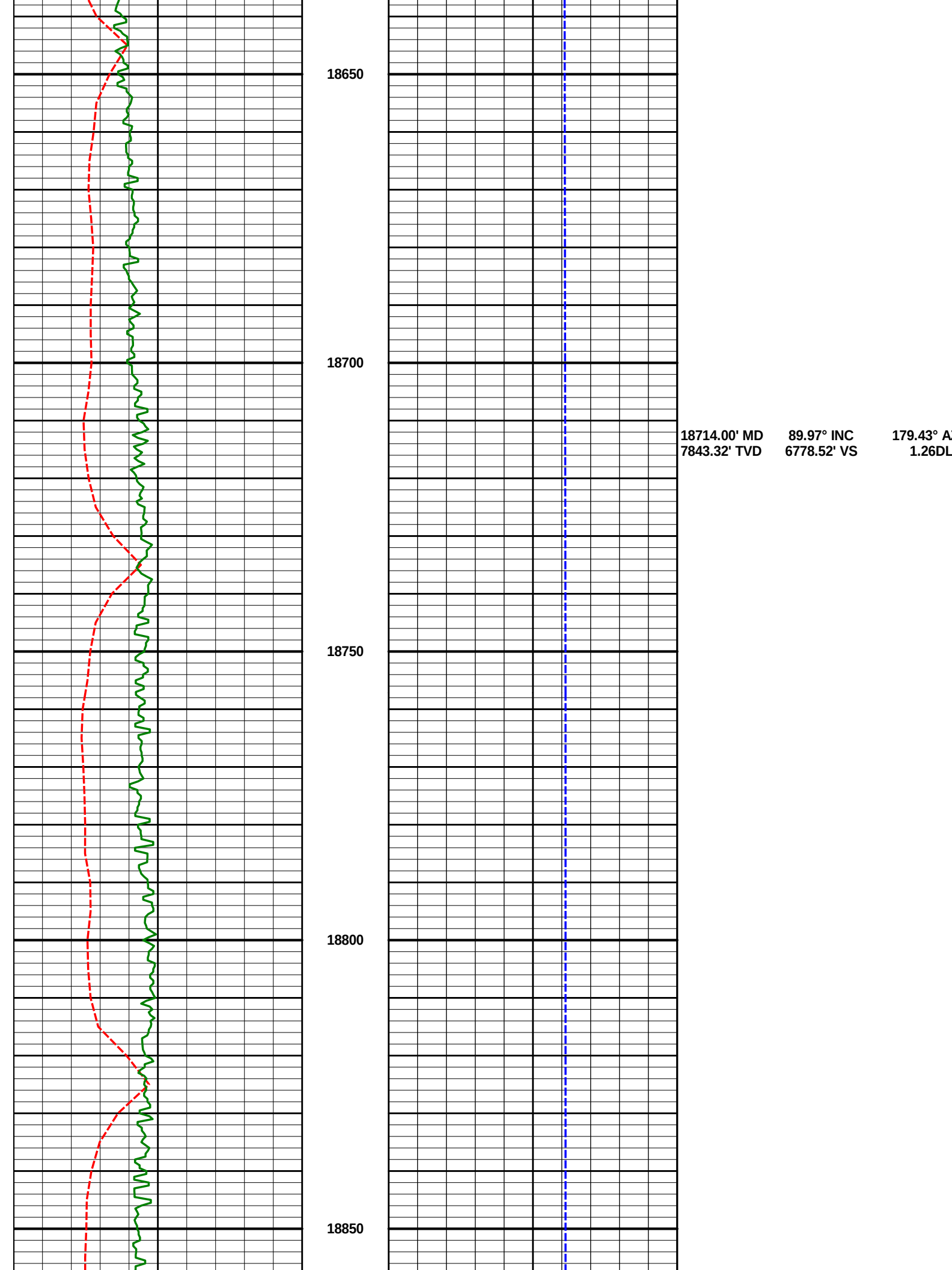
18358.00' MD 89.89° INC 181.51° AZ
7842.93' TVD 6436.28' VS 2.12DL

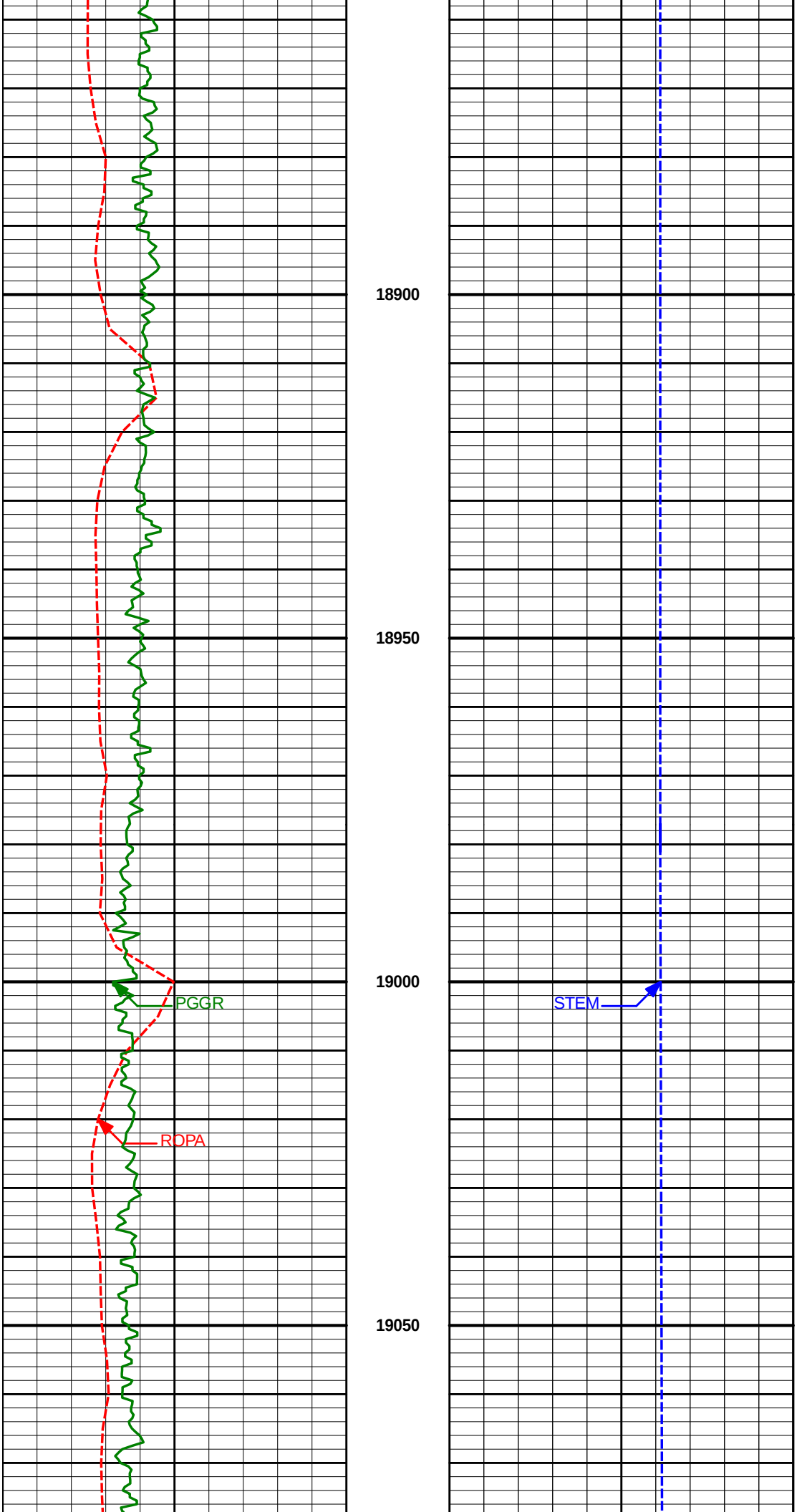


18447.00' MD 90.02° INC 178.93° AZ
7842.99' TVD 6521.68' VS 2.91DL

18536.00' MD 90.03° INC 179.47° AZ
7842.95' TVD 6607.52' VS 0.61DL

18625.00' MD 89.76° INC 180.53° AZ
7843.11' TVD 6693.01' VS 1.23DL

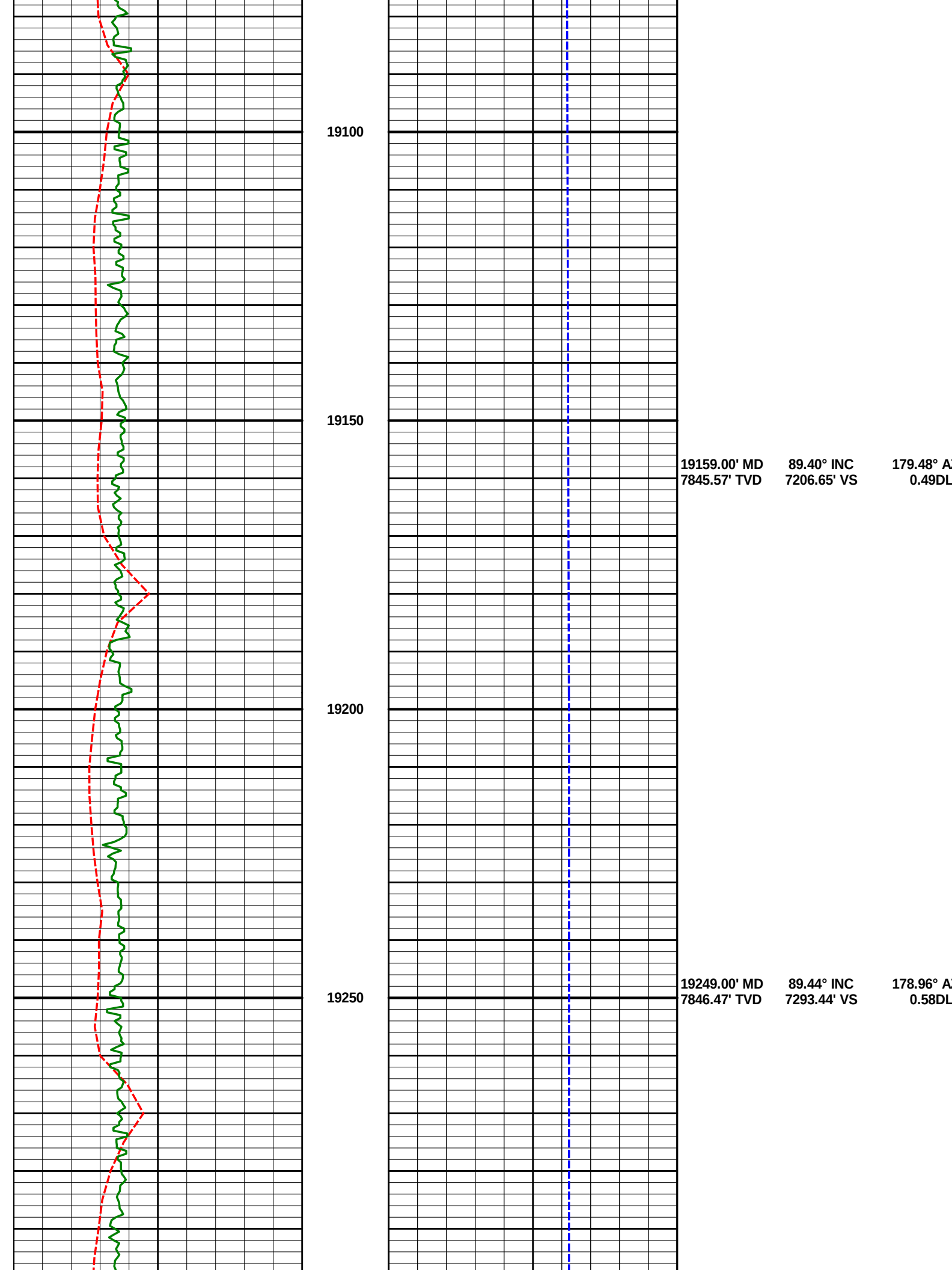

18650
18700
18714.00' MD
89.97° INC
179.43° A
7843.32' TVD
6778.52' VS
1.26DL
18750
18800
18850

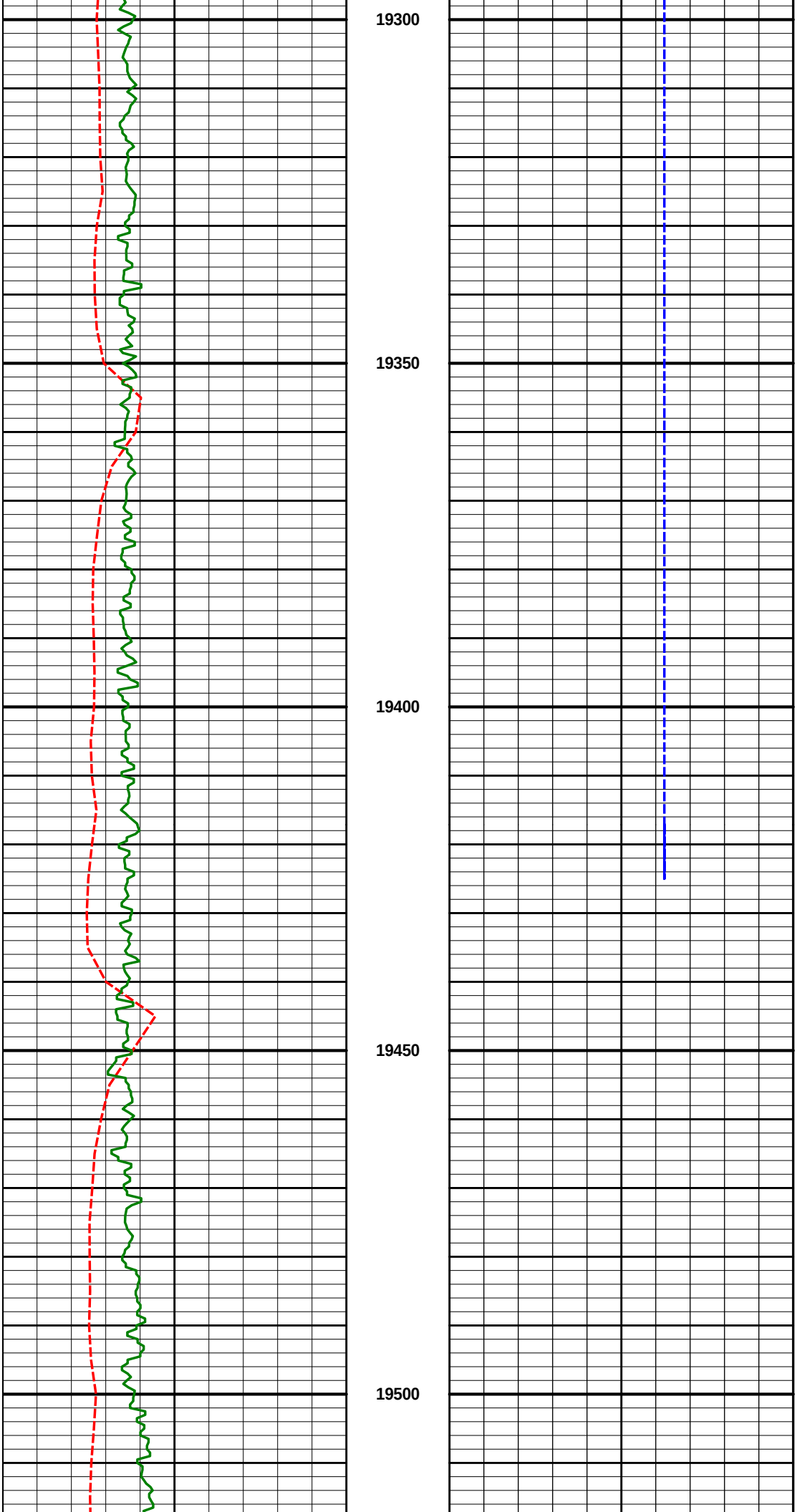


18892.00' MD 89.58° INC 180.17° A
7844.03' TVD 6949.69' VS 0.47DL

18981.00' MD 90.11° INC 179.15° A
7844.28' TVD 7035.33' VS 1.29DL

19070.00' MD 89.41° INC 179.92° A
7844.65' TVD 7121.03' VS 1.16DL

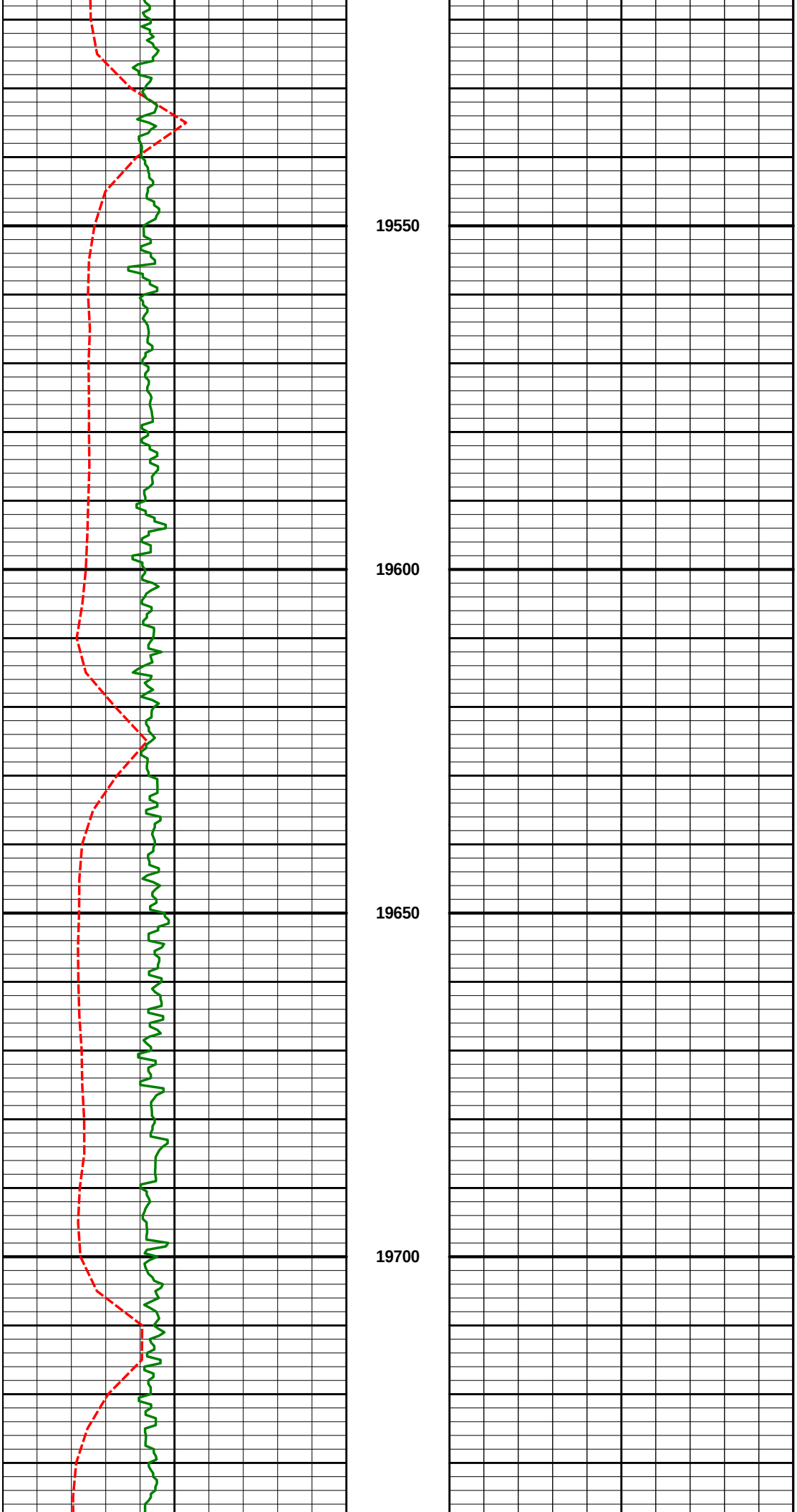

19100
19150
19159.00' MD
89.40° INC
179.48° AZ
7845.57' TVD
7206.65' VS
0.49DL
19200
19250
19249.00' MD
89.44° INC
178.96° AZ
7846.47' TVD
7293.44' VS
0.58DL



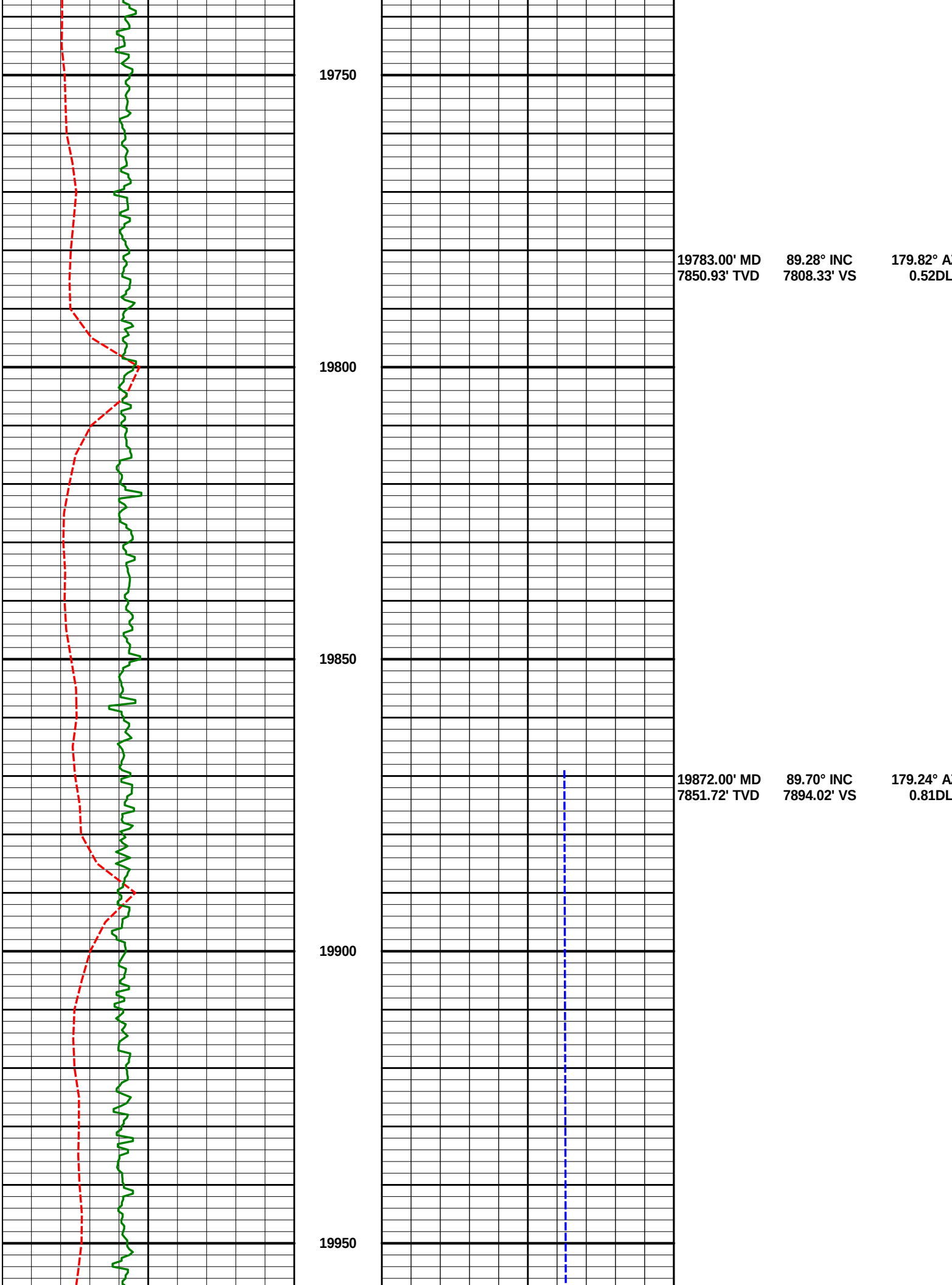
19338.00' MD 89.61° INC 179.19° AZ
7847.20' TVD 7379.33' VS 0.33DL

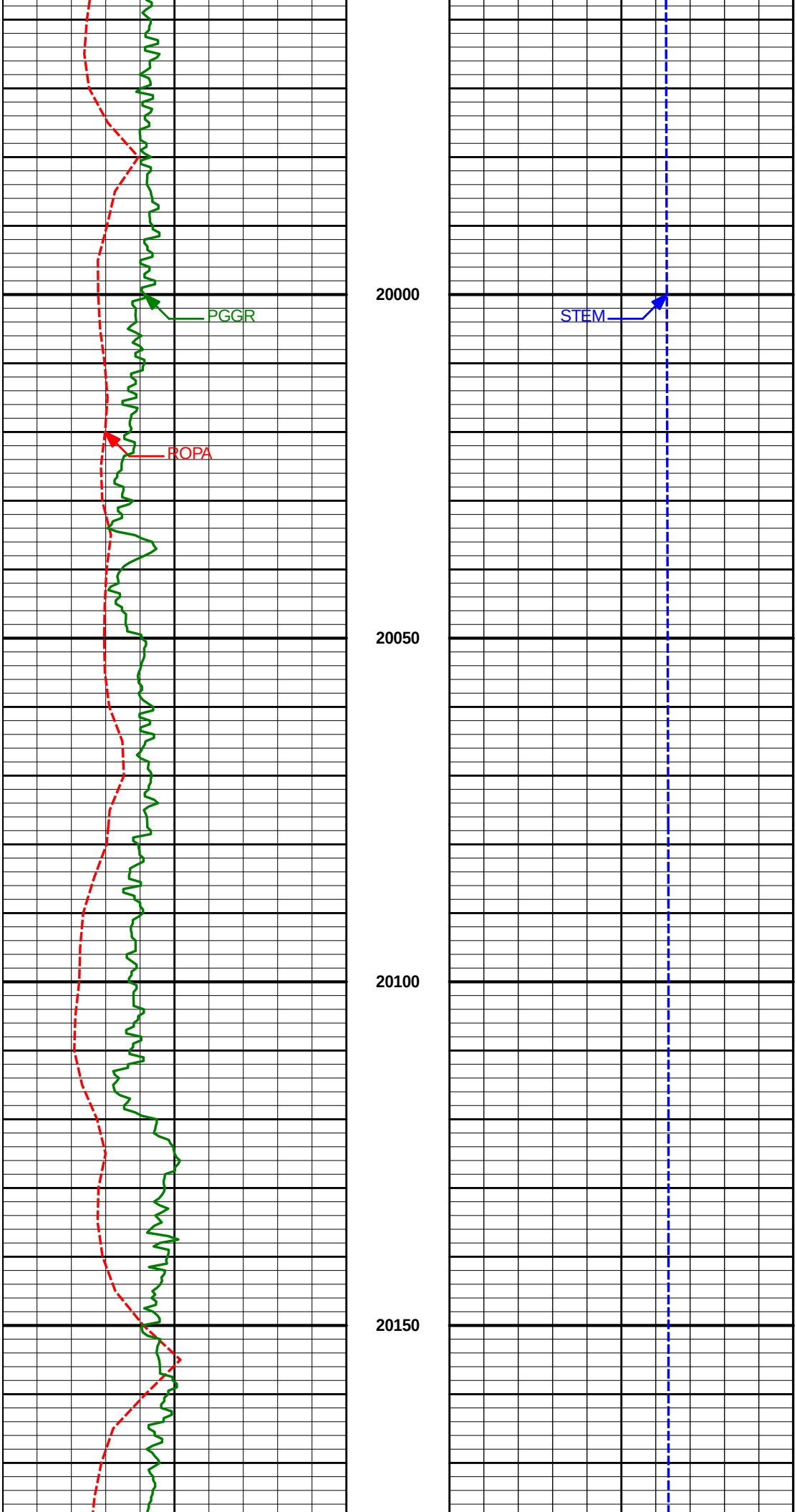
19427.00' MD 89.81° INC 180.16° AZ
7847.65' TVD 7464.96' VS 1.11DL

19516.00' MD 89.54° INC 178.45° AZ



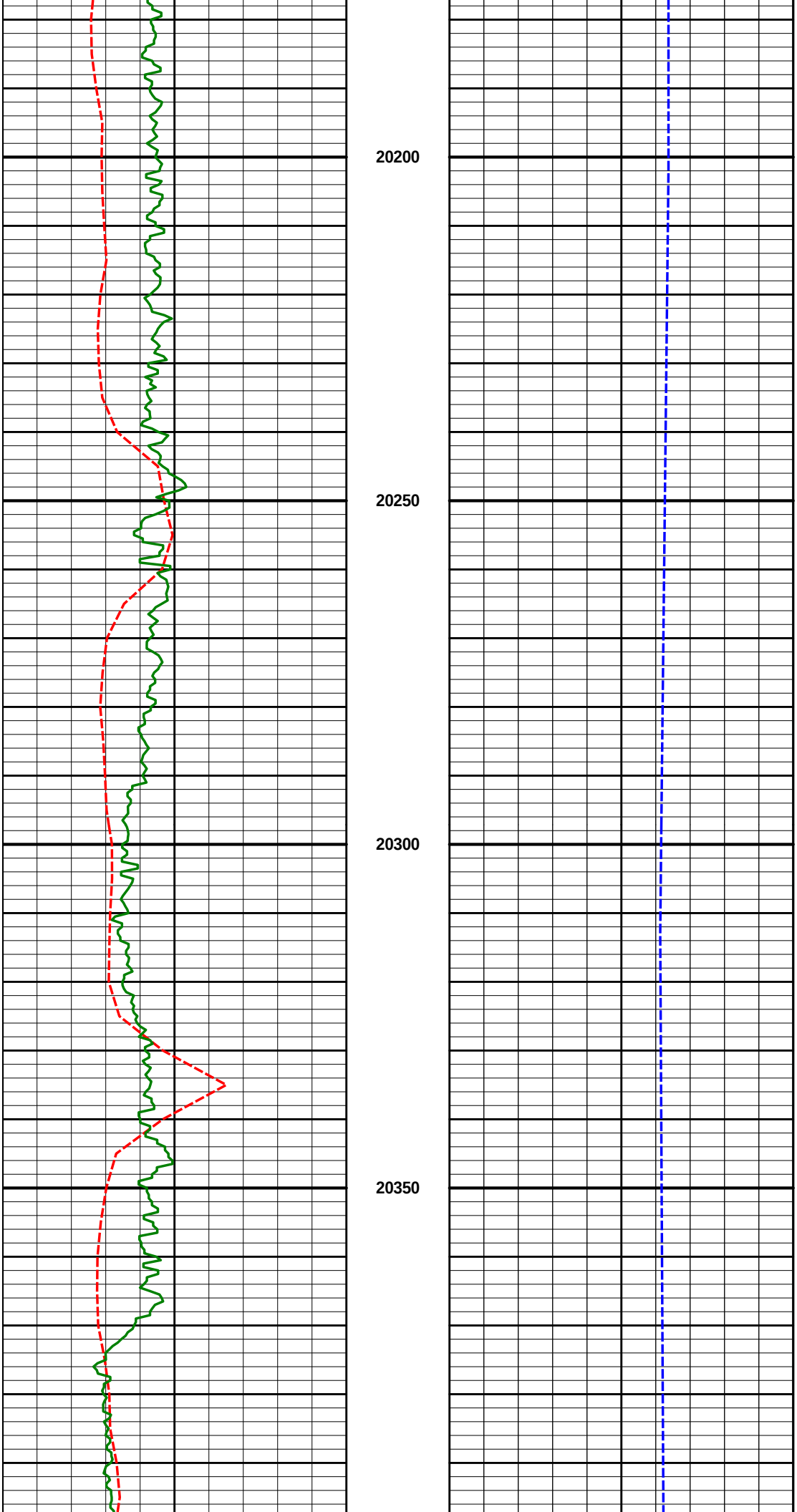
7848.16 TVD 7550.75 VS 1.95DL


19750
19800
19850
19900
19950
19783.00' MD
89.28° INC
179.82° AZ
7850.93' TVD
7808.33' VS
0.52DL
19872.00' MD
89.70° INC
179.24° AZ
7851.72' TVD
7894.02' VS
0.81DL

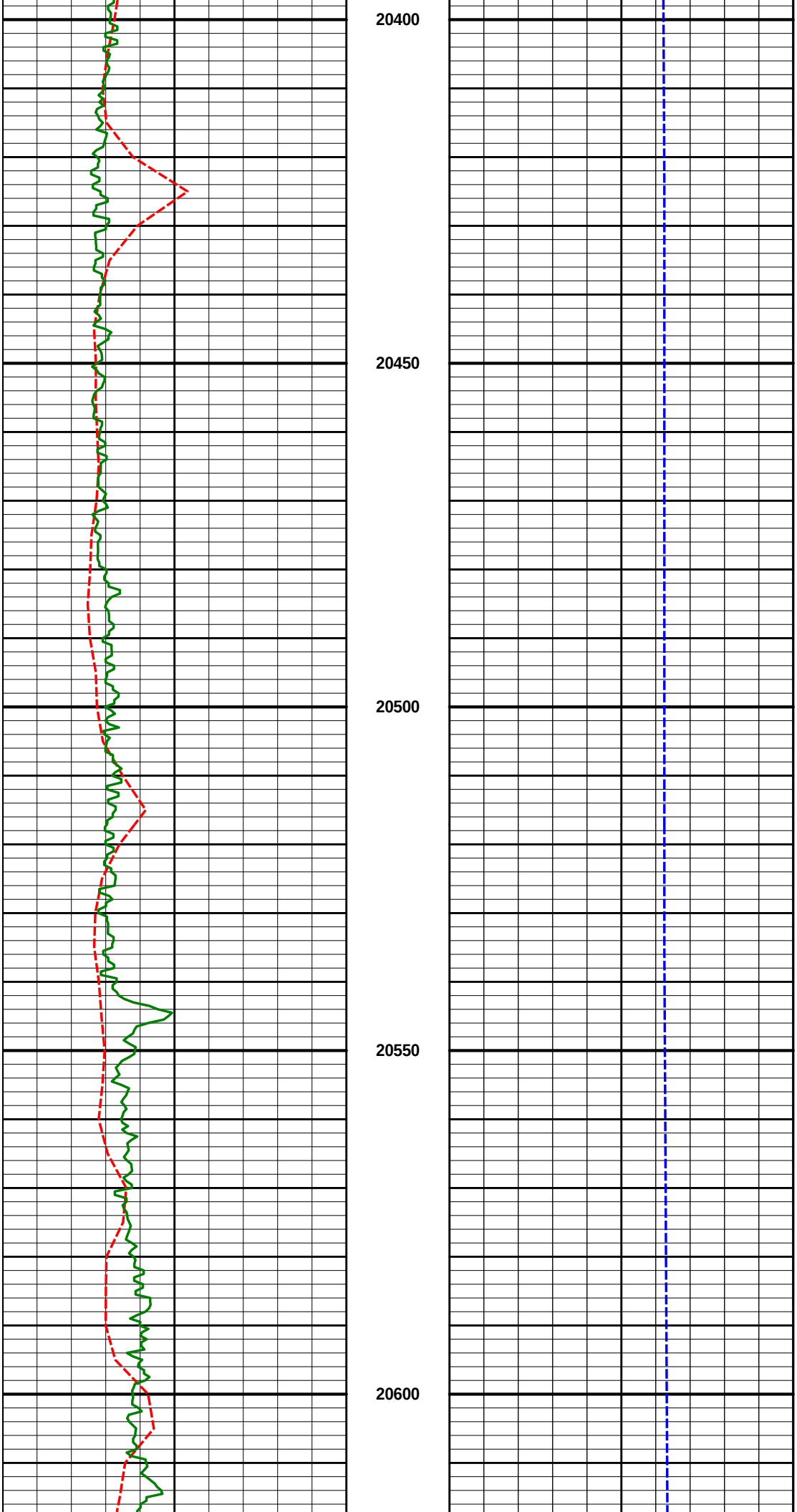


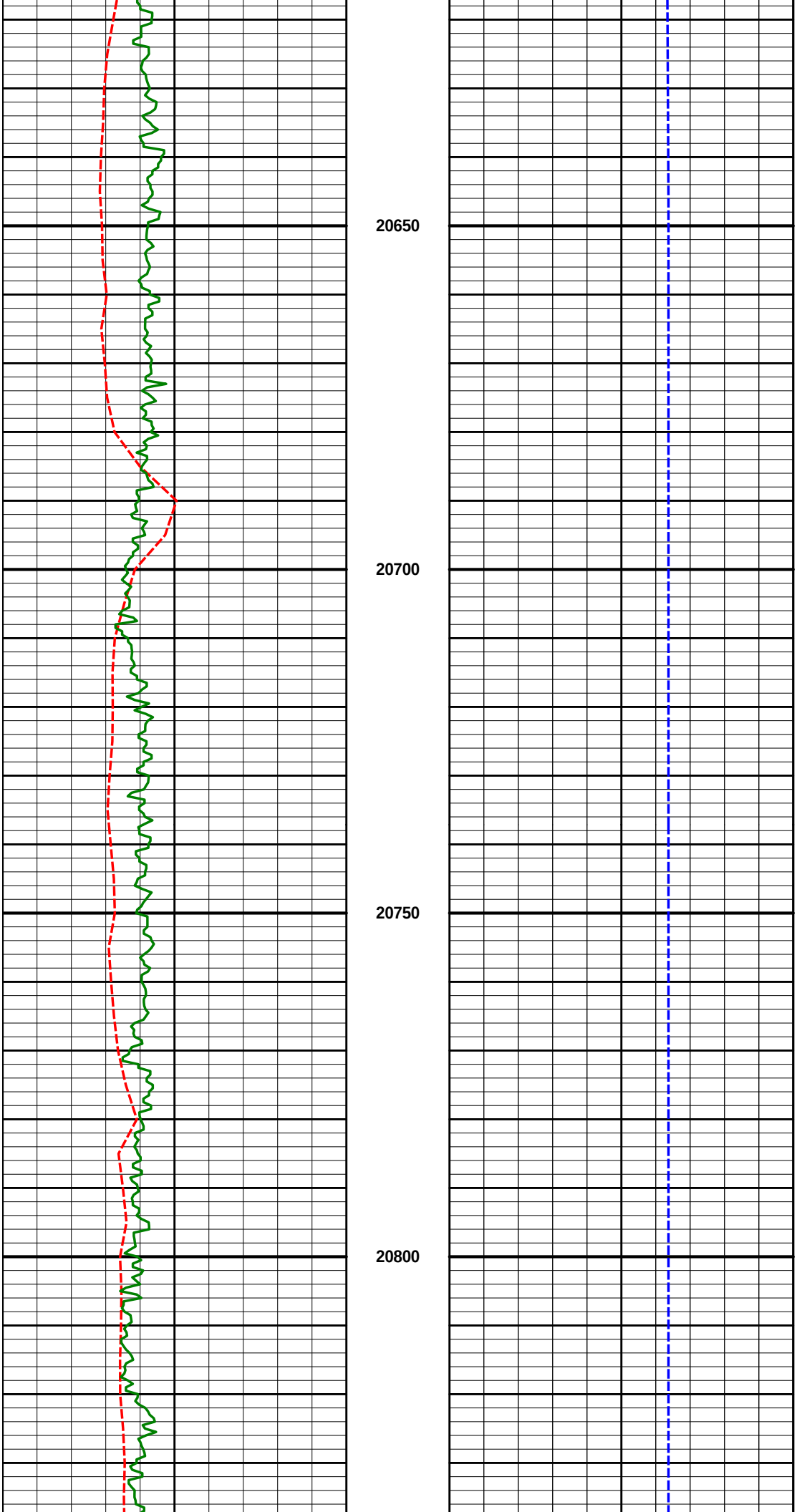
19961.00' MD 89.80° INC 179.93° AZ
7852.11' TVD 7979.70' VS 0.78DL

20050.00' MD 90.10° INC 178.94° AZ
7852.19' TVD 8065.44' VS 1.17DL



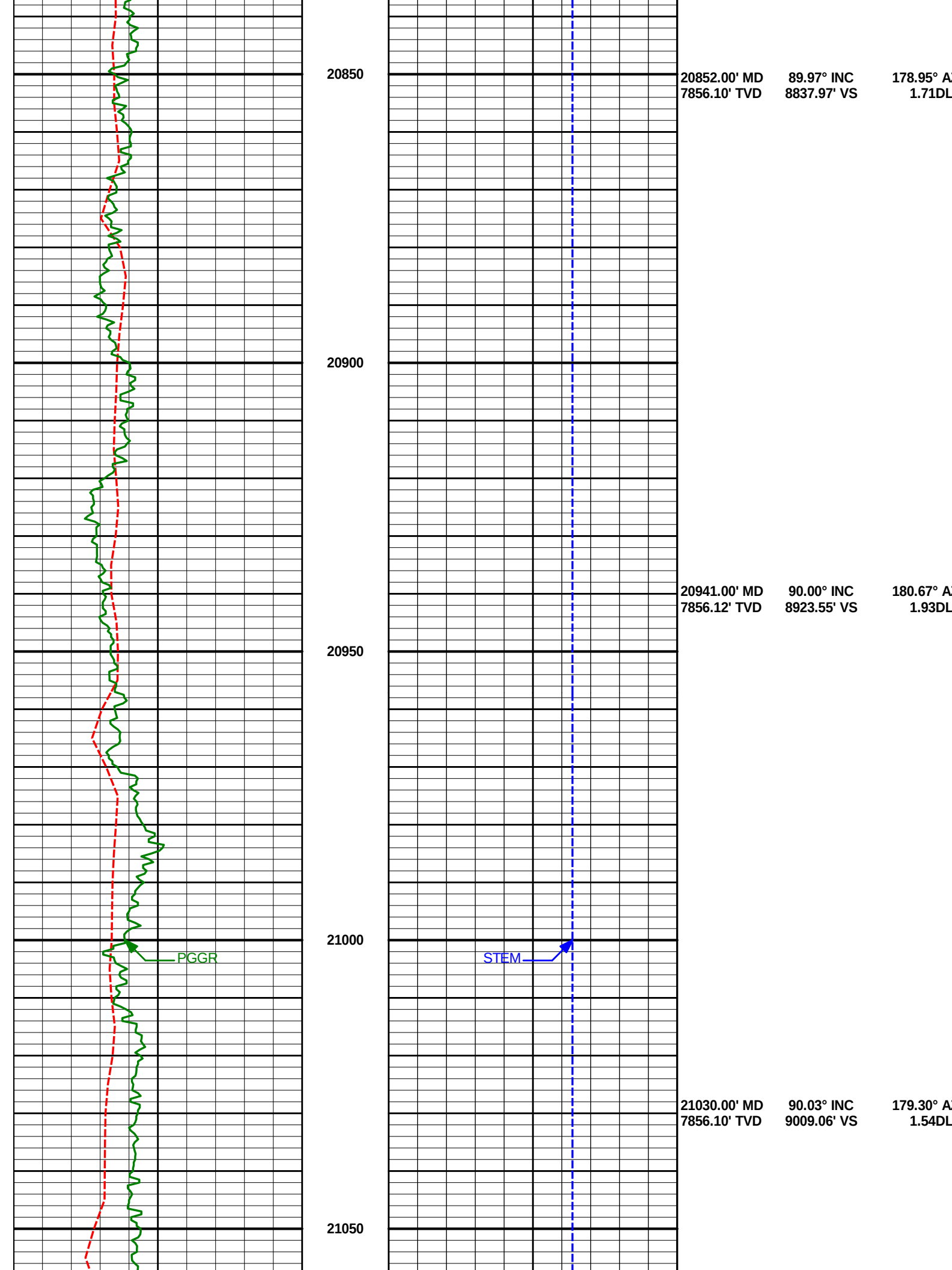
20229.00' MD 89.52° INC 178.92° A
7852.78' TVD 8238.30' VS 0.32DL

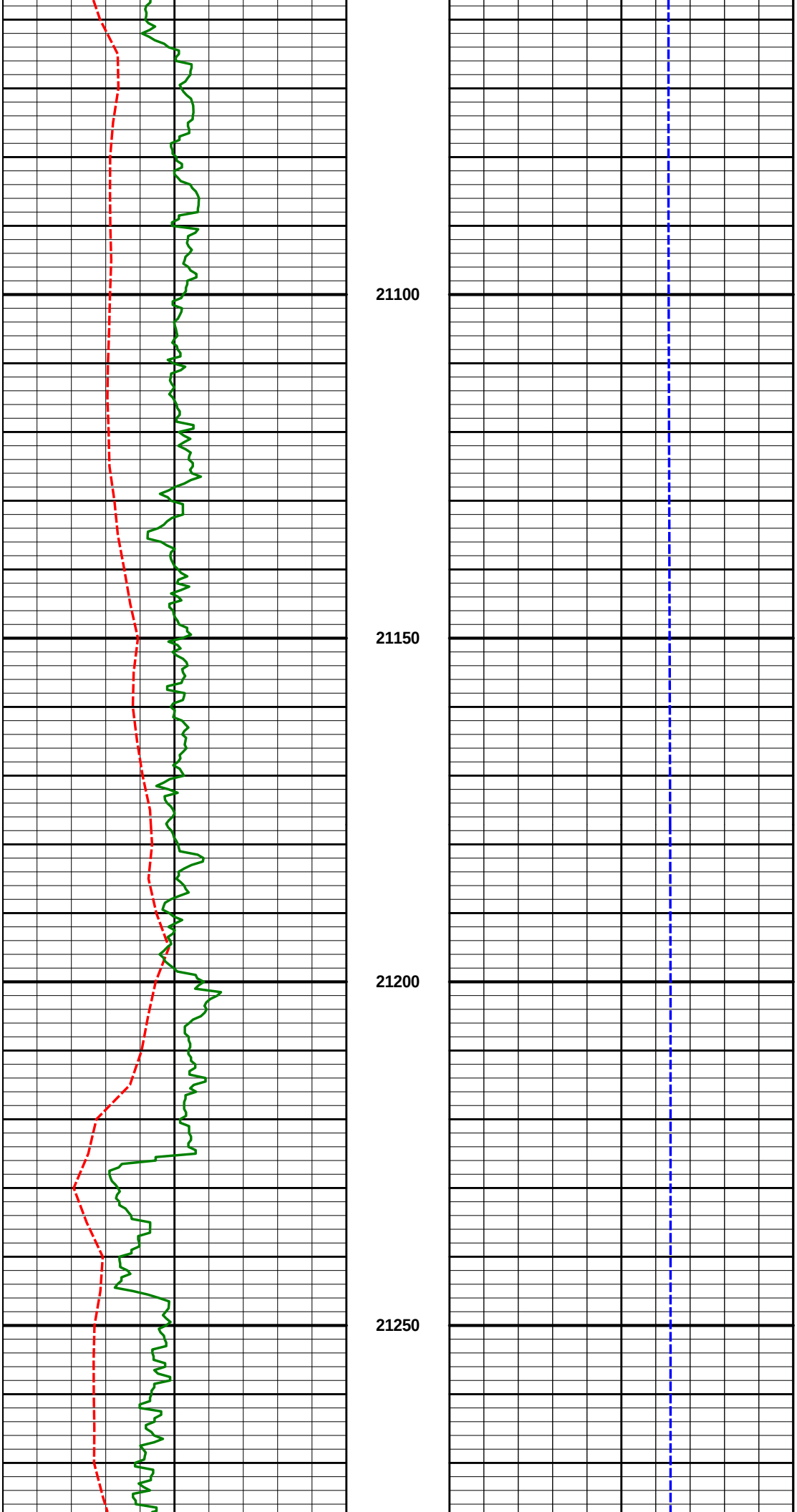

20400
20450
20500
20550
20600
20407.00' MD
89.66° INC
178.75° AZ
7854.05' TVD
8410.26' VS
0.12DL
20496.00' MD
89.74° INC
179.95° AZ
7854.51' TVD
8496.04' VS
1.35DL
20585.00' MD
89.75° INC
181.36° AZ
7854.90' TVD
8581.25' VS
1.59DL



20674.00' MD 89.70° INC 178.85° AZ
7855.33' TVD 8666.70' VS 2.81DL

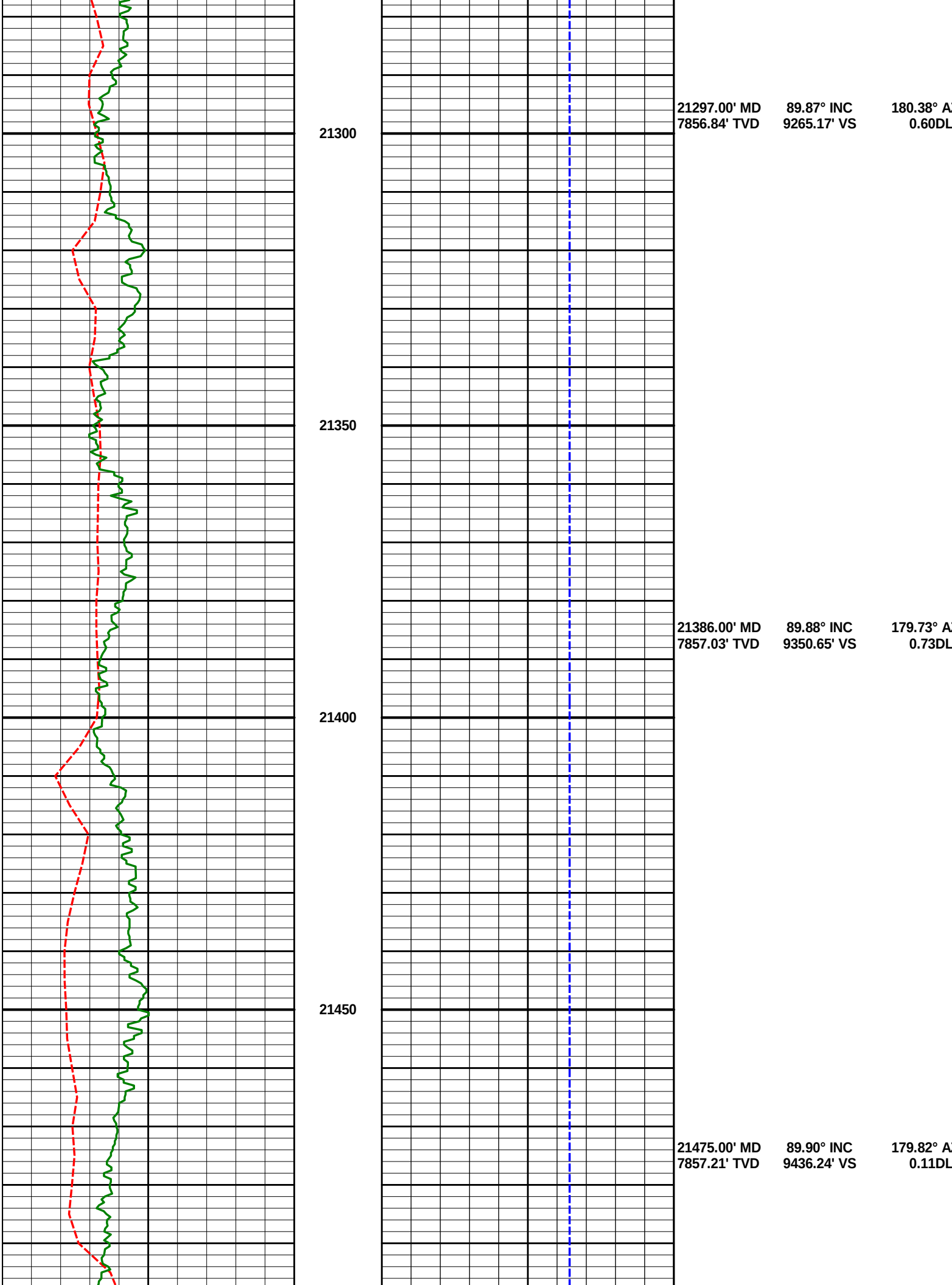
20763.00' MD 89.67° INC 180.45° AZ
7855.82' TVD 8752.34' VS 1.79DL

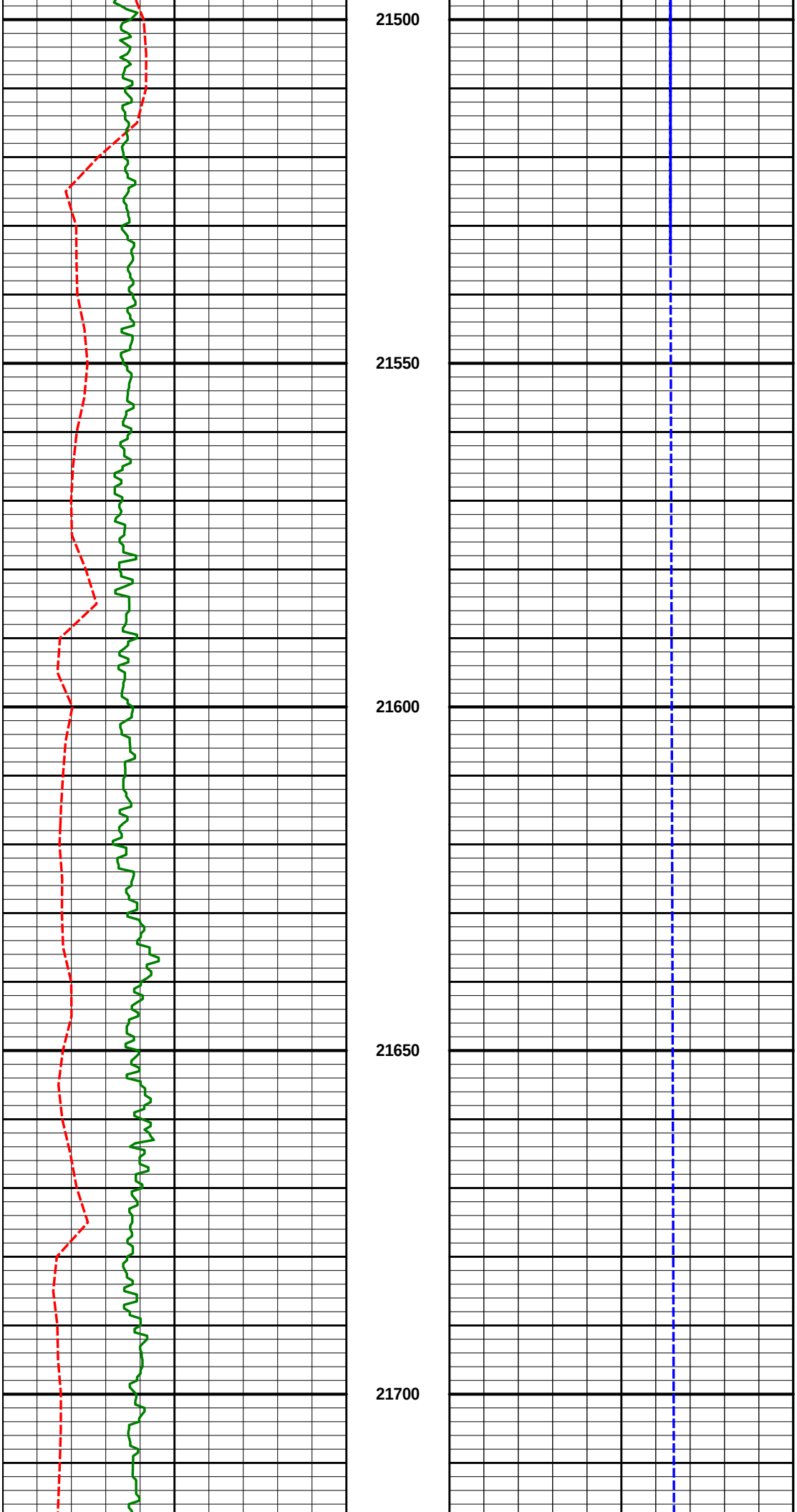

20850
20900
20950
21000
21050
PGGR
STEM
20852.00' MD
7856.10' TVD
89.97° INC
8837.97' VS
178.95° AZ
1.71DL
20941.00' MD
7856.12' TVD
90.00° INC
8923.55' VS
180.67° AZ
1.93DL
21030.00' MD
7856.10' TVD
90.03° INC
9009.06' VS
179.30° AZ
1.54DL



21119.00' MD 89.77° INC 181.20° AZ
7856.26' TVD 9094.45' VS 2.16DL

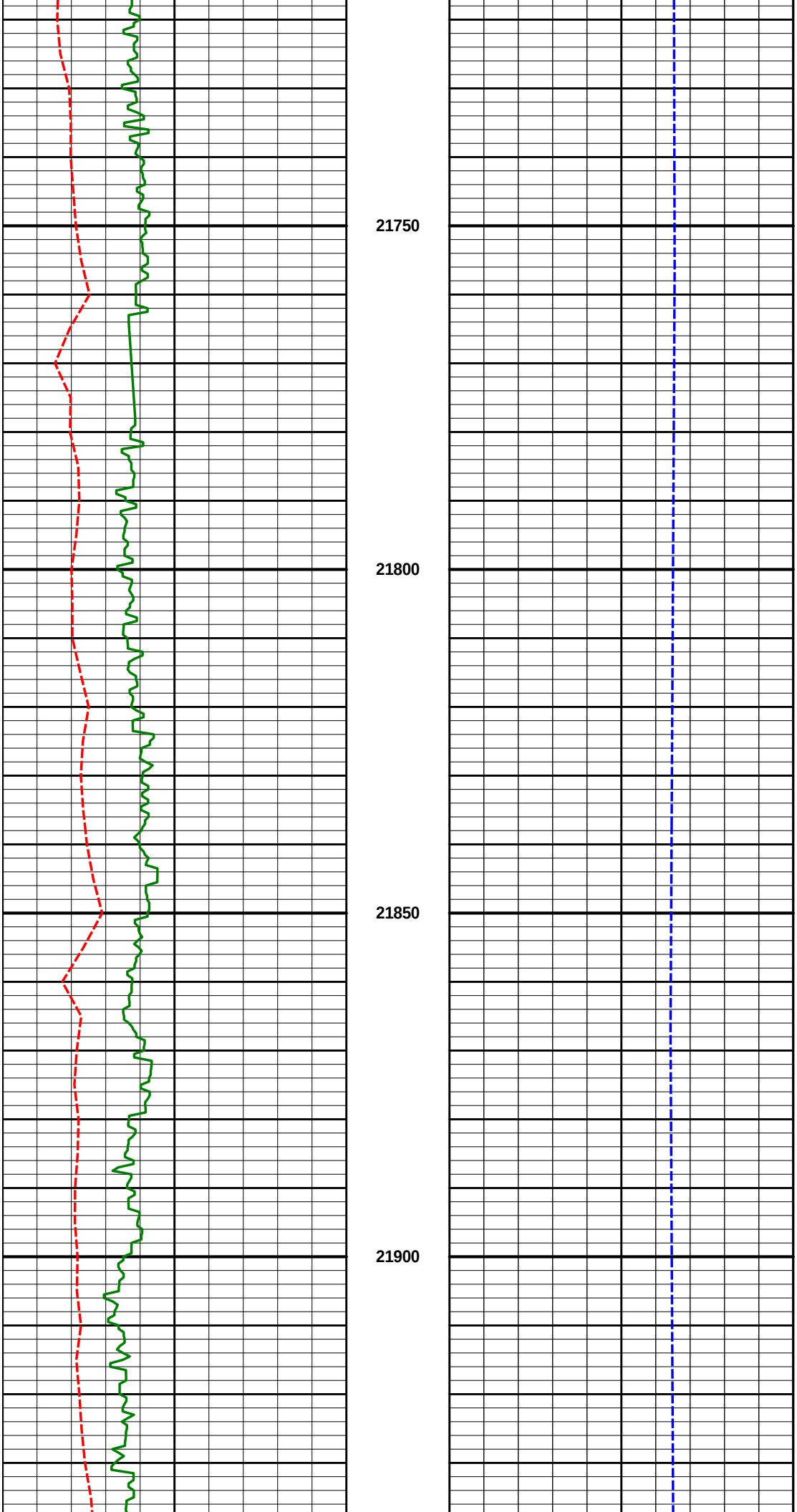
21208.00' MD 89.81° INC 179.84° AZ
7856.58' TVD 9179.72' VS 1.52DL


21300
21350
21400
21450
21297.00' MD
7856.84' TVD
89.87° INC
9265.17' VS
180.38° AZ
0.60DL
21386.00' MD
7857.03' TVD
89.88° INC
9350.65' VS
179.73° AZ
0.73DL
21475.00' MD
7857.21' TVD
89.90° INC
9436.24' VS
179.82° AZ
0.11DL



21564.00' MD 89.76° INC 180.20° AZ
7857.47' TVD 9521.74' VS 0.46DL

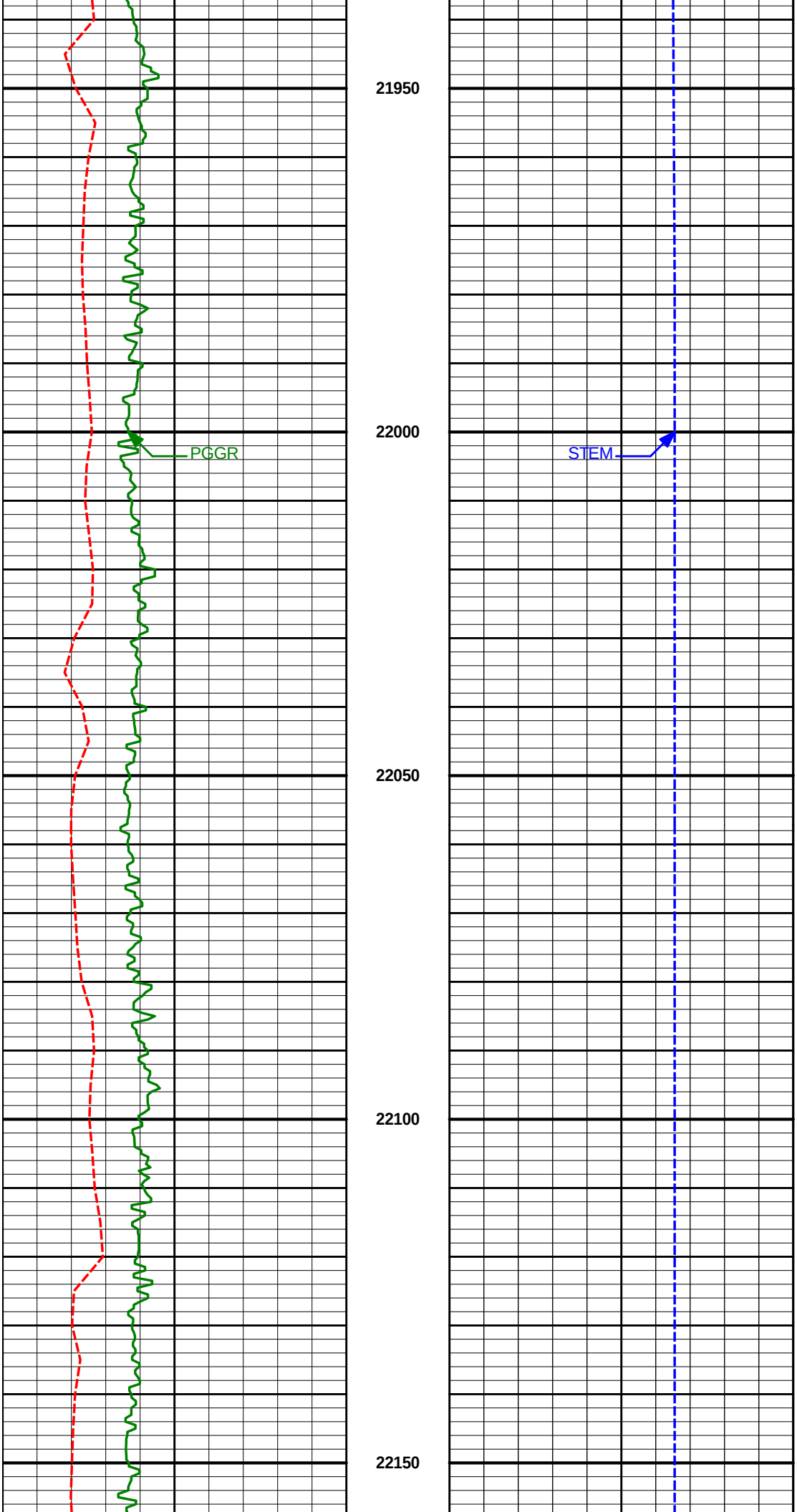
21653.00' MD 89.98° INC 180.70° AZ
7857.67' TVD 9607.04' VS 0.61DL



21742.00' MD 89.86° INC 180.65° AZ
7857.80' TVD 9692.24' VS 0.14DL

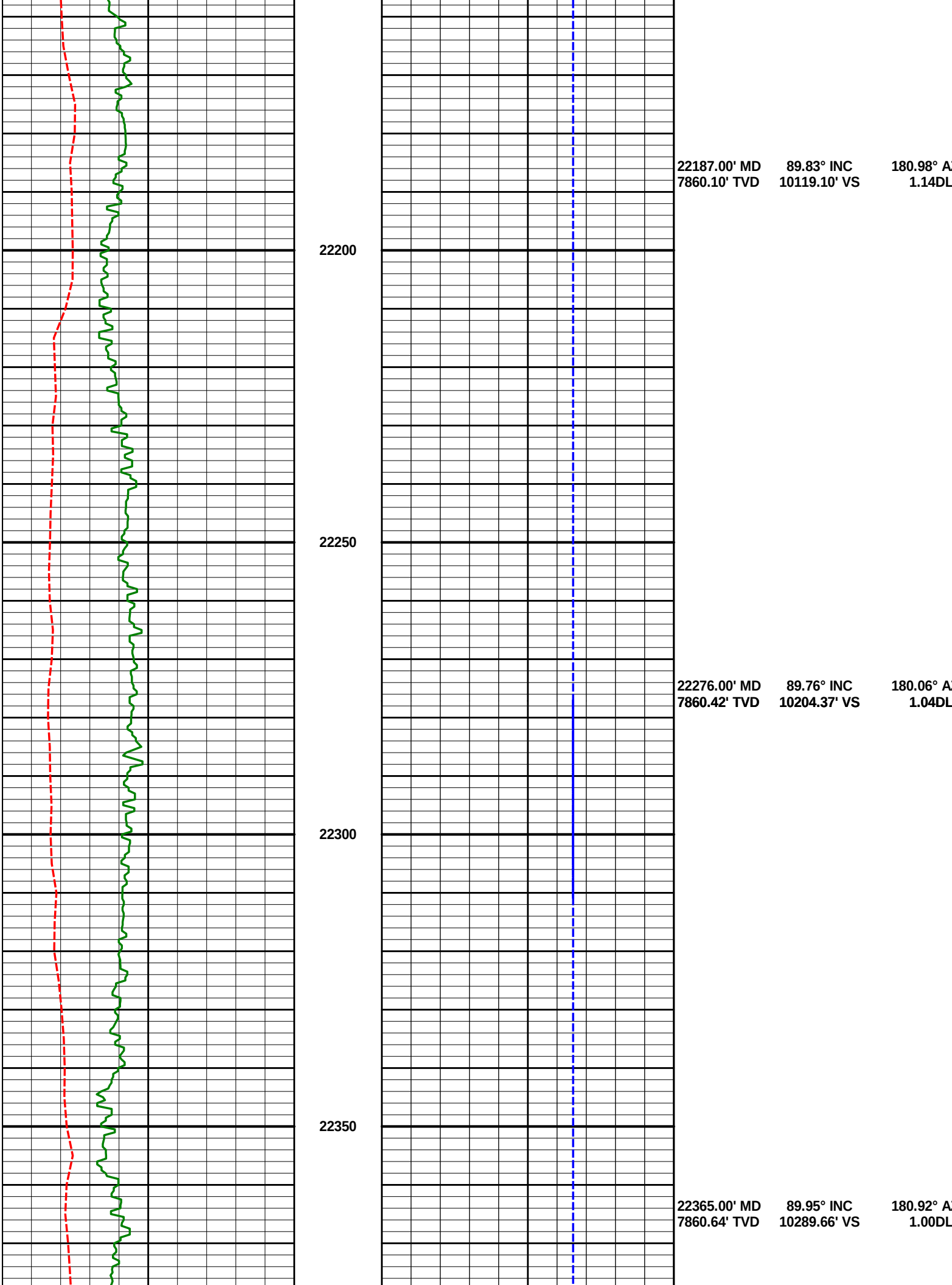
21831.00' MD 89.58° INC 180.08° AZ
7858.23' TVD 9777.58' VS 0.72DL

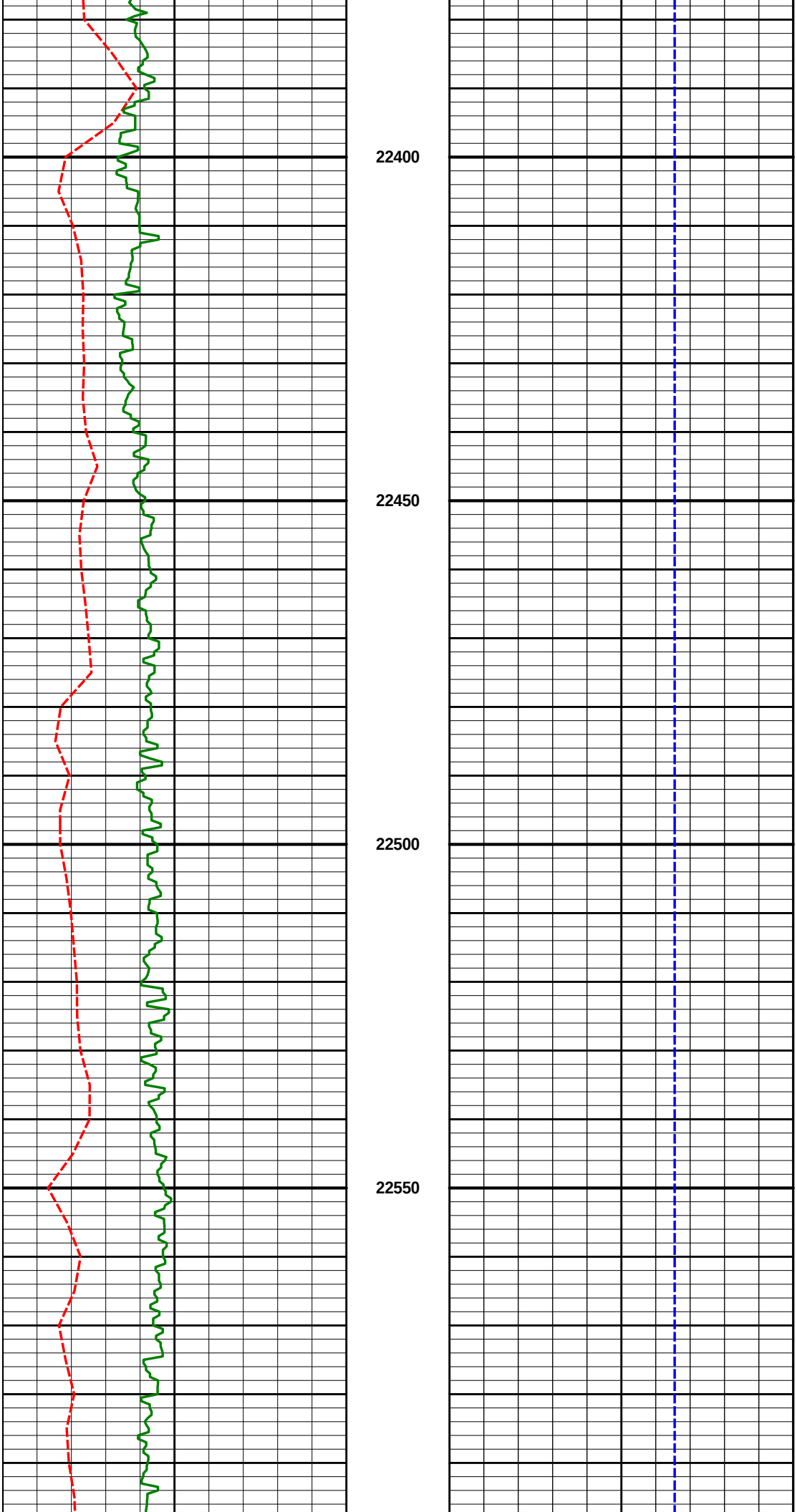
21920.00' MD 89.69° INC 180.77° AZ
7858.80' TVD 9862.90' VS 0.79DL

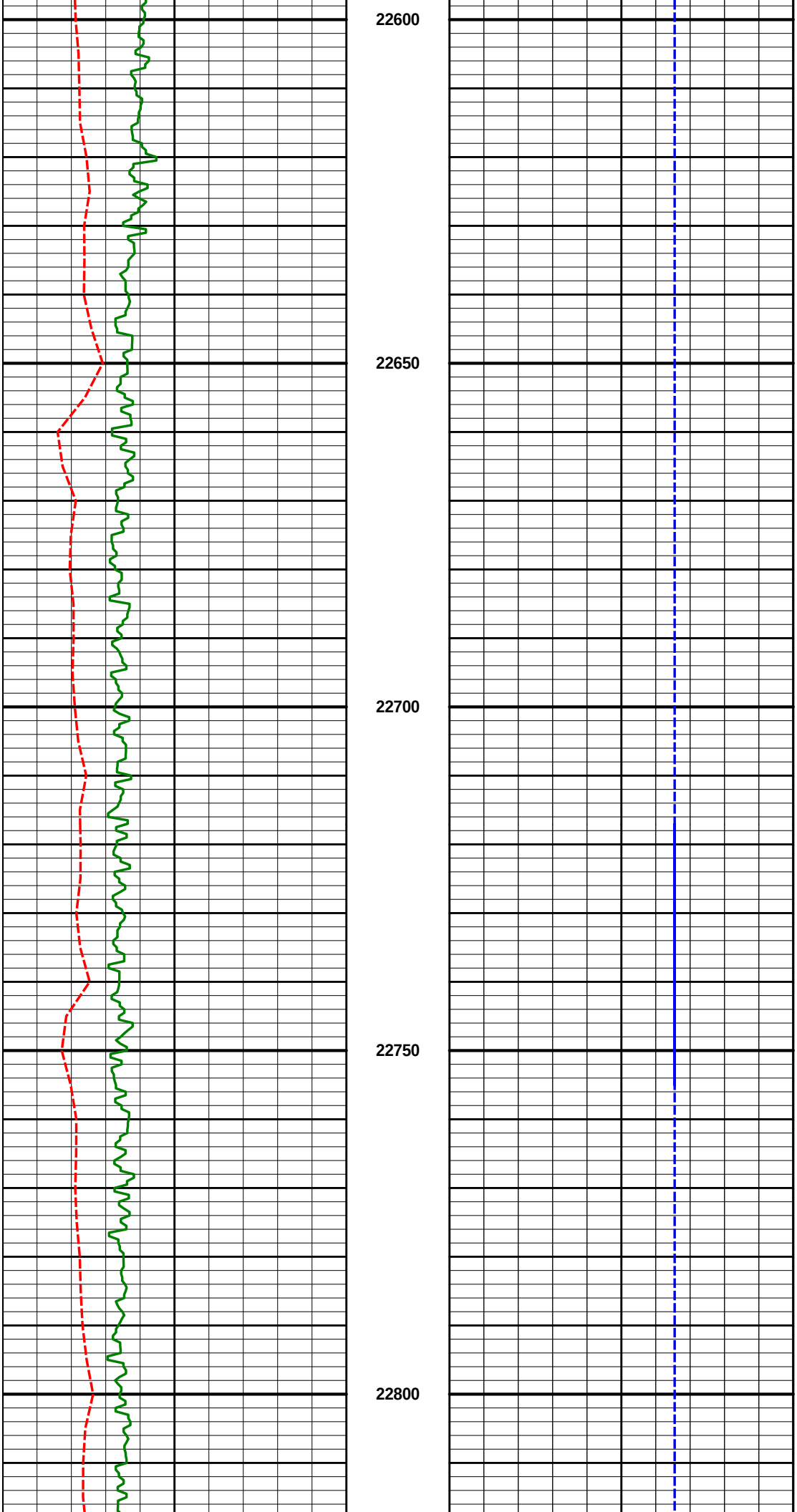


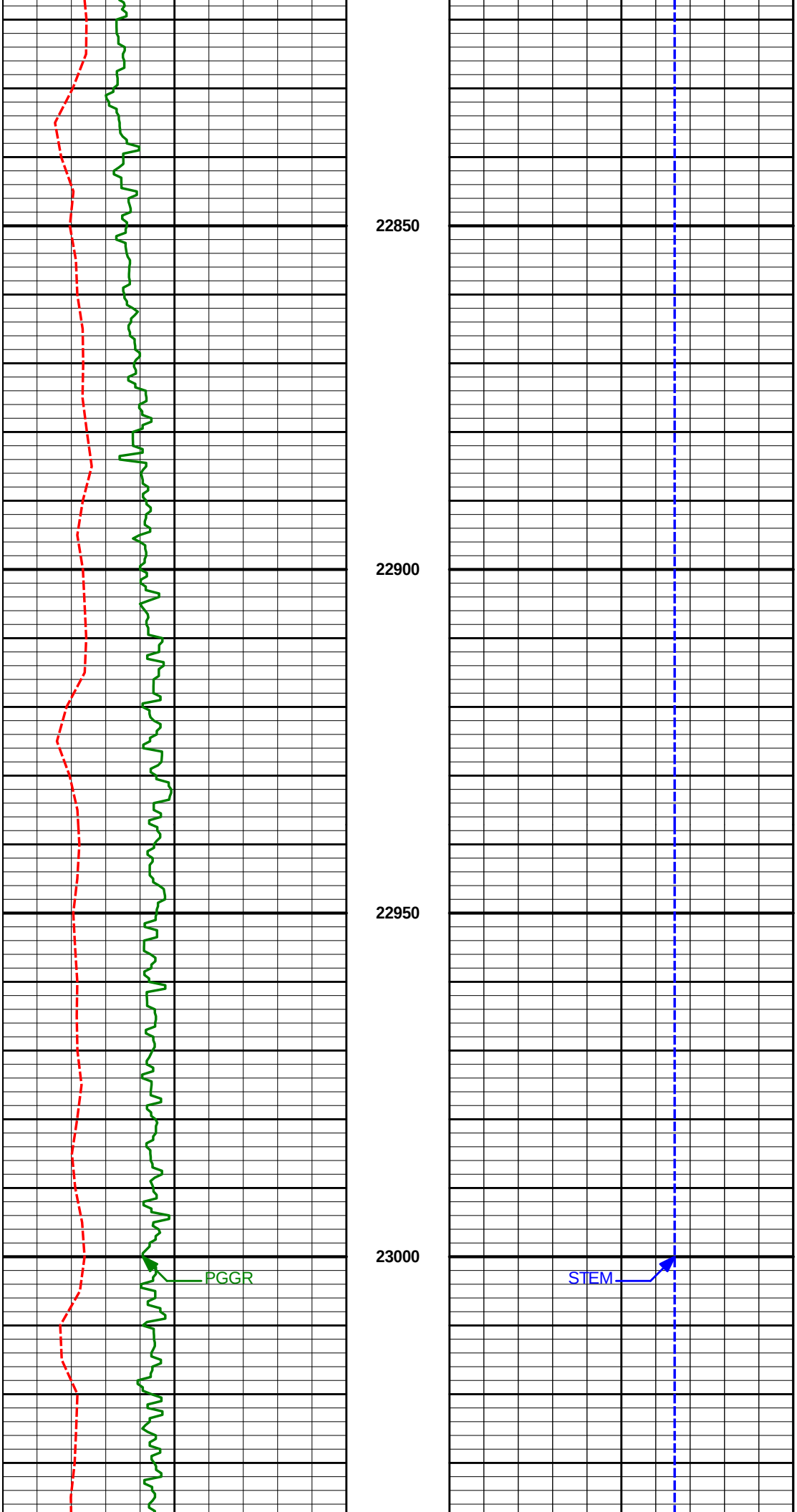
22009.00' MD 89.81° INC 179.78° AZ
7859.18' TVD 9948.28' VS 1.12DL

22099.00' MD 89.58° INC 180.01° AZ
7859.65' TVD 10034.78' VS 0.36DL


22187.00' MD 89.83° INC 180.98° AZ
7860.10' TVD 10119.10' VS 1.14DL
22200
22250
22276.00' MD 89.76° INC 180.06° AZ
7860.42' TVD 10204.37' VS 1.04DL
22300
22350
22365.00' MD 89.95° INC 180.92° AZ
7860.64' TVD 10289.66' VS 1.00DL

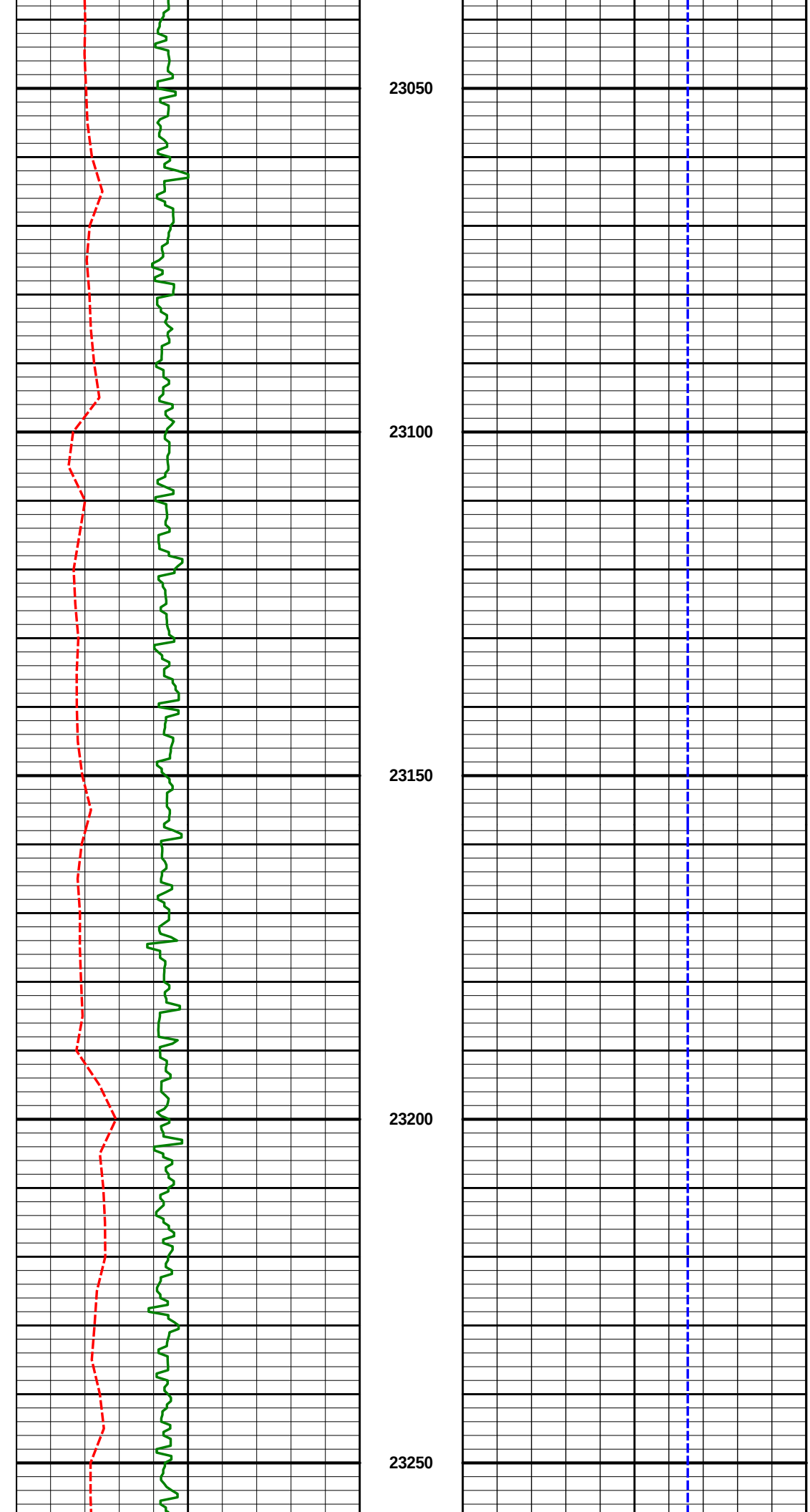

22400
22450
22454.00' MD
7860.93' TVD
89.68° INC
10375.12' VS
179.22° A
1.94DL
22500
22543.00' MD
7861.27' TVD
89.88° INC
10460.67' VS
180.54° A
1.50DL
22550


22600
22633.00' MD
89.82° INC
180.74° AZ
7861.50' TVD
10546.85' VS
0.22DL
22650
22700
22722.00' MD
90.39° INC
180.67° AZ
7861.34' TVD
10632.04' VS
0.64DL
22750
22800
22811.00' MD
89.92° INC
178.83° AZ
7861.10' TVD
10717.64' VS
2.13DL



22900.00' MD 90.35° INC 180.32° A
7860.89' TVD 10803.32' VS 1.74DL

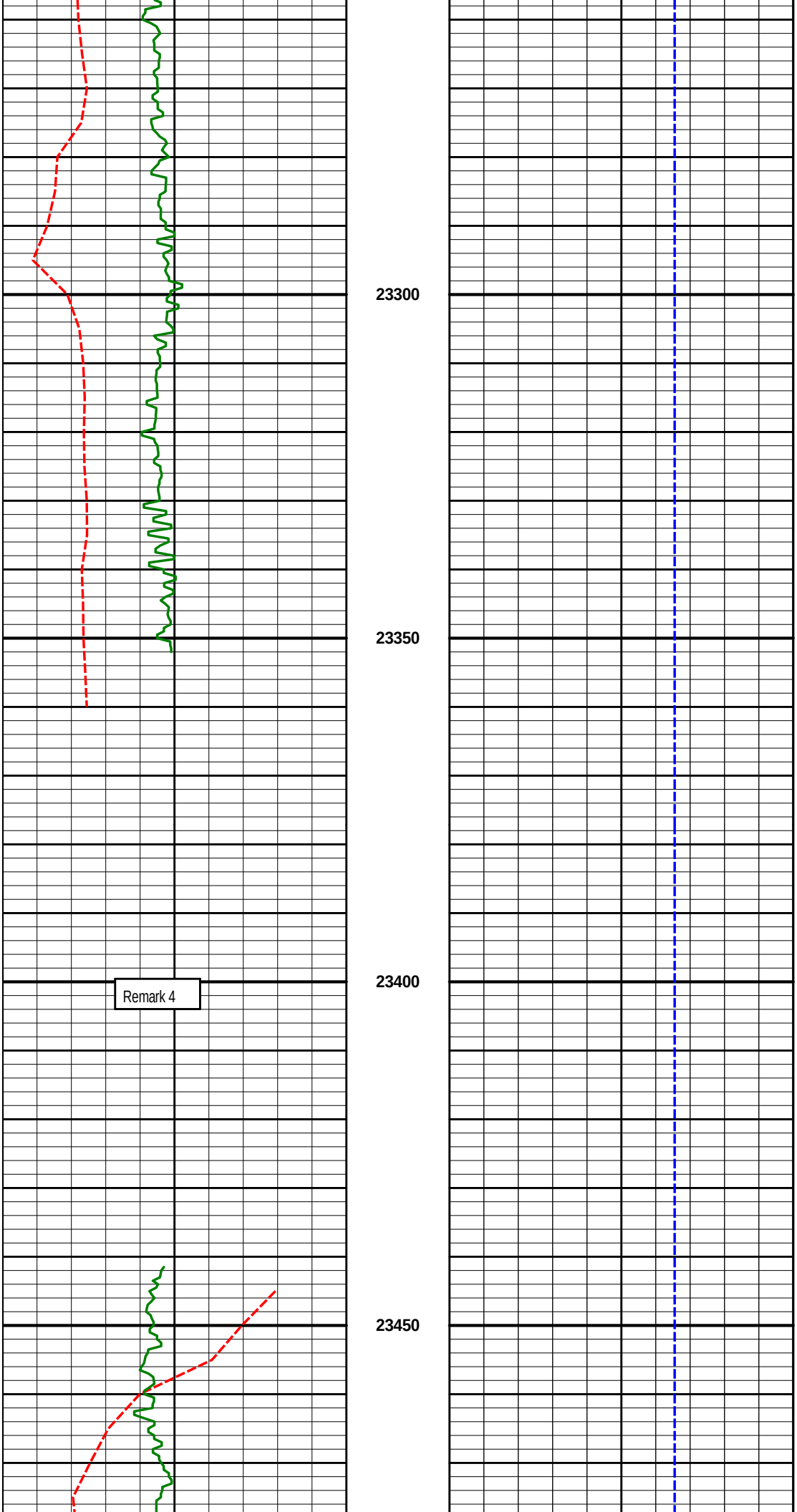
22989.00' MD 90.19° INC 179.55° A
7860.48' TVD 10888.85' VS 0.88DL



23077.00' MD 90.19° INC 179.28° AZ
7860.19' TVD 10973.63' VS 0.32DL

23166.00' MD 90.32° INC 179.14° AZ
7859.79' TVD 11059.47' VS 0.21DL

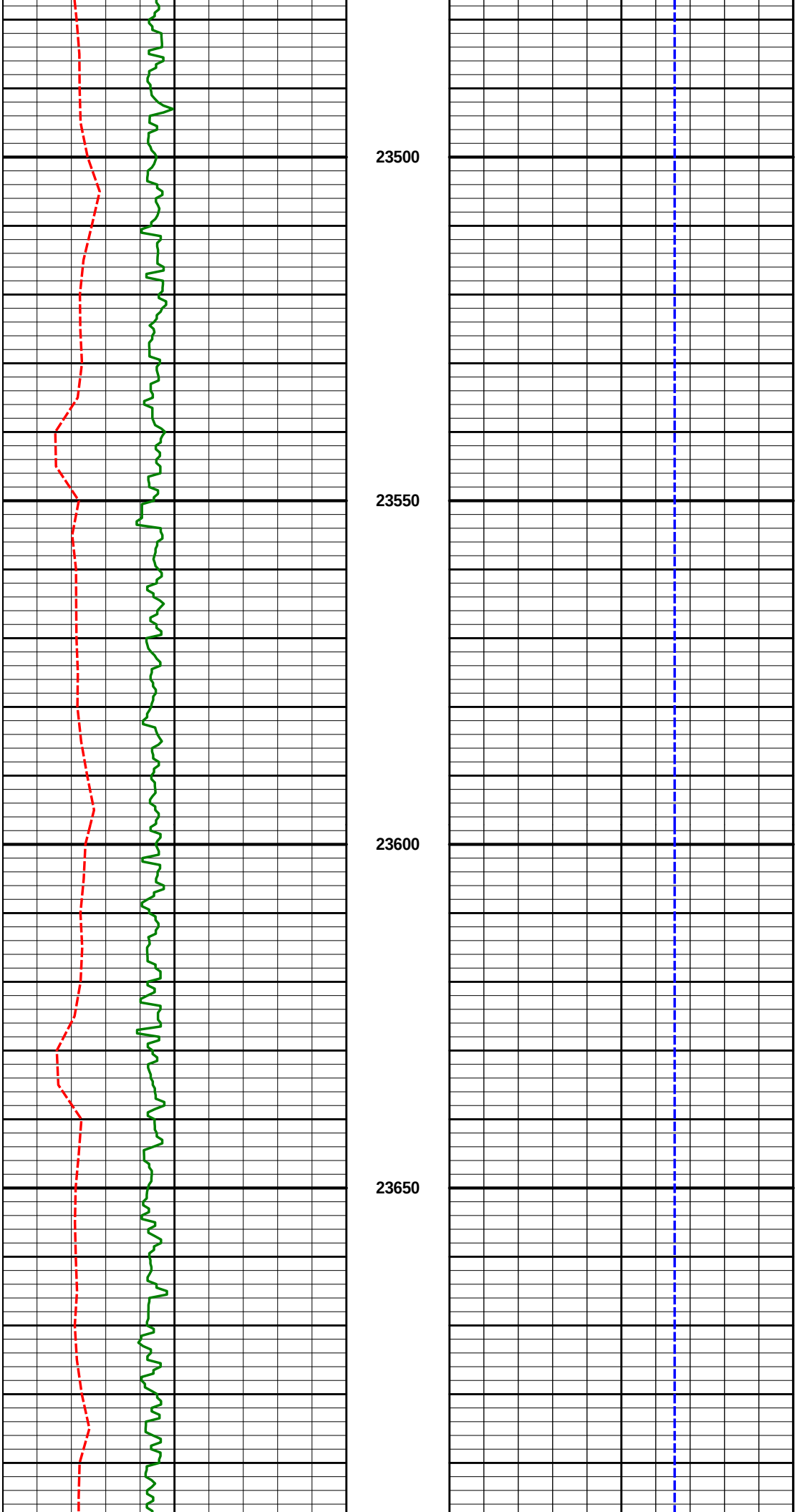
23256.00' MD 89.87° INC 180.48° AZ



7859.65' TVD 11146.01' VS 1.57DL

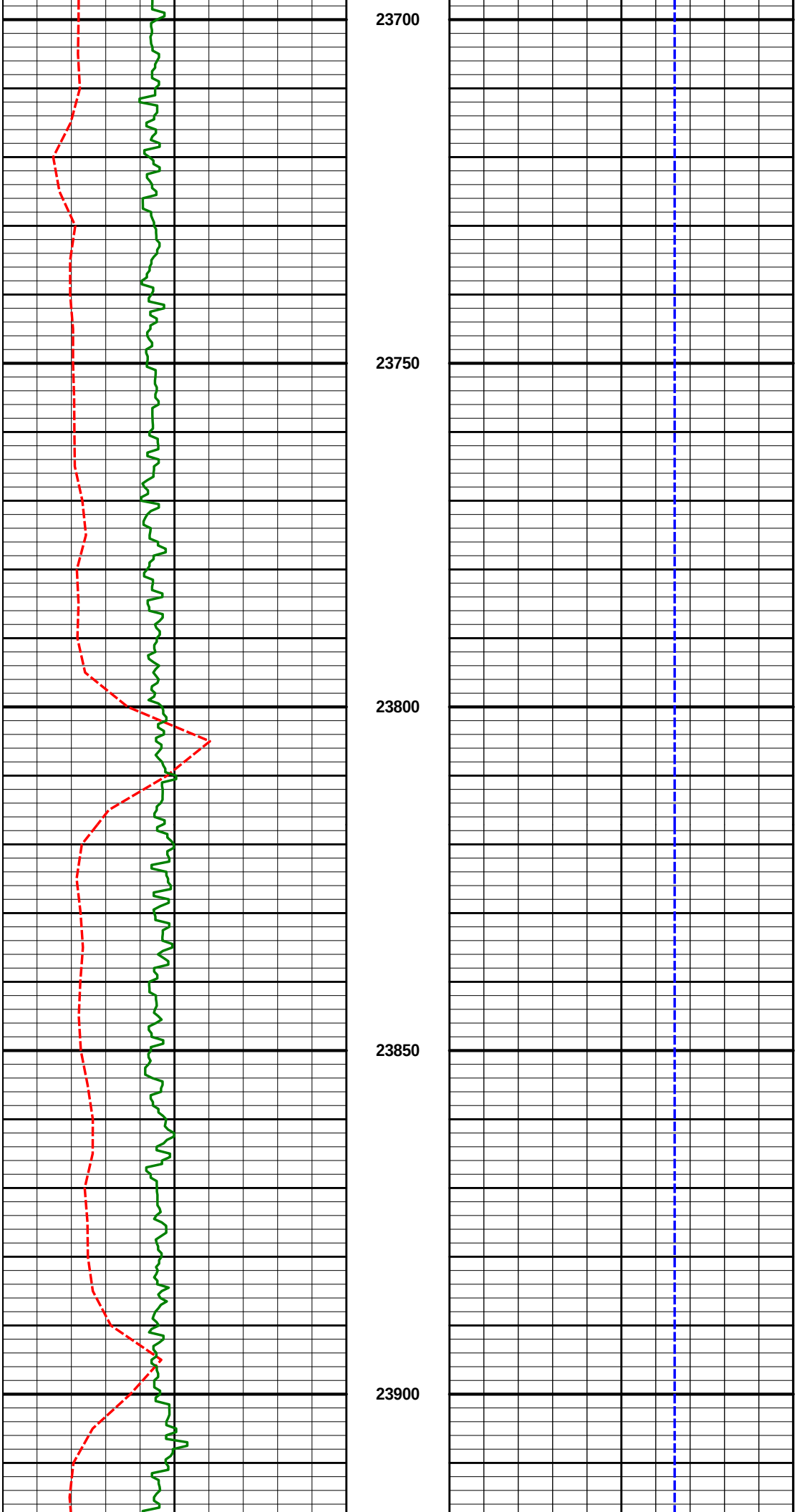
23345.00' MD 89.98° INC 179.18° A
7859.76' TVD 11231.58' VS 1.47DL

23434.00' MD 89.88° INC 179.27° A
7859.87' TVD 11317.40' VS 0.16DL



23523.00' MD 89.92° INC 178.70° AZ
7860.03' TVD 11403.33' VS 0.64DL

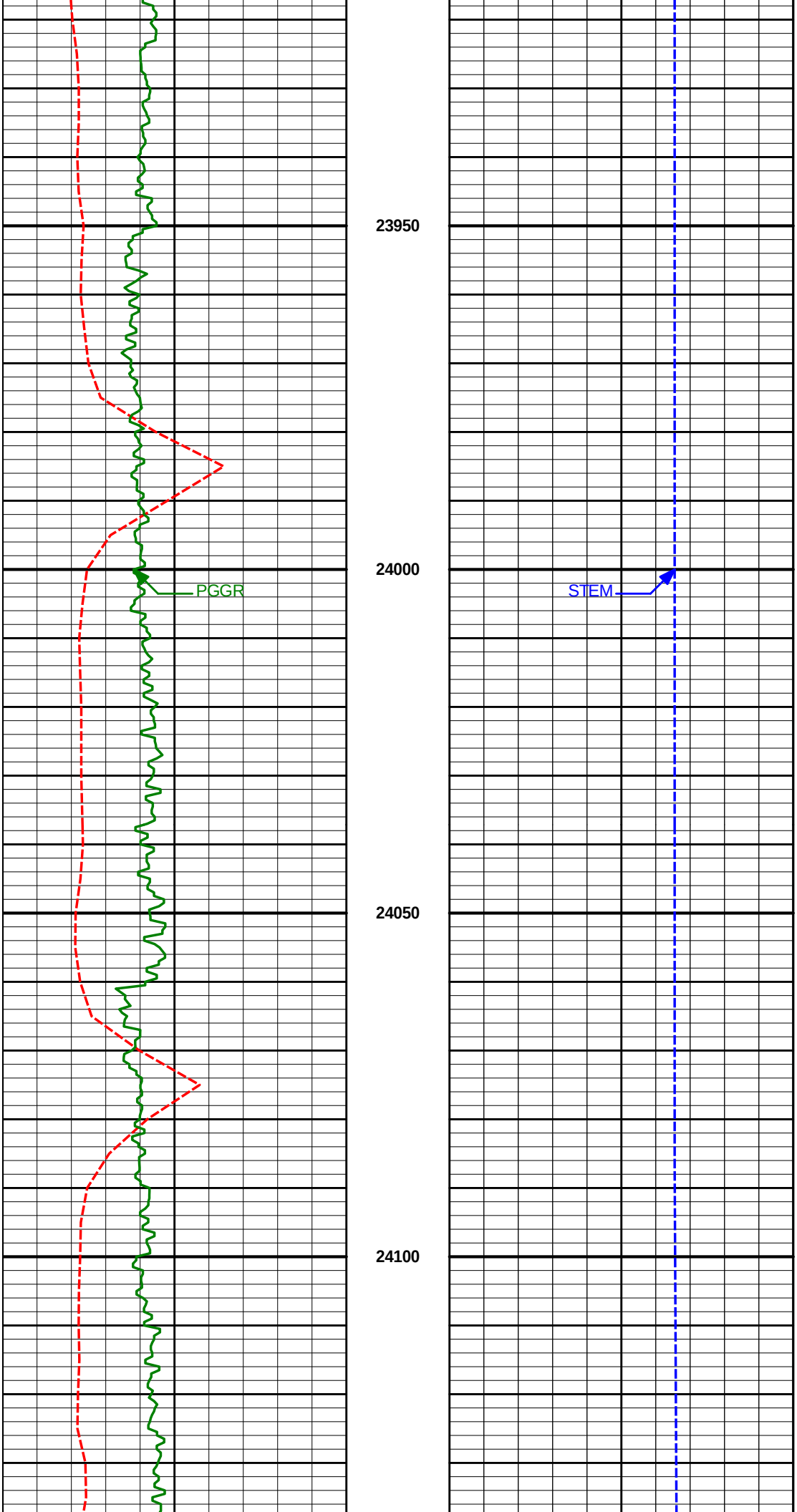
23612.00' MD 90.02° INC 179.91° AZ
7860.08' TVD 11489.12' VS 1.36DL



23701.00' MD 90.08° INC 179.41° A
7860.00' TVD 11574.76' VS 0.57DL

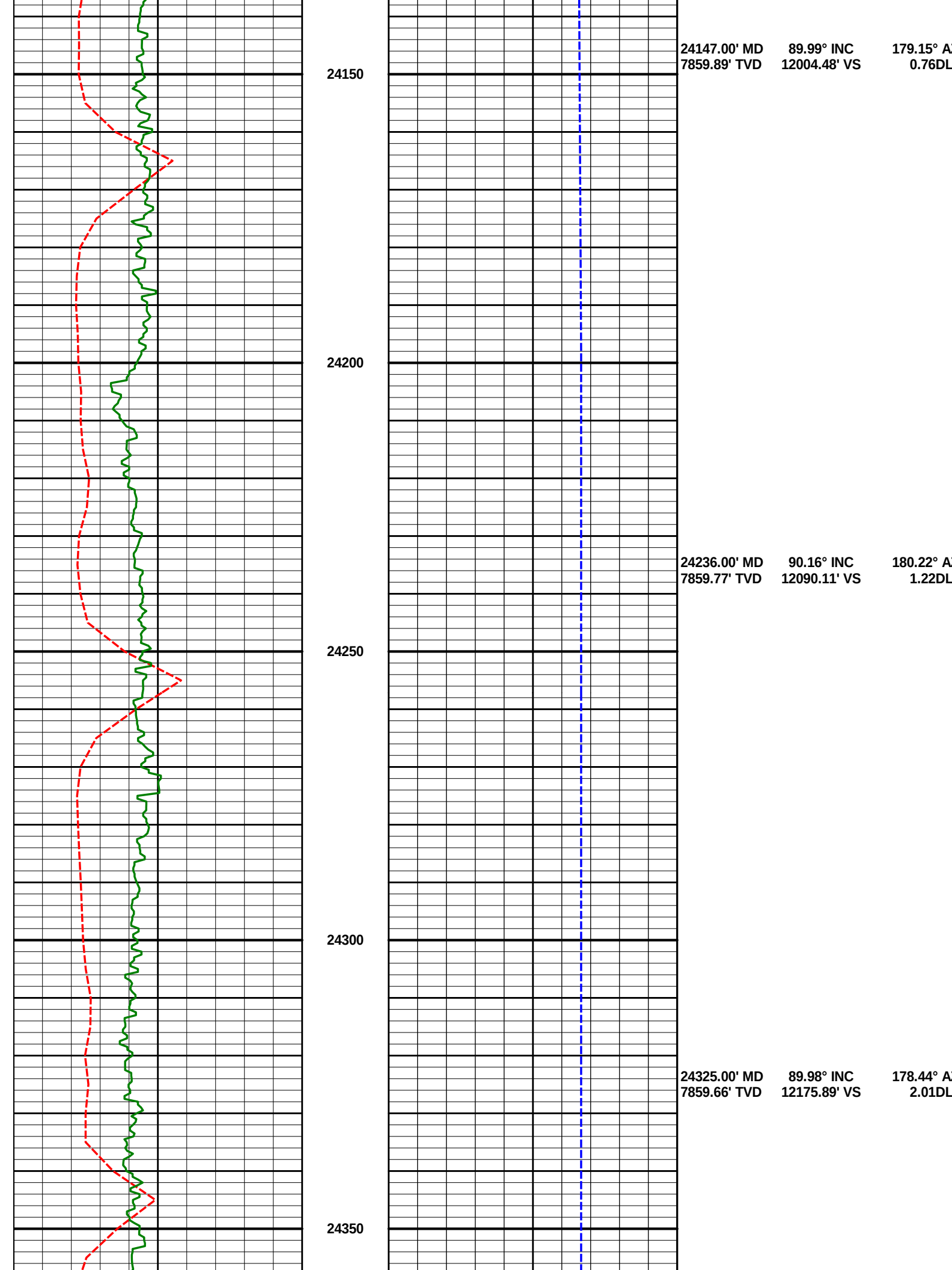
23790.00' MD 90.10° INC 178.91° A
7859.85' TVD 11660.62' VS 0.56DL

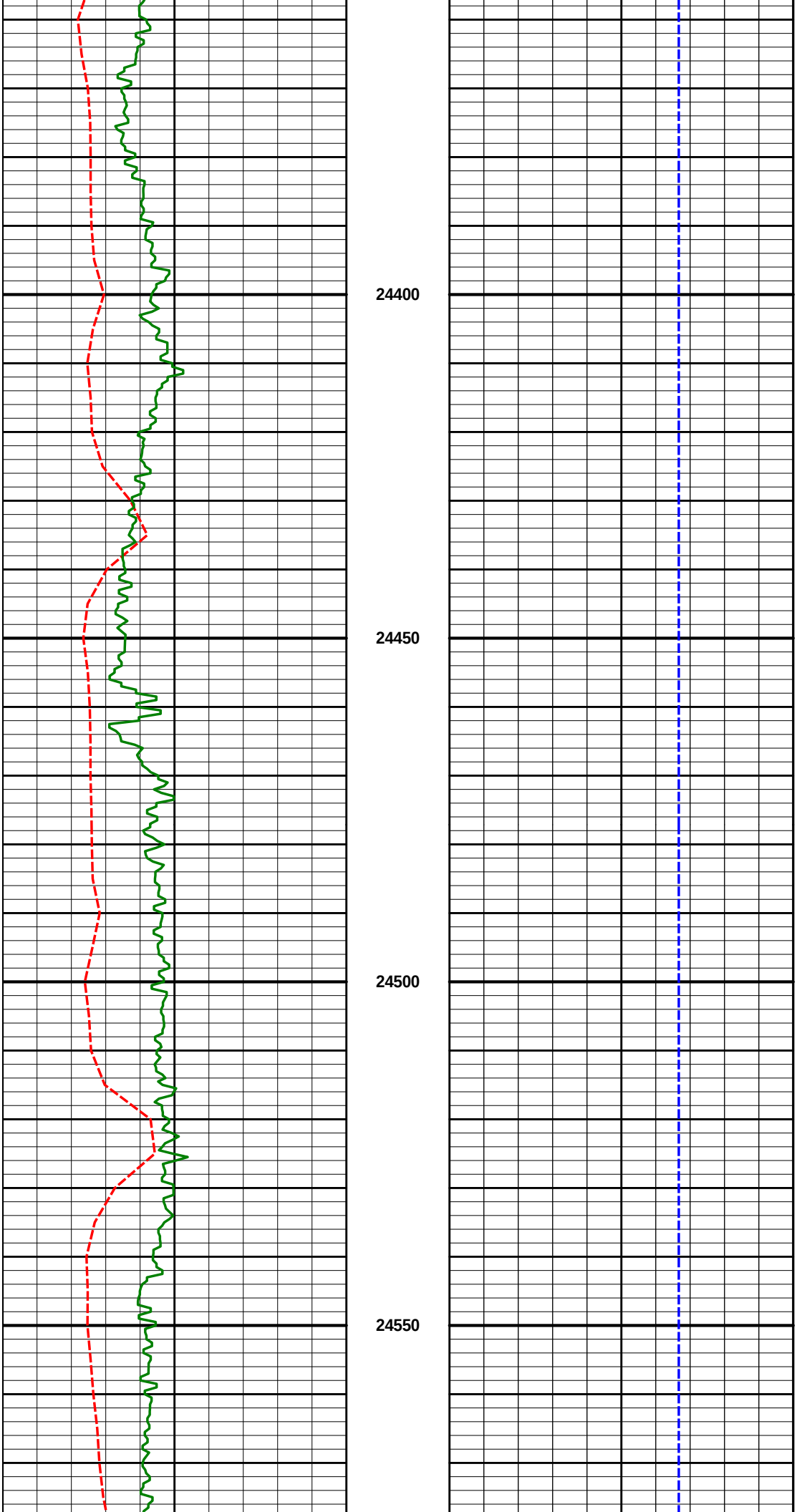
23879.00' MD 90.03° INC 179.86° A
7859.75' TVD 11746.38' VS 1.06DL



23968.00' MD 89.91° INC 179.16° A
7859.79' TVD 11832.08' VS 0.79DL

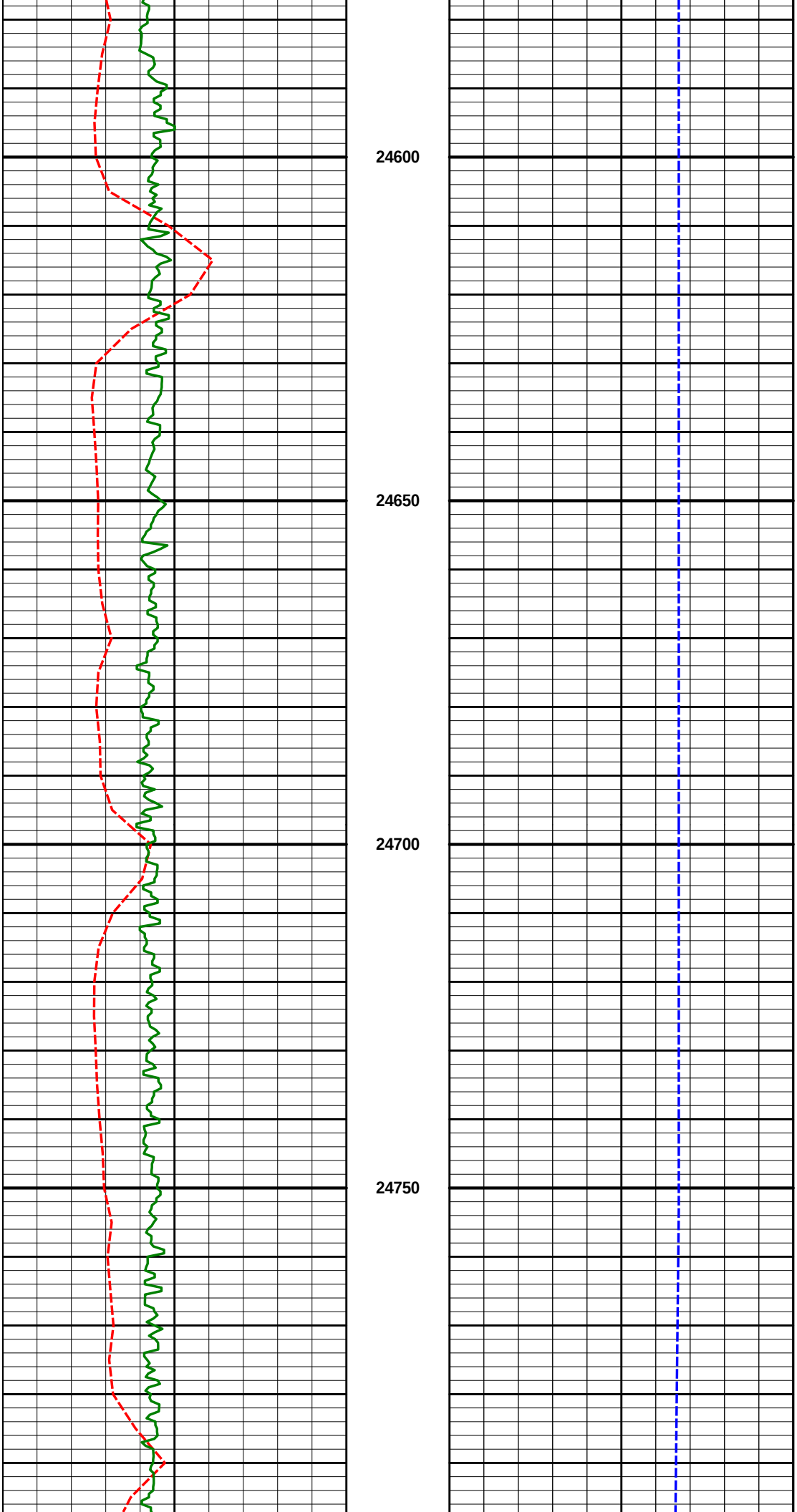
24057.00' MD 89.98° INC 179.83° A
7859.87' TVD 11917.80' VS 0.76DL


24150
24200
24250
24300
24350
24147.00' MD
89.99° INC
179.15° A
7859.89' TVD
12004.48' VS
0.76DL
24236.00' MD
90.16° INC
180.22° A
7859.77' TVD
12090.11' VS
1.22DL
24325.00' MD
89.98° INC
178.44° A
7859.66' TVD
12175.89' VS
2.01DL



24414.00' MD 90.03° INC 181.29° A
7859.66' TVD 12261.44' VS 3.20DL

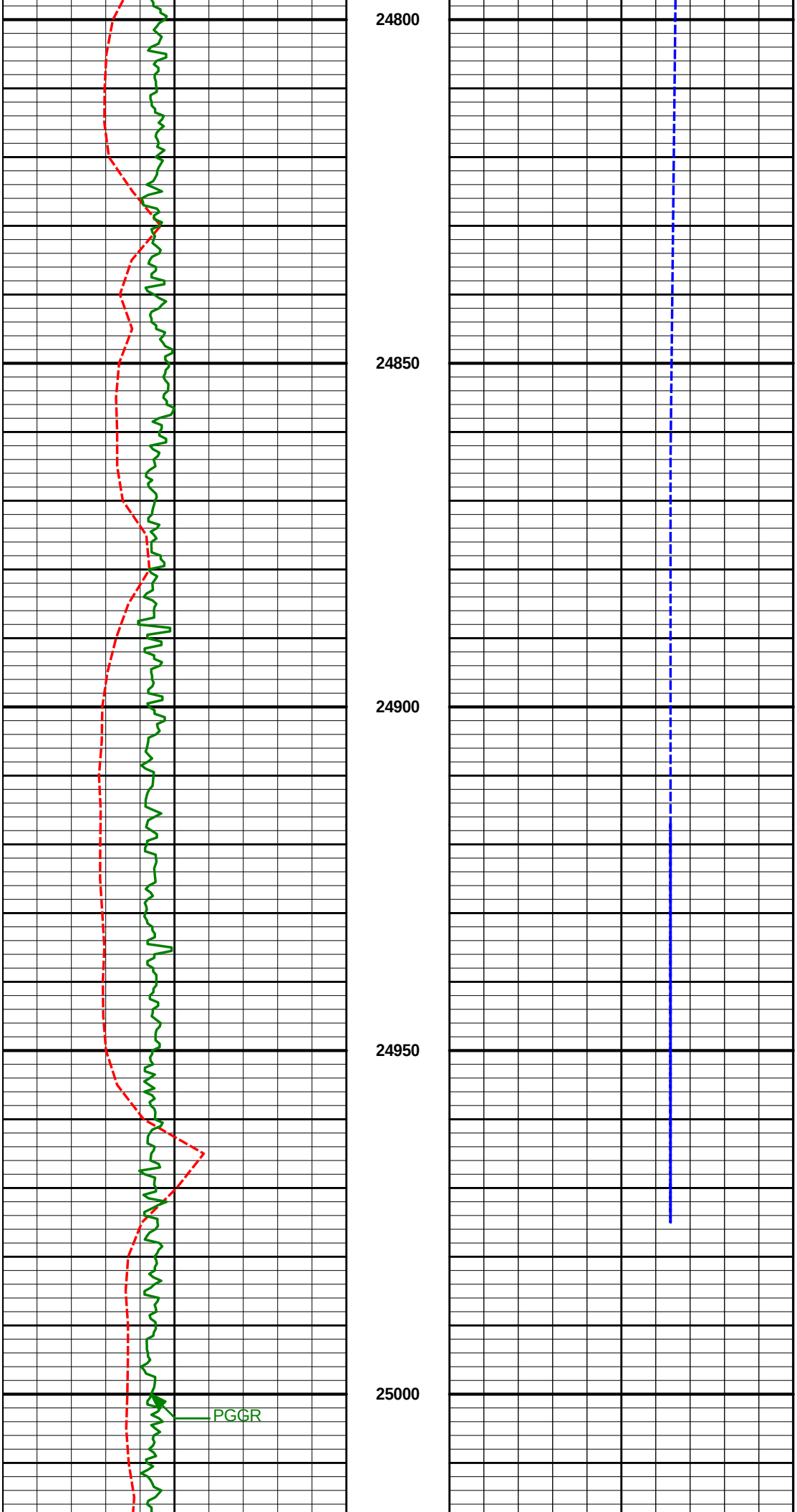
24503.00' MD 89.93° INC 178.81° A
7859.69' TVD 12346.91' VS 2.78DL



24592.00' MD 89.98° INC 179.95° AZ
7859.76' TVD 12432.67' VS 1.28DL

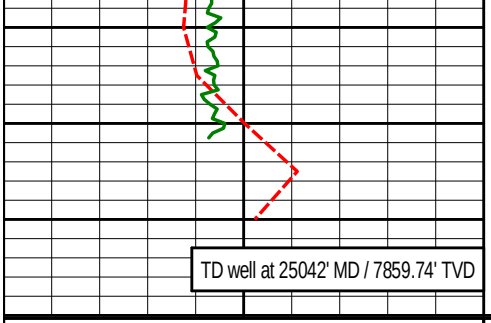
24680.00' MD 89.88° INC 181.35° AZ
7859.86' TVD 12516.93' VS 1.59DL

24770.00' MD 89.90° INC 178.90° AZ
7860.03' TVD 12603.33' VS 2.72DL



24858.00' MD 89.89° INC 180.38° A
7860.19' TVD 12688.02' VS 1.68DL

24947.00' MD 90.26° INC 178.63° A
7860.08' TVD 12773.73' VS 2.01DL



25024.00' MD 90.17° INC 178.88° AZ
7859.79' TVD 12848.15' VS 0.34DL

25042.00' MD 90.17° INC 178.88° AZ
7859.74' TVD 12865.53' VS 0.00DL

Rate of Penetration	MD	Temperature	Surveys
ROPA	ft	STEM	
500 feet per hr 0	1 : 240	100 fahrenheit 400	

Gamma Ray
PGGR
0 api 300

HALLIBURTON

DIRECTIONAL SURVEY REPORT

Extraction Oil _Gas
Interchange B S22-30-20N
Wattenberg
Broomfield Colorado
USA
CA-XX-0907820368

Surveys from surface to 11850' MD are provided by Total Directional. All other surveys are provided by Sperry Drilling.
Final survey at 25042' MD is a straight line projection to bit.

Measured Depth (feet)	*Inclination (degrees)*	*Direction (degrees)*	*Vertical Depth (feet)*	*Latitude (feet)*	*Departure (feet)*	*Vertical Section (feet)*	*Dogleg (deg/100f*
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
119.00	0.44	260.43	119.00	0.08 S	0.45 W	-0.05	0.37
206.00	1.01	55.73	206.00	0.30 N	0.15 W	-0.33	1.63
293.00	2.64	49.14	292.95	2.04 N	2.00 E	-1.41	1.89
381.00	4.97	54.95	380.75	5.56 N	6.66 E	-3.49	2.68
468.00	6.94	45.72	467.28	11.39 N	13.51 E	-7.20	2.51
555.00	8.92	37.80	553.44	20.39 N	21.40 E	-13.65	2.59
642.00	9.84	55.30	639.30	29.96 N	31.65 E	-19.99	3.43
729.00	10.81	55.12	724.89	38.85 N	44.46 E	-24.98	1.12
816.00	13.05	45.89	810.01	50.36 N	58.21 E	-32.22	3.37
904.00	15.51	48.62	895.29	65.06 N	74.17 E	-41.90	2.90
991.00	18.15	49.93	978.55	81.47 N	93.27 E	-52.37	3.07
1078.00	20.30	48.35	1060.70	100.23 N	114.92 E	-64.38	2.54
1165.00	22.54	45.89	1141.68	121.86 N	138.17 E	-78.71	2.77
1253.00	24.74	42.55	1222.30	147.17 N	162.74 E	-96.20	2.93
1340.00	25.84	43.87	1300.96	174.25 N	188.19 E	-115.15	1.42
1427.00	26.06	43.69	1379.19	201.74 N	214.53 E	-134.24	0.27
1514.00	27.91	44.92	1456.71	229.98 N	242.11 E	-153.72	2.22
1601.00	29.93	45.98	1532.86	259.48 N	272.10 E	-173.73	2.40
1645.00	29.88	46.15	1571.00	274.70 N	287.90 E	-183.97	0.22
1765.00	32.24	43.05	1673.80	318.81 N	331.31 E	-214.29	2.38
1854.00	33.57	41.77	1748.52	354.51 N	363.91 E	-239.53	1.69
1943.00	35.28	42.09	1821.93	391.94 N	397.53 E	-266.16	1.93
2032.00	35.79	39.73	1894.35	431.03 N	431.40 E	-294.31	1.64
2121.00	36.53	40.45	1966.21	471.20 N	465.22 E	-323.51	0.96
2210.00	37.76	42.17	2037.15	511.56 N	500.70 E	-352.43	1.81
2299.00	35.17	39.74	2108.73	551.47 N	535.39 E	-381.14	3.33
2388.00	35.94	40.27	2181.13	591.11 N	568.66 E	-409.98	0.93
2477.00	37.66	42.43	2252.40	631.11 N	603.89 E	-438.63	2.42
2566.00	38.59	45.72	2322.42	670.57 N	642.11 E	-465.92	2.51

2833.00	39.06	46.19	2532.62	785.70 N	759.77 E	-543.86	1.49
2922.00	39.65	45.38	2601.44	825.06 N	800.22 E	-570.44	0.88
3012.00	39.54	44.31	2670.79	865.73 N	840.67 E	-598.28	0.77
3101.00	38.36	39.51	2740.02	907.32 N	878.04 E	-627.86	3.64
3190.00	37.06	39.64	2810.43	949.28 N	912.72 E	-658.54	1.46
3279.00	36.90	39.27	2881.52	990.61 N	946.74 E	-688.80	0.31
3368.00	36.58	39.26	2952.84	1031.83 N	980.43 E	-719.05	0.36
3546.00	36.84	37.01	3095.55	1115.52 N	1046.12 E	-781.20	0.77
3635.00	36.59	40.82	3166.90	1156.90 N	1079.53 E	-811.68	2.57
3725.00	37.32	43.23	3238.82	1197.08 N	1115.75 E	-840.23	1.80
3814.00	38.35	43.06	3309.11	1236.91 N	1153.08 E	-868.13	1.16
3903.00	37.63	41.68	3379.26	1277.38 N	1190.00 E	-896.75	1.25
3992.00	37.01	40.70	3450.04	1317.98 N	1225.54 E	-925.89	0.96
4081.00	37.14	41.71	3521.04	1358.35 N	1260.88 E	-954.86	0.70
4171.00	36.38	38.96	3593.15	1399.39 N	1295.75 E	-984.60	2.01
4260.00	37.21	41.50	3664.43	1440.07 N	1330.18 E	-1014.13	1.95
4349.00	37.30	45.40	3735.27	1479.17 N	1367.22 E	-1041.40	2.65
4438.00	37.43	44.92	3806.01	1517.25 N	1405.51 E	-1067.36	0.36
4527.00	38.13	47.47	3876.36	1554.98 N	1444.86 E	-1092.67	1.92
4616.00	37.98	46.63	3946.44	1592.36 N	1485.02 E	-1117.43	0.61
4705.00	38.01	44.69	4016.58	1630.65 N	1524.20 E	-1143.34	1.34
4794.00	37.51	41.22	4086.95	1670.51 N	1561.33 E	-1171.33	2.45
4883.00	37.91	37.18	4157.37	1712.69 N	1595.71 E	-1202.30	2.81
4994.00	40.43	36.58	4243.42	1768.77 N	1637.78 E	-1244.49	2.30
5083.00	39.40	35.64	4311.68	1814.90 N	1671.44 E	-1279.47	1.34
5172.00	38.94	35.48	4380.68	1860.63 N	1704.13 E	-1314.32	0.53
5261.00	36.79	39.49	4450.95	1903.98 N	1737.32 E	-1346.76	3.67
5351.00	37.72	41.16	4522.58	1945.51 N	1772.58 E	-1376.86	1.53
5440.00	38.54	41.37	4592.59	1986.82 N	1808.82 E	-1406.48	0.93
5529.00	40.89	40.59	4661.05	2029.75 N	1846.11 E	-1437.37	2.70
5618.00	42.29	40.86	4727.61	2074.52 N	1884.65 E	-1469.68	1.59
5707.00	41.66	41.69	4793.78	2119.26 N	1923.91 E	-1501.76	0.94
5796.00	41.37	39.35	4860.42	2164.09 N	1962.24 E	-1534.19	1.77
5885.00	42.16	39.47	4926.81	2209.89 N	1999.87 E	-1567.74	0.89
5974.00	42.60	40.50	4992.55	2255.85 N	2038.42 E	-1601.19	0.92
6063.00	39.75	39.66	5059.54	2300.67 N	2076.15 E	-1633.77	3.26
6152.00	39.30	41.16	5128.19	2343.80 N	2112.87 E	-1665.01	1.19
6241.00	38.94	42.99	5197.24	2385.48 N	2150.49 E	-1694.61	1.36
6330.00	37.77	43.59	5267.03	2425.68 N	2188.35 E	-1722.71	1.38
6419.00	37.08	43.57	5337.71	2464.86 N	2225.64 E	-1750.00	0.78
6597.00	38.38	40.03	5478.50	2546.07 N	2298.18 E	-1807.87	1.42
6686.00	40.16	40.21	5547.40	2589.14 N	2334.48 E	-1839.17	2.00
6775.00	41.18	41.42	5614.90	2633.03 N	2372.39 E	-1870.81	1.45
6865.00	39.87	42.36	5683.32	2676.57 N	2411.43 E	-1901.80	1.61
6954.00	37.96	42.11	5752.56	2717.96 N	2449.01 E	-1931.13	2.15
7043.00	36.16	42.01	5823.58	2757.78 N	2484.94 E	-1959.40	2.02
7132.00	36.47	41.04	5895.29	2797.24 N	2519.88 E	-1987.61	0.73
7221.00	38.13	38.84	5966.09	2838.60 N	2554.49 E	-2017.73	2.39
7310.00	39.25	37.65	6035.56	2882.29 N	2588.92 E	-2050.15	1.51
7399.00	37.43	38.75	6105.37	2925.68 N	2623.05 E	-2082.36	2.18
7488.00	36.19	39.01	6176.62	2967.19 N	2656.52 E	-2112.95	1.40
7577.00	35.99	40.49	6248.54	3007.50 N	2690.04 E	-2142.36	1.00
7666.00	35.79	40.56	6320.64	3047.16 N	2723.94 E	-2171.05	0.23
7755.00	34.40	43.87	6393.47	3085.06 N	2758.29 E	-2197.92	2.65
7844.00	35.59	45.96	6466.38	3121.19 N	2794.33 E	-2222.62	1.90
7933.00	37.92	45.91	6537.68	3158.23 N	2832.60 E	-2247.58	2.62
8022.00	38.31	45.03	6607.70	3196.75 N	2871.76 E	-2273.72	0.75
8111.00	38.75	46.59	6677.33	3235.39 N	2911.51 E	-2299.80	1.20
8200.00	39.46	46.74	6746.39	3273.91 N	2952.34 E	-2325.47	0.80
8289.00	39.13	44.29	6815.27	3313.40 N	2992.55 E	-2352.24	1.78
8378.00	39.42	43.59	6884.17	3353.97 N	3031.64 E	-2380.36	0.60
8467.00	38.54	41.51	6953.36	3395.20 N	3069.51 E	-2409.46	1.77
8556.00	32.83	46.94	7025.63	3432.48 N	3105.55 E	-2435.26	7.33
8645.00	26.93	62.27	7102.88	3458.39 N	3141.10 E	-2450.28	10.80
8735.00	22.35	81.81	7184.80	3470.33 N	3176.15 E	-2452.03	10.32
8824.00	22.47	102.71	7267.21	3469.00 N	3209.54 E	-2441.48	8.91
8913.00	25.48	116.29	7348.59	3456.77 N	3243.33 E	-2420.34	7.04
9002.00	29.38	123.67	7427.59	3436.17 N	3278.69 E	-2390.74	5.81

9358.00	49.03	151.00	7700.92	3274.65 N	3432.76 E	-2192.79	9.01
9447.00	57.07	156.58	7754.41	3210.86 N	3463.96 E	-2122.84	10.32
9537.00	68.52	162.15	7795.51	3136.04 N	3491.92 E	-2043.21	13.86
9626.00	79.13	168.25	7820.29	3053.53 N	3513.59 E	-1957.93	13.61
9715.00	89.53	177.34	7829.09	2965.88 N	3524.61 E	-1870.65	15.48
9804.00	90.97	177.37	7828.70	2876.97 N	3528.72 E	-1784.11	1.62
9893.00	89.61	179.00	7828.25	2788.02 N	3531.54 E	-1697.87	2.39
9982.00	90.28	178.29	7828.33	2699.05 N	3533.64 E	-1611.81	1.10
10071.00	89.72	180.04	7828.33	2610.06 N	3534.94 E	-1525.96	2.06
10160.00	90.42	179.51	7828.23	2521.07 N	3535.29 E	-1440.37	0.99
10249.00	89.01	181.33	7828.67	2432.08 N	3534.64 E	-1355.06	2.59
10338.00	89.21	181.22	7830.05	2343.11 N	3532.66 E	-1270.14	0.26
10427.00	89.65	180.93	7830.94	2254.13 N	3530.99 E	-1185.12	0.59
10516.00	89.93	181.12	7831.26	2165.14 N	3529.40 E	-1100.08	0.38
10605.00	90.18	180.90	7831.18	2076.16 N	3527.83 E	-1015.03	0.37
10694.00	90.61	180.19	7830.56	1987.16 N	3526.98 E	-929.77	0.93
10783.00	91.38	179.53	7829.02	1898.18 N	3527.20 E	-844.22	1.14
10872.00	89.36	180.50	7828.44	1809.19 N	3527.17 E	-758.73	2.52
10961.00	89.15	179.60	7829.60	1720.20 N	3527.10 E	-673.26	1.04
11050.00	88.72	178.75	7831.26	1631.22 N	3528.38 E	-587.43	1.07
11139.00	87.94	178.47	7833.85	1542.29 N	3530.54 E	-501.39	0.93
11228.00	87.67	178.25	7837.26	1453.39 N	3533.08 E	-415.28	0.39
11317.00	87.30	177.90	7841.16	1364.52 N	3536.07 E	-329.08	0.57
11405.00	88.44	178.25	7844.43	1276.64 N	3539.02 E	-243.83	1.36
11495.00	89.76	179.44	7845.85	1186.67 N	3540.84 E	-156.90	1.97
11584.00	89.75	179.66	7846.23	1097.67 N	3541.53 E	-71.21	0.25
11672.00	89.90	179.67	7846.50	1009.67 N	3542.05 E	13.47	0.17
11761.00	90.45	180.87	7846.23	920.68 N	3541.63 E	98.86	1.48
11850.00	89.80	181.41	7846.03	831.70 N	3539.86 E	183.85	0.95
12035.00	90.71	180.50	7845.21	646.73 N	3536.78 E	360.69	0.70
12124.00	89.98	178.94	7844.67	557.73 N	3537.22 E	446.31	1.93
12213.00	90.21	179.25	7844.52	468.74 N	3538.62 E	532.19	0.43
12302.00	90.19	179.56	7844.21	379.75 N	3539.54 E	617.94	0.35
12391.00	89.87	179.27	7844.16	290.76 N	3540.44 E	703.68	0.49
12480.00	89.96	181.94	7844.29	201.77 N	3539.50 E	788.91	2.99
12569.00	90.05	182.23	7844.28	112.83 N	3536.27 E	873.46	0.35
12658.00	90.15	181.28	7844.12	23.87 N	3533.54 E	958.16	1.07
12836.00	90.18	181.25	7843.62	154.09 S	3529.61 E	1128.02	0.02
12925.00	90.02	180.40	7843.47	243.08 S	3528.33 E	1213.16	0.98
13192.00	90.05	180.52	7843.31	510.07 S	3526.21 E	1469.06	0.05
13370.00	90.33	176.08	7842.71	687.94 S	3531.49 E	1641.41	2.50
13459.00	89.98	177.86	7842.47	776.81 S	3536.20 E	1728.10	2.04
13548.00	89.79	181.26	7842.65	865.80 S	3536.88 E	1813.77	3.82
13727.00	89.82	182.43	7843.26	1044.70 S	3531.13 E	1984.04	0.66
13816.00	89.86	181.19	7843.51	1133.65 S	3528.31 E	2068.72	1.39
13905.00	89.87	180.94	7843.72	1222.64 S	3526.66 E	2153.75	0.28
13994.00	89.95	180.20	7843.87	1311.63 S	3525.78 E	2239.00	0.84
14083.00	89.61	181.14	7844.21	1400.63 S	3524.74 E	2324.20	1.12
14172.00	89.71	180.37	7844.73	1489.62 S	3523.57 E	2409.37	0.87
14350.00	90.05	178.05	7845.09	1667.59 S	3526.03 E	2581.02	1.32
14439.00	89.99	179.15	7845.05	1756.56 S	3528.21 E	2667.10	1.24
14618.00	90.18	181.10	7844.79	1935.55 S	3527.83 E	2838.95	1.10
14707.00	90.12	179.68	7844.55	2024.54 S	3527.23 E	2924.28	1.60
14796.00	90.21	179.63	7844.30	2113.54 S	3527.77 E	3009.93	0.11
14974.00	90.29	177.76	7843.52	2291.49 S	3531.84 E	3182.01	1.05
15063.00	90.05	180.37	7843.25	2380.47 S	3533.29 E	3267.89	2.95
15153.00	89.91	180.70	7843.27	2470.46 S	3532.45 E	3354.11	0.39
15242.00	89.84	181.06	7843.46	2559.45 S	3531.08 E	3439.22	0.42
15331.00	89.69	178.26	7843.83	2648.44 S	3531.60 E	3524.86	3.16
15420.00	89.88	178.48	7844.16	2737.40 S	3534.13 E	3611.03	0.33
15509.00	89.63	178.44	7844.54	2826.37 S	3536.52 E	3697.16	0.29
15598.00	89.65	178.10	7845.09	2915.33 S	3539.21 E	3783.37	0.39
15687.00	89.61	179.33	7845.67	3004.30 S	3541.21 E	3869.40	1.39
15776.00	89.48	178.14	7846.37	3093.28 S	3543.17 E	3955.42	1.35
15865.00	89.58	178.65	7847.10	3182.24 S	3545.66 E	4041.57	0.58
15954.00	89.41	181.37	7847.88	3271.23 S	3545.65 E	4127.06	3.07
16043.00	89.65	179.10	7848.62	3360.22 S	3545.28 E	4212.45	2.57
16132.00	90.17	179.34	7848.75	3449.21 S	3546.50 E	4298.28	0.64

16666.00	90.67	179.14	7845.14	3983.16 S	3551.48 E	4812.62	0.33
16755.00	90.47	179.29	7844.25	4072.15 S	3552.70 E	4898.45	0.28
16934.00	90.70	179.09	7842.42	4251.12 S	3555.23 E	5071.08	0.17
17023.00	90.56	179.45	7841.44	4340.11 S	3556.36 E	5156.88	0.44
17112.00	90.06	179.45	7840.95	4429.10 S	3557.21 E	5242.62	0.56
17201.00	90.14	179.15	7840.80	4518.09 S	3558.29 E	5328.41	0.34
17290.00	89.80	181.17	7840.84	4607.09 S	3558.04 E	5413.84	2.30
17379.00	90.08	179.47	7840.94	4696.08 S	3557.54 E	5499.20	1.94
17468.00	89.96	180.81	7840.91	4785.08 S	3557.33 E	5584.64	1.51
17557.00	90.02	180.44	7840.93	4874.07 S	3556.36 E	5669.86	0.42
17646.00	89.97	179.46	7840.94	4963.07 S	3556.43 E	5755.38	1.10
17735.00	90.22	181.87	7840.79	5052.06 S	3555.40 E	5840.58	2.72
17824.00	89.95	180.77	7840.66	5141.04 S	3553.36 E	5925.49	1.28
17913.00	89.85	180.60	7840.82	5230.03 S	3552.29 E	6010.69	0.21
18002.00	89.61	181.73	7841.24	5319.01 S	3550.48 E	6095.67	1.29
18091.00	89.61	180.56	7841.84	5407.99 S	3548.69 E	6180.65	1.31
18180.00	89.43	181.29	7842.58	5496.97 S	3547.26 E	6265.74	0.84
18269.00	90.12	179.63	7842.93	5585.96 S	3546.54 E	6351.03	2.01
18358.00	89.89	181.51	7842.93	5674.96 S	3545.65 E	6436.28	2.12
18447.00	90.02	178.93	7842.99	5763.95 S	3545.31 E	6521.68	2.91
18536.00	90.03	179.47	7842.95	5852.94 S	3546.55 E	6607.52	0.61
18625.00	89.76	180.53	7843.11	5941.94 S	3546.55 E	6693.01	1.23
18714.00	89.97	179.43	7843.32	6030.94 S	3546.57 E	6778.52	1.26
18892.00	89.58	180.17	7844.03	6208.93 S	3547.19 E	6949.69	0.47
18981.00	90.11	179.15	7844.28	6297.93 S	3547.72 E	7035.33	1.29
19070.00	89.41	179.92	7844.65	6386.92 S	3548.44 E	7121.03	1.16
19159.00	89.40	179.48	7845.57	6475.92 S	3548.91 E	7206.65	0.49
19249.00	89.44	178.96	7846.47	6565.90 S	3550.13 E	7293.44	0.58
19338.00	89.61	179.19	7847.20	6654.89 S	3551.57 E	7379.33	0.33
19427.00	89.81	180.16	7847.65	6743.89 S	3552.07 E	7464.96	1.11
19516.00	89.54	178.45	7848.16	6832.87 S	3553.15 E	7550.75	1.95
19783.00	89.28	179.82	7850.93	7099.82 S	3557.19 E	7808.33	0.52
19872.00	89.70	179.24	7851.72	7188.82 S	3557.91 E	7894.02	0.81
19961.00	89.80	179.93	7852.11	7277.81 S	3558.56 E	7979.70	0.78
20050.00	90.10	178.94	7852.19	7366.81 S	3559.43 E	8065.44	1.17
20229.00	89.52	178.92	7852.78	7545.77 S	3562.78 E	8238.30	0.32
20407.00	89.66	178.75	7854.05	7723.73 S	3566.40 E	8410.26	0.12
20496.00	89.74	179.95	7854.51	7812.72 S	3567.42 E	8496.04	1.35
20585.00	89.75	181.36	7854.90	7901.71 S	3566.41 E	8581.25	1.59
20674.00	89.70	178.85	7855.33	7990.71 S	3566.24 E	8666.70	2.81
20763.00	89.67	180.45	7855.82	8079.70 S	3566.79 E	8752.34	1.79
20852.00	89.97	178.95	7856.10	8168.70 S	3567.26 E	8837.97	1.71
20941.00	90.00	180.67	7856.12	8257.69 S	3567.55 E	8923.55	1.93
21030.00	90.03	179.30	7856.10	8346.69 S	3567.58 E	9009.06	1.54
21119.00	89.77	181.20	7856.26	8435.68 S	3567.20 E	9094.45	2.16
21208.00	89.81	179.84	7856.58	8524.68 S	3566.39 E	9179.72	1.52
21297.00	89.87	180.38	7856.84	8613.68 S	3566.22 E	9265.17	0.60
21386.00	89.88	179.73	7857.03	8702.68 S	3566.14 E	9350.65	0.73
21475.00	89.90	179.82	7857.21	8791.68 S	3566.49 E	9436.24	0.11
21564.00	89.76	180.20	7857.47	8880.68 S	3566.47 E	9521.74	0.46
21653.00	89.98	180.70	7857.67	8969.67 S	3565.76 E	9607.04	0.61
21742.00	89.86	180.65	7857.80	9058.67 S	3564.71 E	9692.24	0.14
21831.00	89.58	180.08	7858.23	9147.66 S	3564.15 E	9777.58	0.72
21920.00	89.69	180.77	7858.80	9236.66 S	3563.49 E	9862.90	0.79
22009.00	89.81	179.78	7859.18	9325.65 S	3563.06 E	9948.28	1.12
22099.00	89.58	180.01	7859.65	9415.65 S	3563.22 E	10034.78	0.36
22187.00	89.83	180.98	7860.10	9503.65 S	3562.46 E	10119.10	1.14
22276.00	89.76	180.06	7860.42	9592.64 S	3561.65 E	10204.37	1.04
22365.00	89.95	180.92	7860.64	9681.64 S	3560.89 E	10289.66	1.00
22454.00	89.68	179.22	7860.93	9770.63 S	3560.77 E	10375.12	1.94
22543.00	89.88	180.54	7861.27	9859.63 S	3560.95 E	10460.67	1.50
22633.00	89.82	180.74	7861.50	9949.63 S	3559.95 E	10546.85	0.22
22722.00	90.39	180.67	7861.34	10038.62 S	3558.86 E	10632.04	0.64
22811.00	89.92	178.83	7861.10	10127.61 S	3559.25 E	10717.64	2.13
22900.00	90.35	180.32	7860.89	10216.61 S	3559.91 E	10803.32	1.74
22989.00	90.19	179.55	7860.48	10305.61 S	3560.01 E	10888.85	0.88
23077.00	90.19	179.28	7860.19	10393.60 S	3560.91 E	10973.63	0.32
23166.00	90.32	179.14	7859.79	10482.59 S	3562.14 E	11059.47	0.21

23434.00	89.88	179.27	7859.87	10750.58 S	3563.89 E	11317.40	0.16
23523.00	89.92	178.70	7860.03	10839.56 S	3565.47 E	11403.33	0.64
23612.00	90.02	179.91	7860.08	10928.56 S	3566.54 E	11489.12	1.36
23701.00	90.08	179.41	7860.00	11017.55 S	3567.06 E	11574.76	0.57
23790.00	90.10	178.91	7859.85	11106.54 S	3568.37 E	11660.62	0.56
23879.00	90.03	179.86	7859.75	11195.54 S	3569.32 E	11746.38	1.06
23968.00	89.91	179.16	7859.79	11284.53 S	3570.08 E	11832.08	0.79
24057.00	89.98	179.83	7859.87	11373.53 S	3570.87 E	11917.80	0.76
24147.00	89.99	179.15	7859.89	11463.53 S	3571.66 E	12004.48	0.76
24236.00	90.16	180.22	7859.77	11552.52 S	3572.15 E	12090.11	1.22
24325.00	89.98	178.44	7859.66	11641.51 S	3573.19 E	12175.89	2.01
24414.00	90.03	181.29	7859.66	11730.50 S	3573.40 E	12261.44	3.20
24503.00	89.93	178.81	7859.69	11819.50 S	3573.32 E	12346.91	2.78
24592.00	89.98	179.95	7859.76	11908.49 S	3574.28 E	12432.67	1.28
24680.00	89.88	181.35	7859.86	11996.48 S	3573.29 E	12516.93	1.59
24770.00	89.90	178.90	7860.03	12086.47 S	3573.09 E	12603.33	2.72
24858.00	89.89	180.38	7860.19	12174.47 S	3573.64 E	12688.02	1.68
24947.00	90.26	178.63	7860.08	12263.46 S	3574.41 E	12773.73	2.01
25024.00	90.17	178.88	7859.79	12340.44 S	3576.08 E	12848.15	0.34
25042.00	90.17	178.88	7859.74	12358.44 S	3576.44 E	12865.53	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 DIRECTION OF 163.88 DEGREES (TRUE)
A TOTAL CORRECTION OF 7.84 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 25042.00 FEET
IS 12865.53 FEET ALONG 163.86 DEGREES (TRUE)

Final Survey is a Projection to Bit.

Date Printed:15 May 2022