



MD
1:240
Feet

MWD Gamma / ROP (5")

Client: *Whiting Petroleum*

Well Name: RAZOR #12F-0103A

API/UWID: 05-123-38711-01

County: Weld Field: Wildcat

Permit #: 15-0325

State: Colorado **Country:** USA

Longitude: 103° 49' 5.369 W

Latitude: 40° 51' 16.78 N

Personnel

Company Representative

Kenny Wilkerson

Geologist

Todd & Lauren

Directional Driller(s)

Brandon Davis

Jon Willy

John Barnett

MWD Operator(s)

Larry Seebeck

Joe Owens

Jason Bryant

Reference Data

North Reference: True North

Magnetic Declination: 7.44

Grid Convergence: 0.00

Total Mag Correction: 7.44

Comments:

-Main Leg and Side Track 1

ST 1

PHOENIX TECHNOLOGY SERVICES LP ("PHOENIX") DOES NOT MAKE AND EXPRESSLY DISCLAIMS ALL WARRANTIES, REPRESENTATIONS AND CONDITIONS, WITH REGARD TO THE INFORMATION CONTAINED IN THIS DOCUMENT, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED OR ARISING FROM CONTRACT OR OTHERWISE. ANYONE USING THIS INFORMATION DOES SO AT THEIR OWN RISK AND ACKNOWLEDGES AND AGREES THAT PHOENIX SHALL NOT BE LIABLE FOR ANY ERROR, OMISSION, DEFECT, DEFICIENCY, OR NONCONFORMITY IN THE INFORMATION AND WITHOUT LIMITING THE FOREGOING, PHOENIX DOES NOT WARRANT THAT THE INFORMATION (OR THE USE THEREOF) WILL BE FREE OF ALL ERRORS OR THAT IT DOES NOT INFRINGE ANY THIRD PARTY RIGHTS. ANYONE USING THE INFORMATION AGREES TO INDEMNIFY AND HOLD PHOENIX HARMLESS FROM ALL CLAIMS, ACTIONS, COSTS (INCLUDING LEGAL COSTS) ON A SOLICITOR AND CLIENT BASIS, AND LIABILITIES ARISING FROM OR IN CONNECTION WITH THE USE OF THE INFORMATION.

1:240

Creation Date: September 06, 2015 13:25

0

50

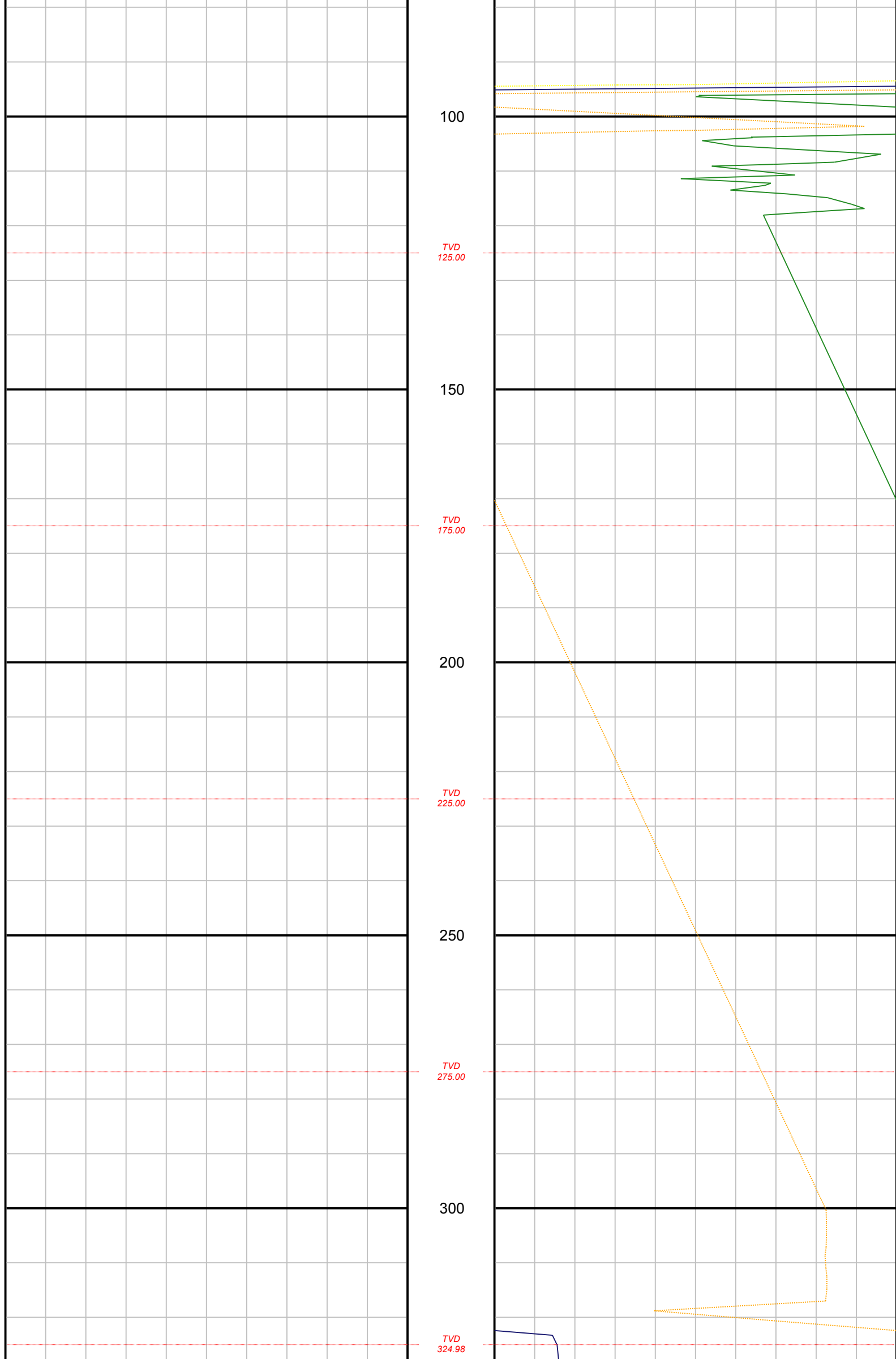
TVD
25.00

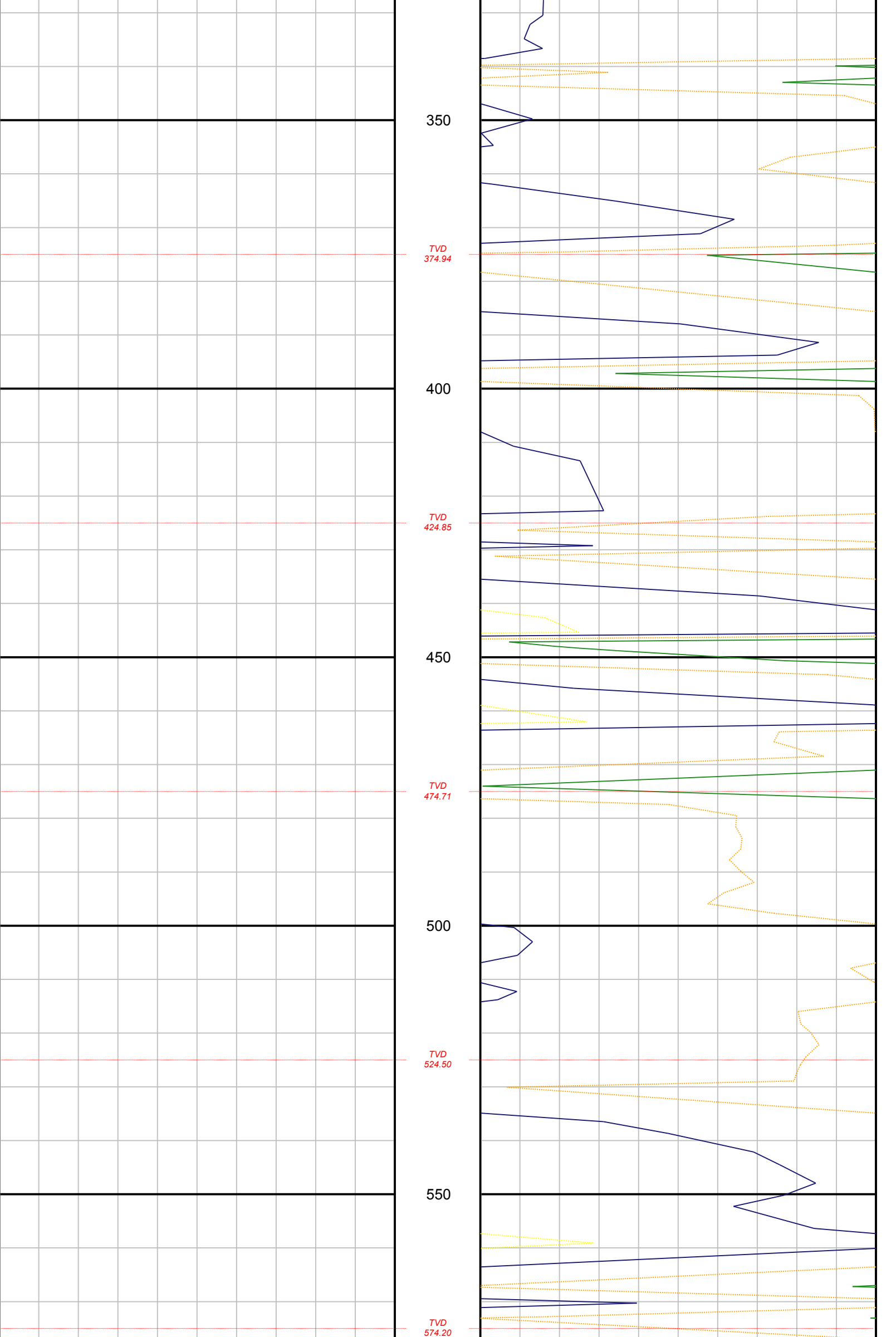
TVD
75.00

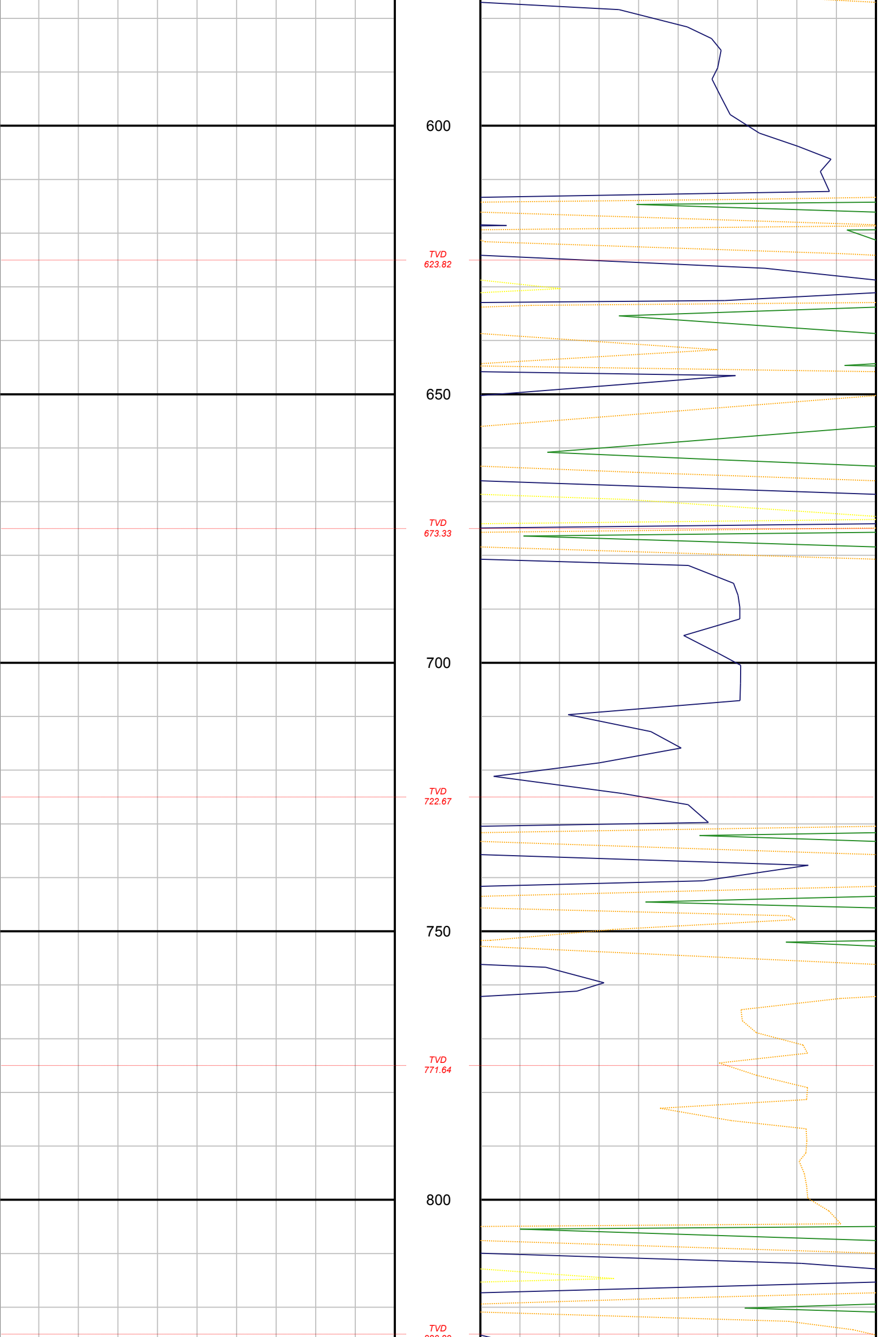
	ROP	ROP
0	ft/hr	300
	ROP	ROP
300	ft/hr	600
	ROP	ROP
600	ft/hr	900
	ROP	ROP
900	ft/hr	1200

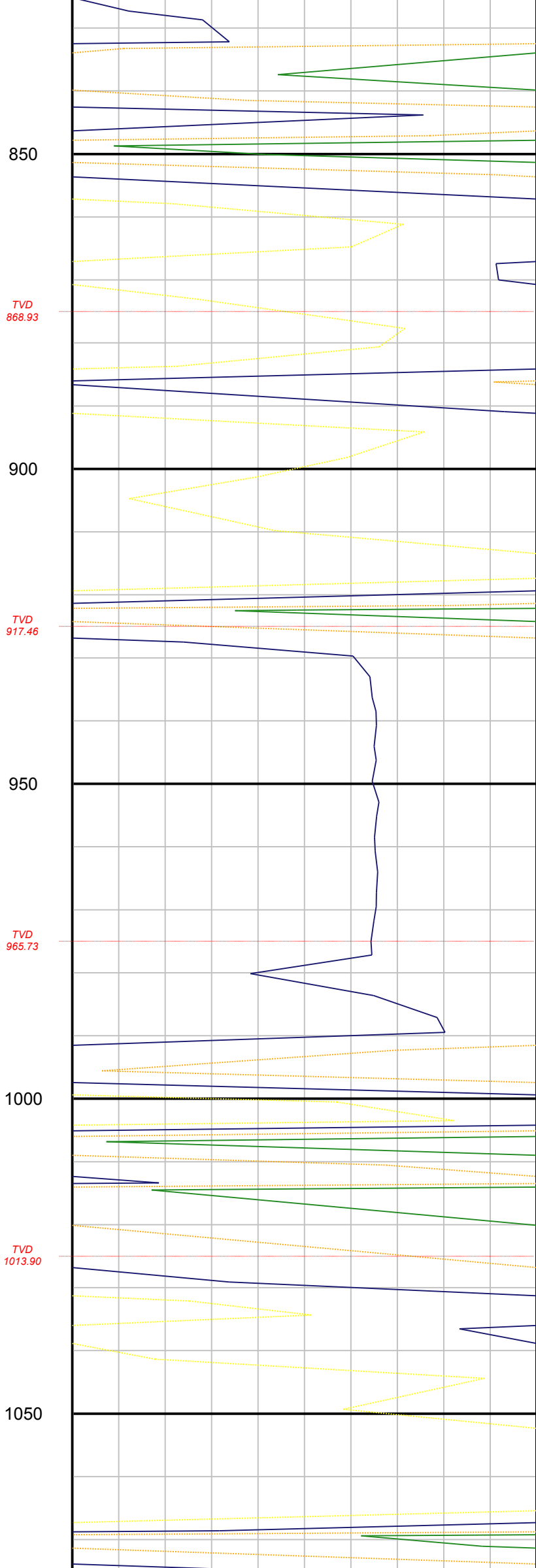
	Gamma	Gama
0	AAPI	200
	Gamma	Gama
200	AAPI	400
	Gamma	Gama
400	AAPI	600
	Gamma	Gama
600	AAPI	800

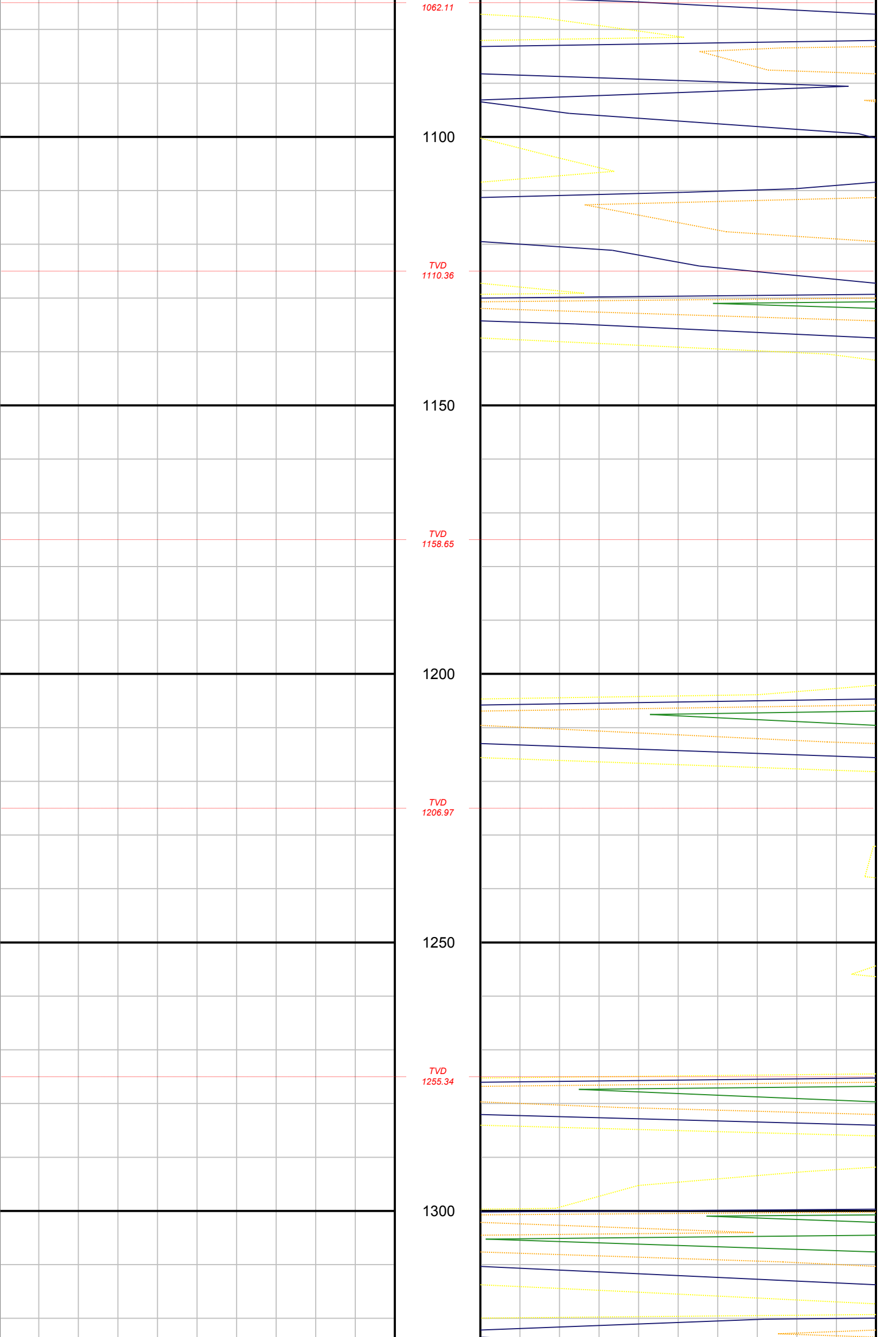
[illegible]

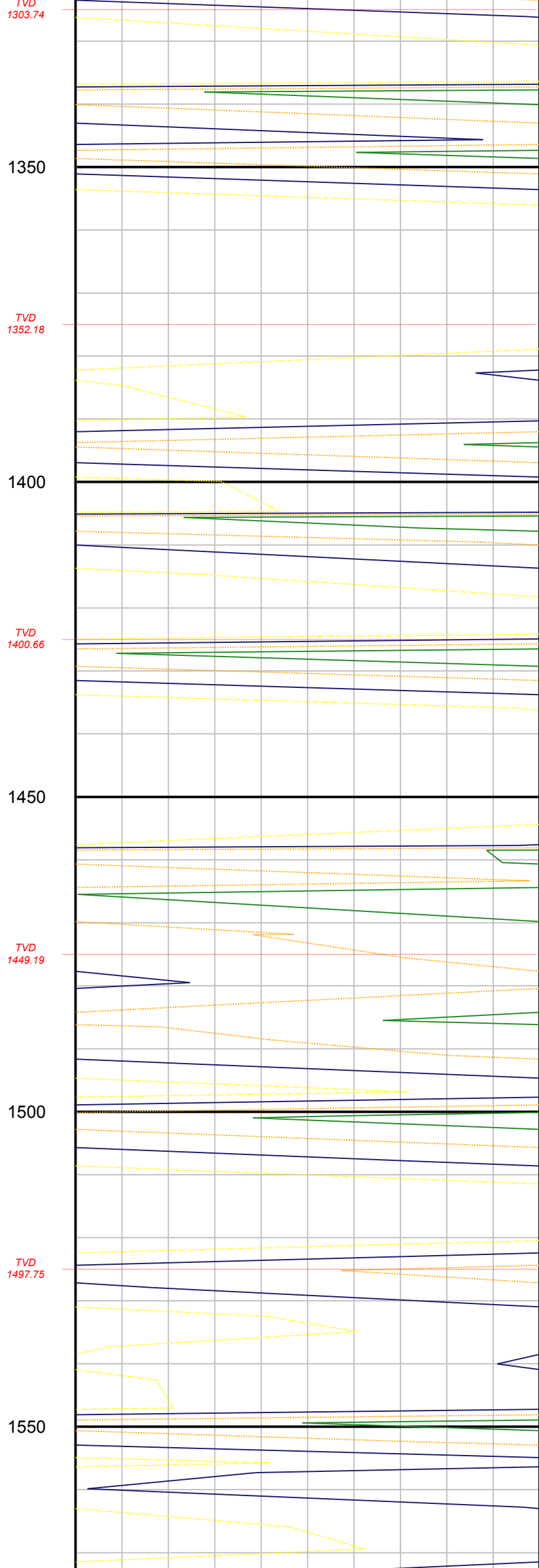


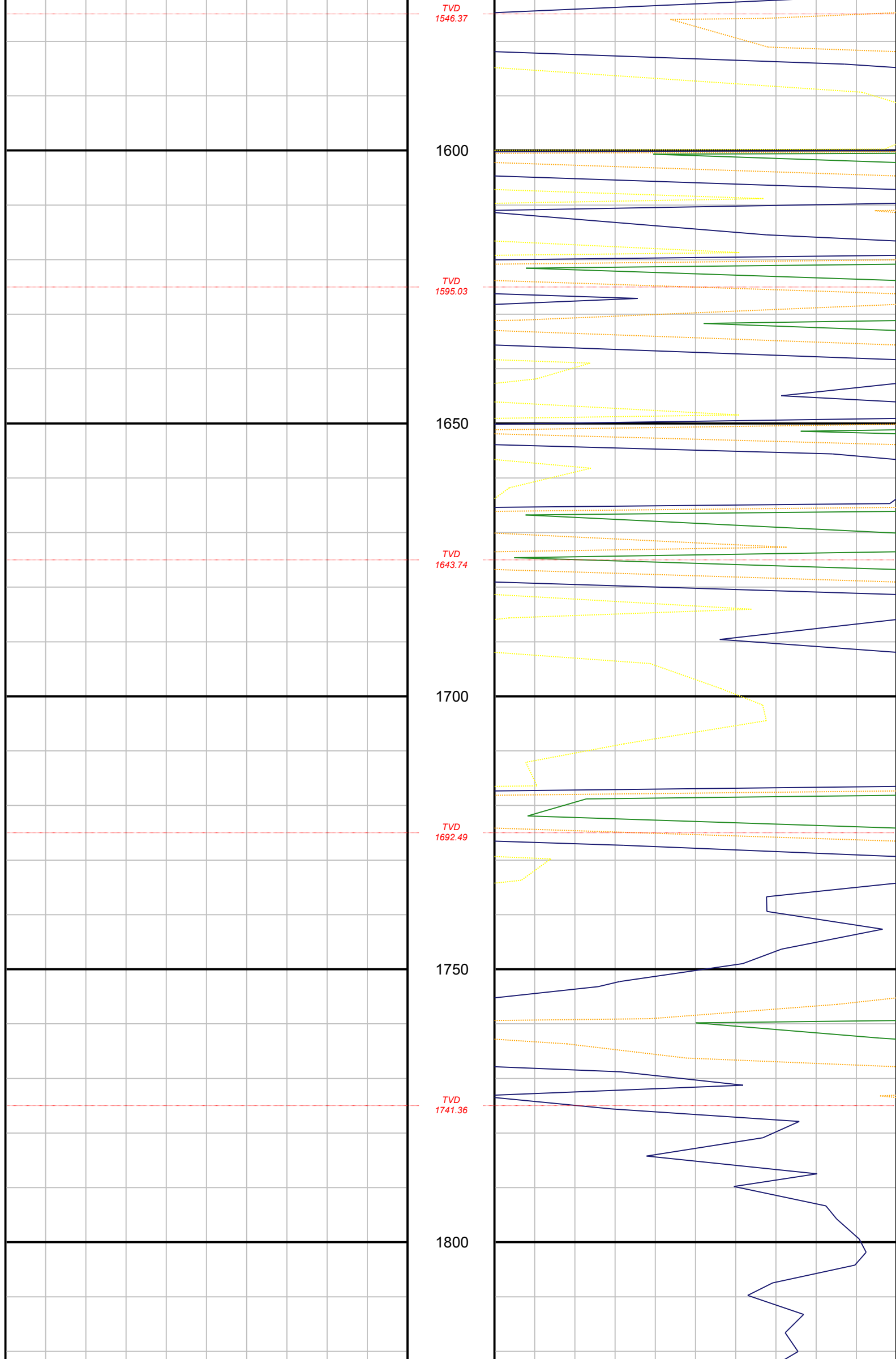


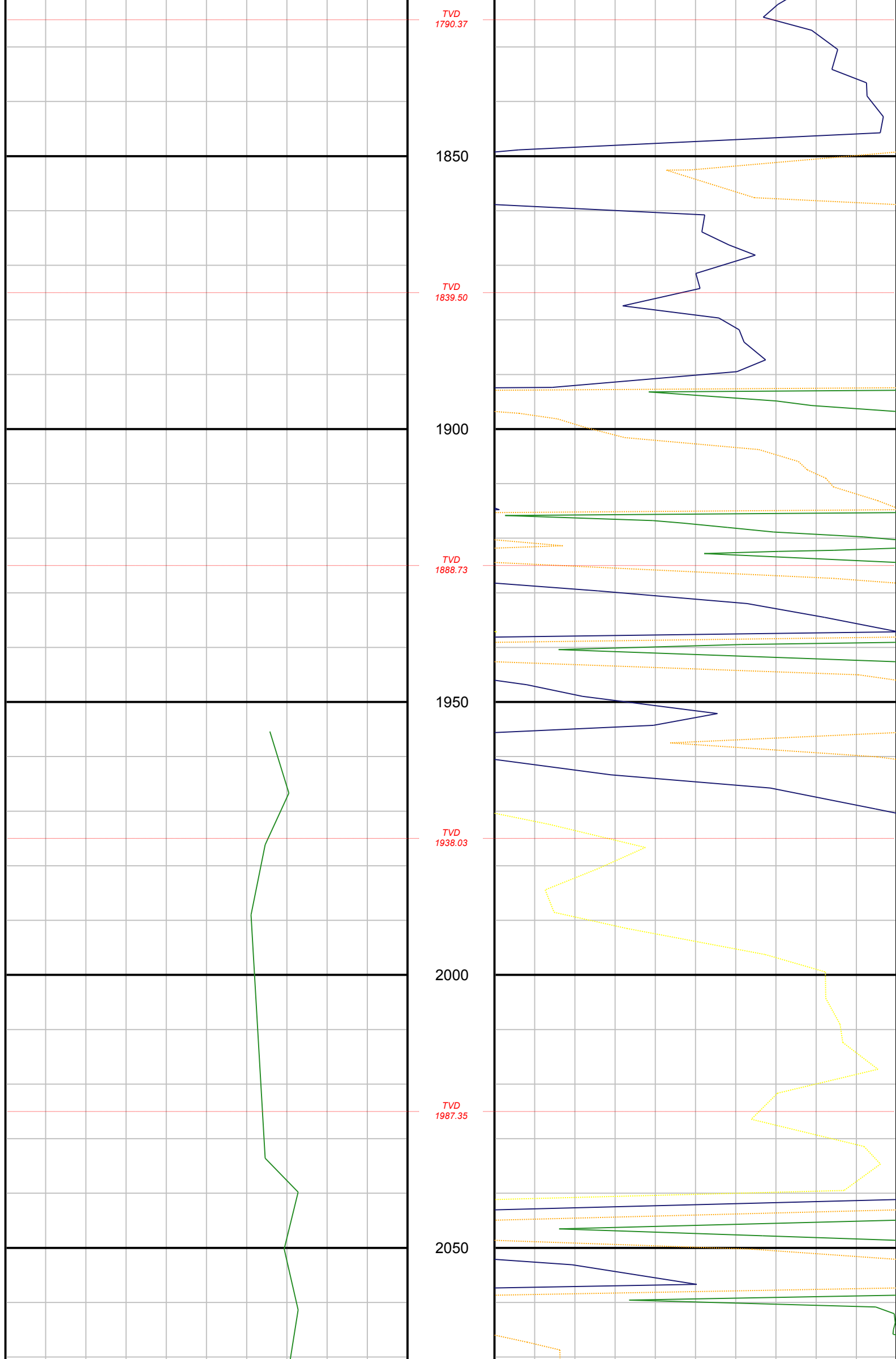


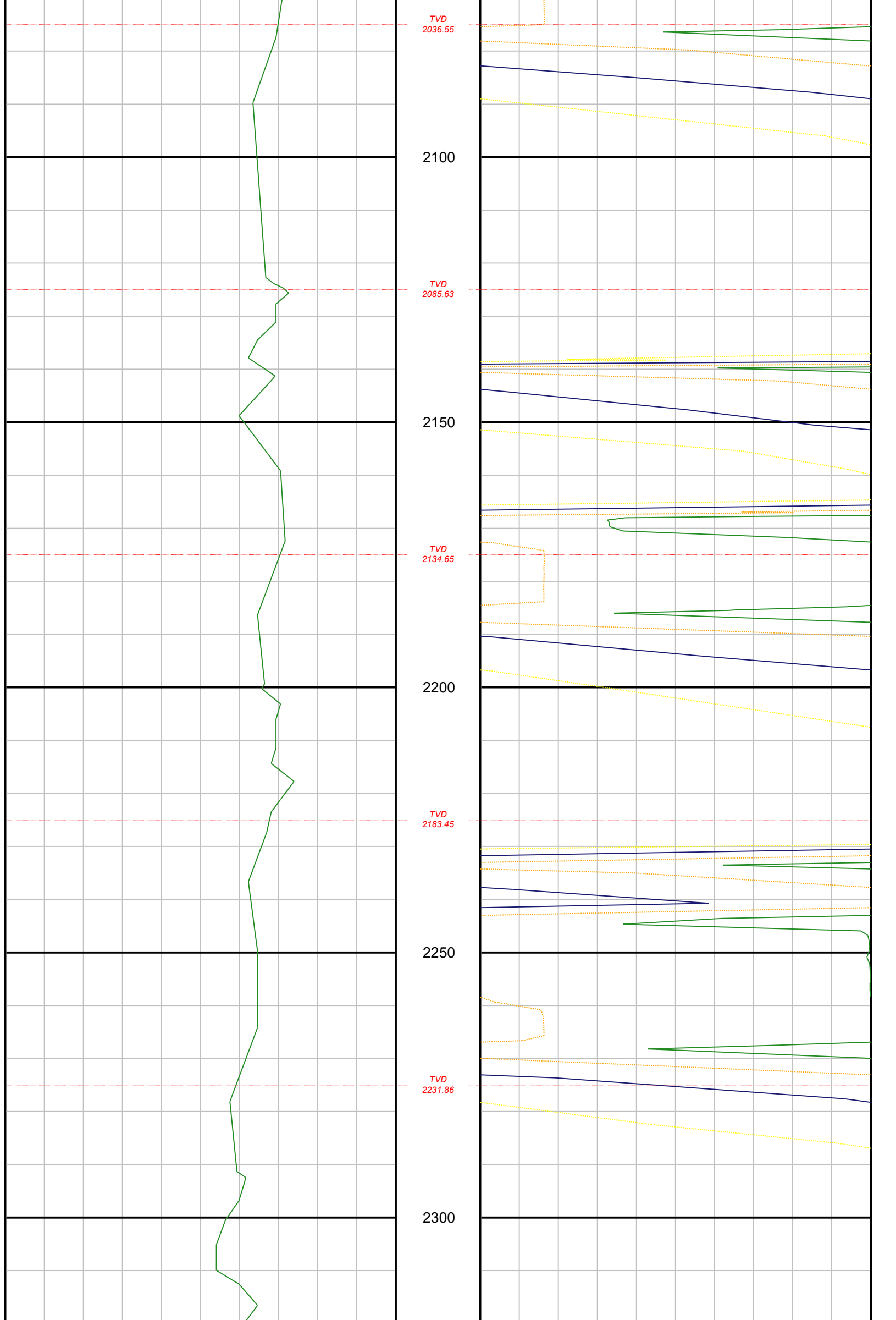


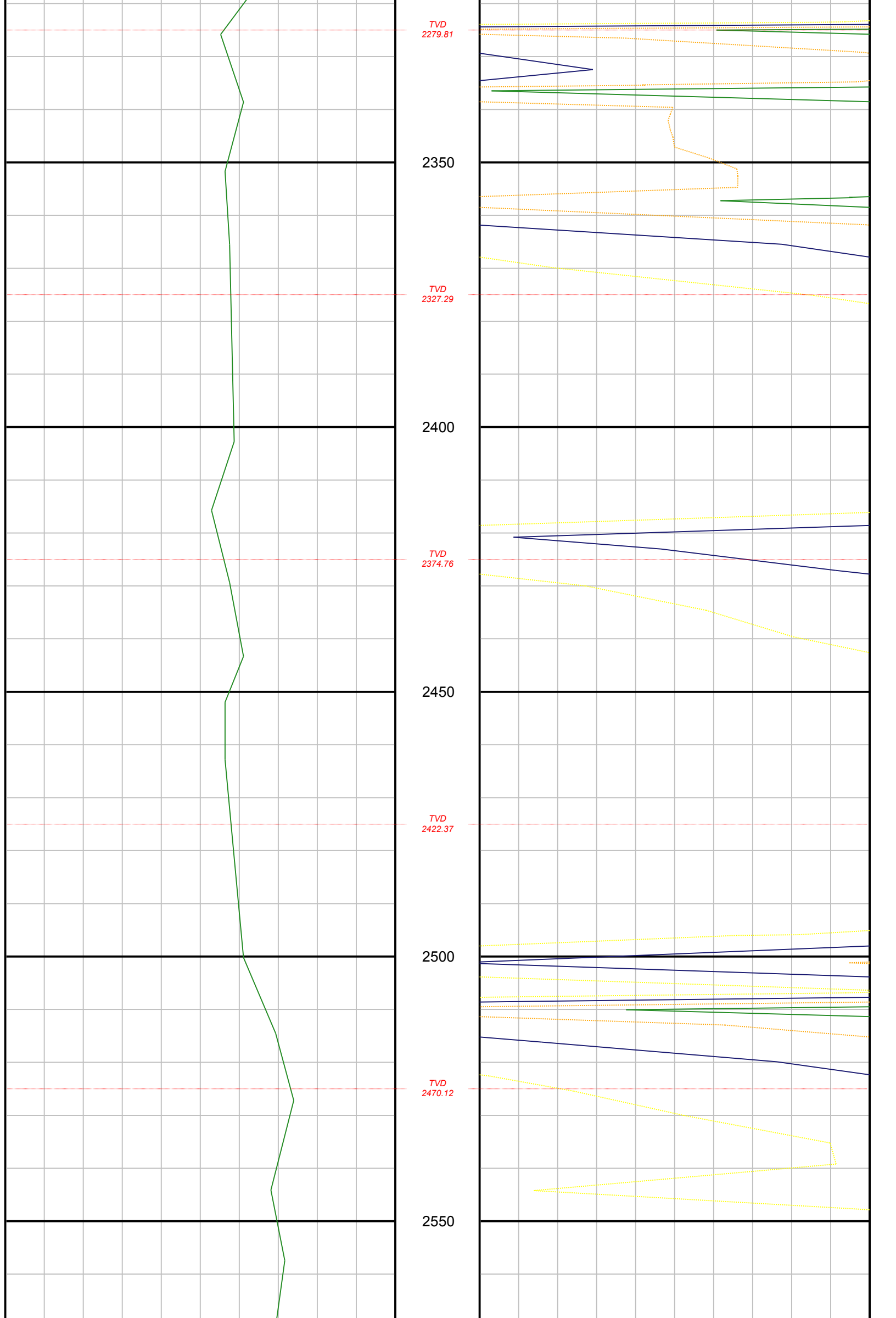


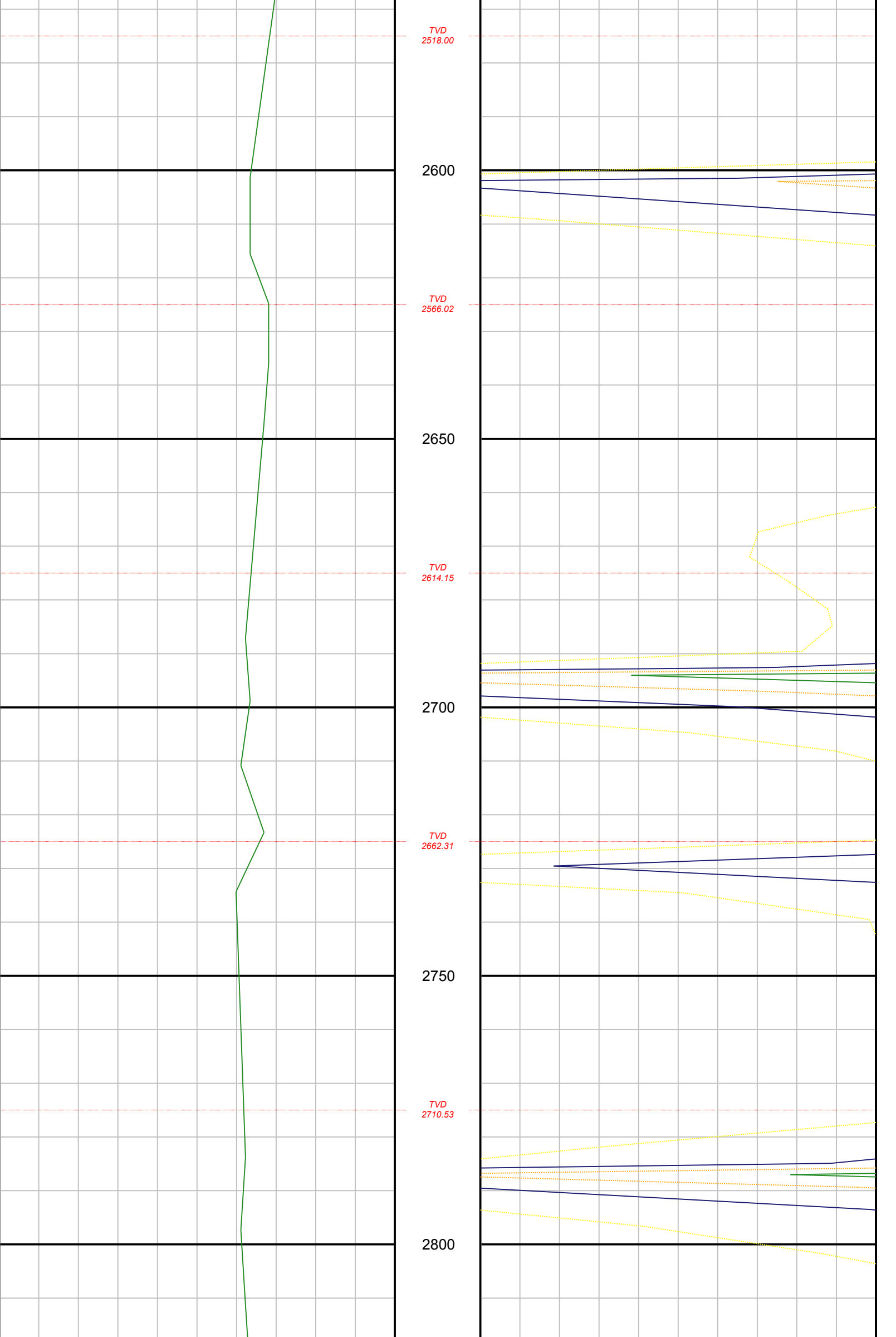


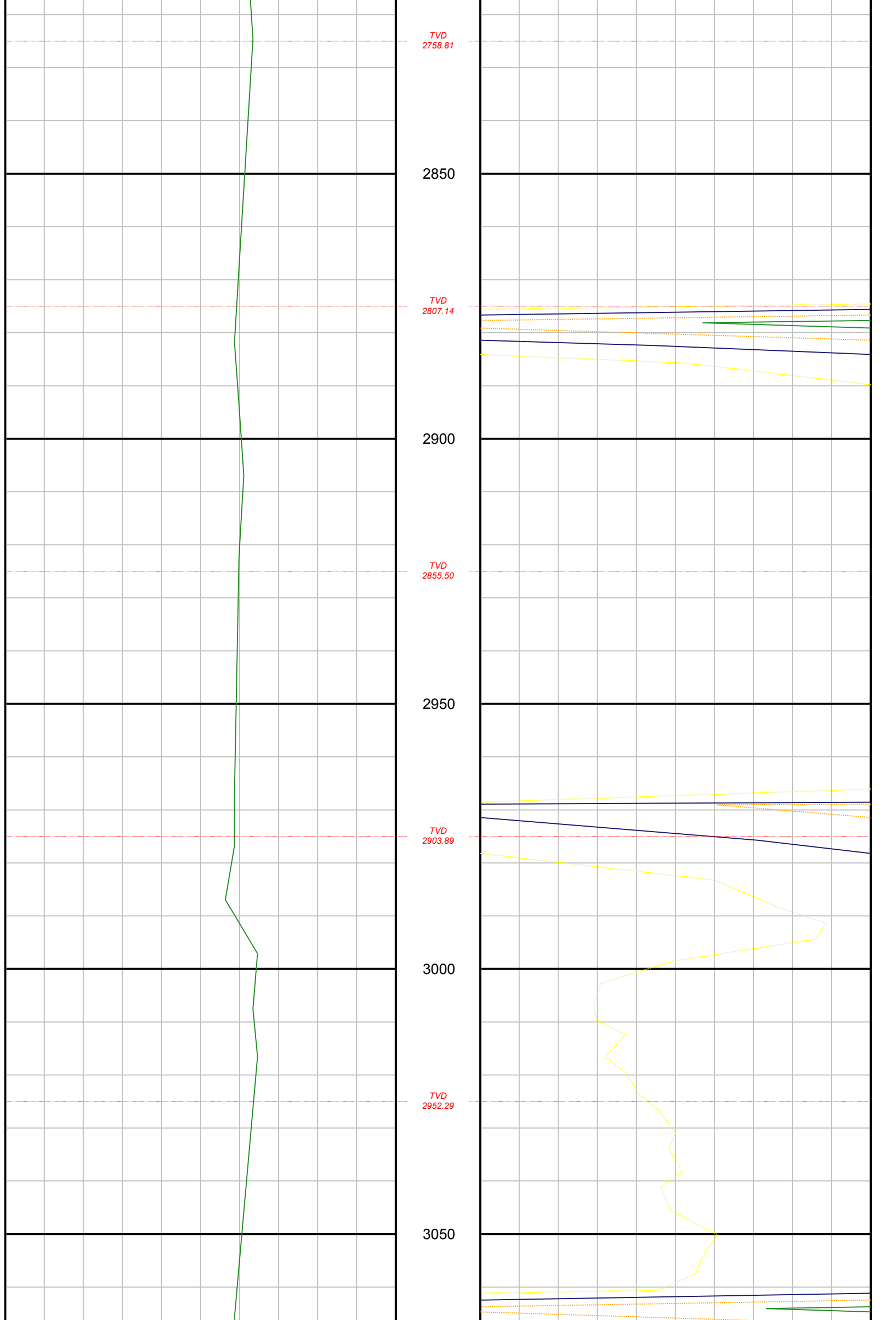


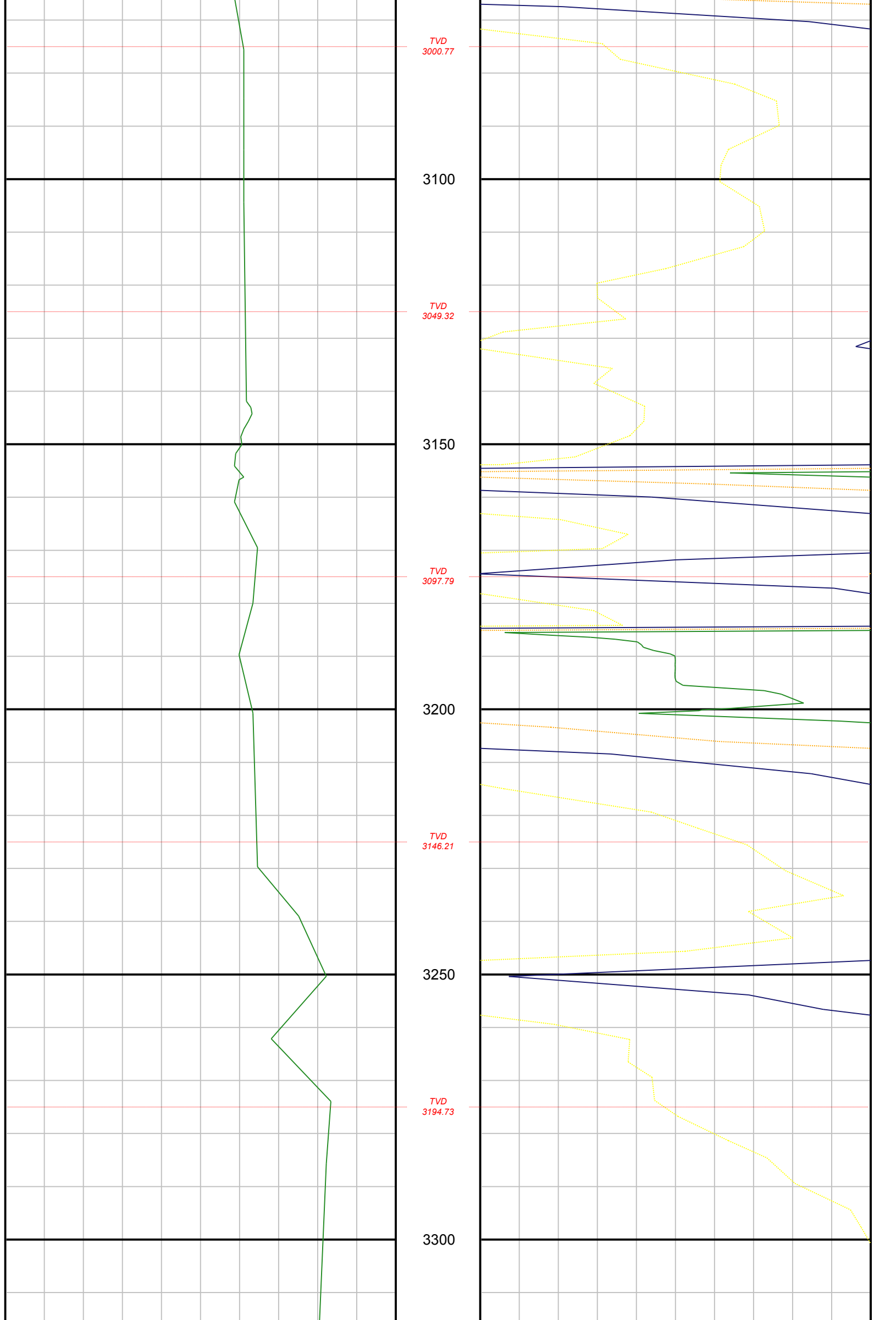


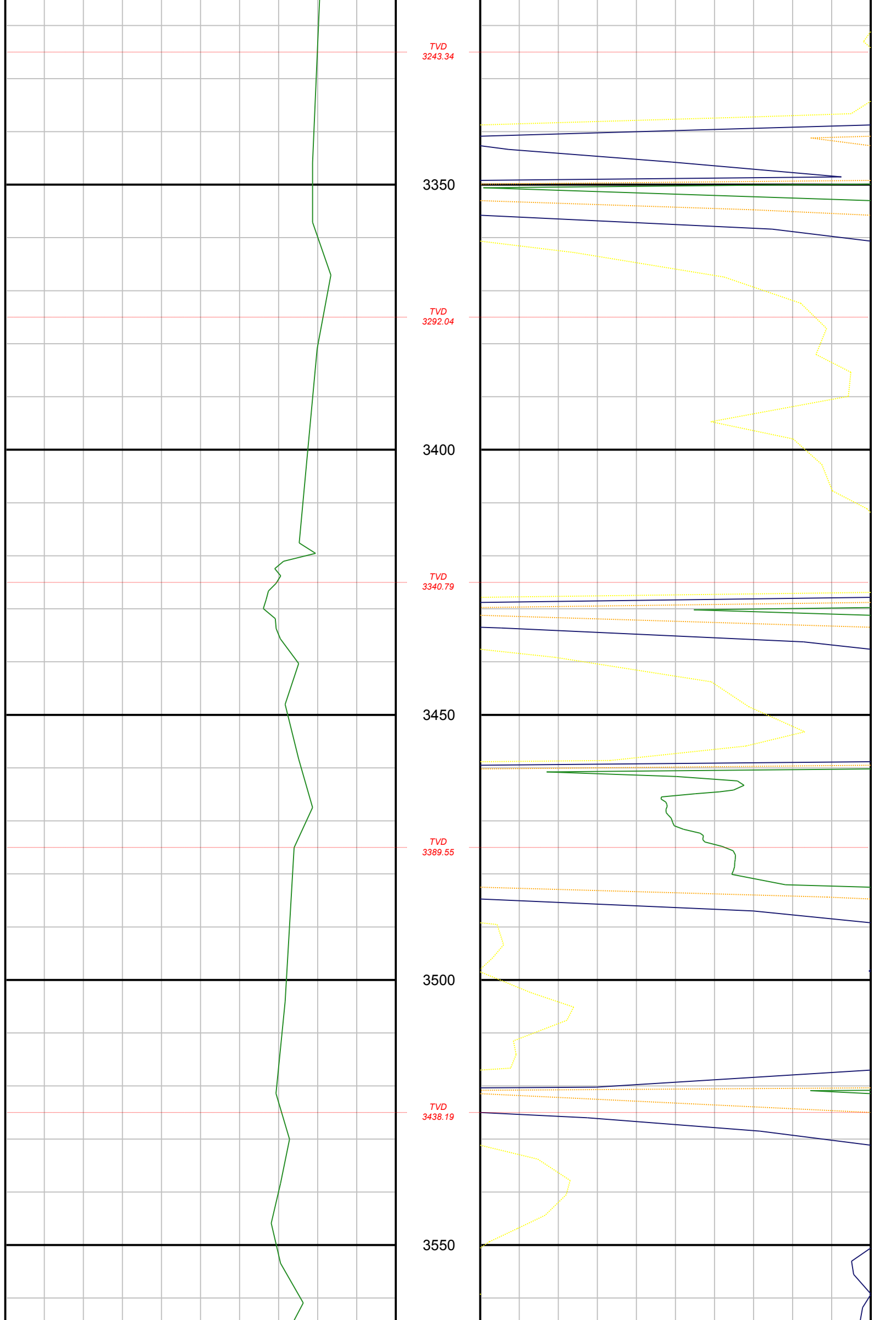


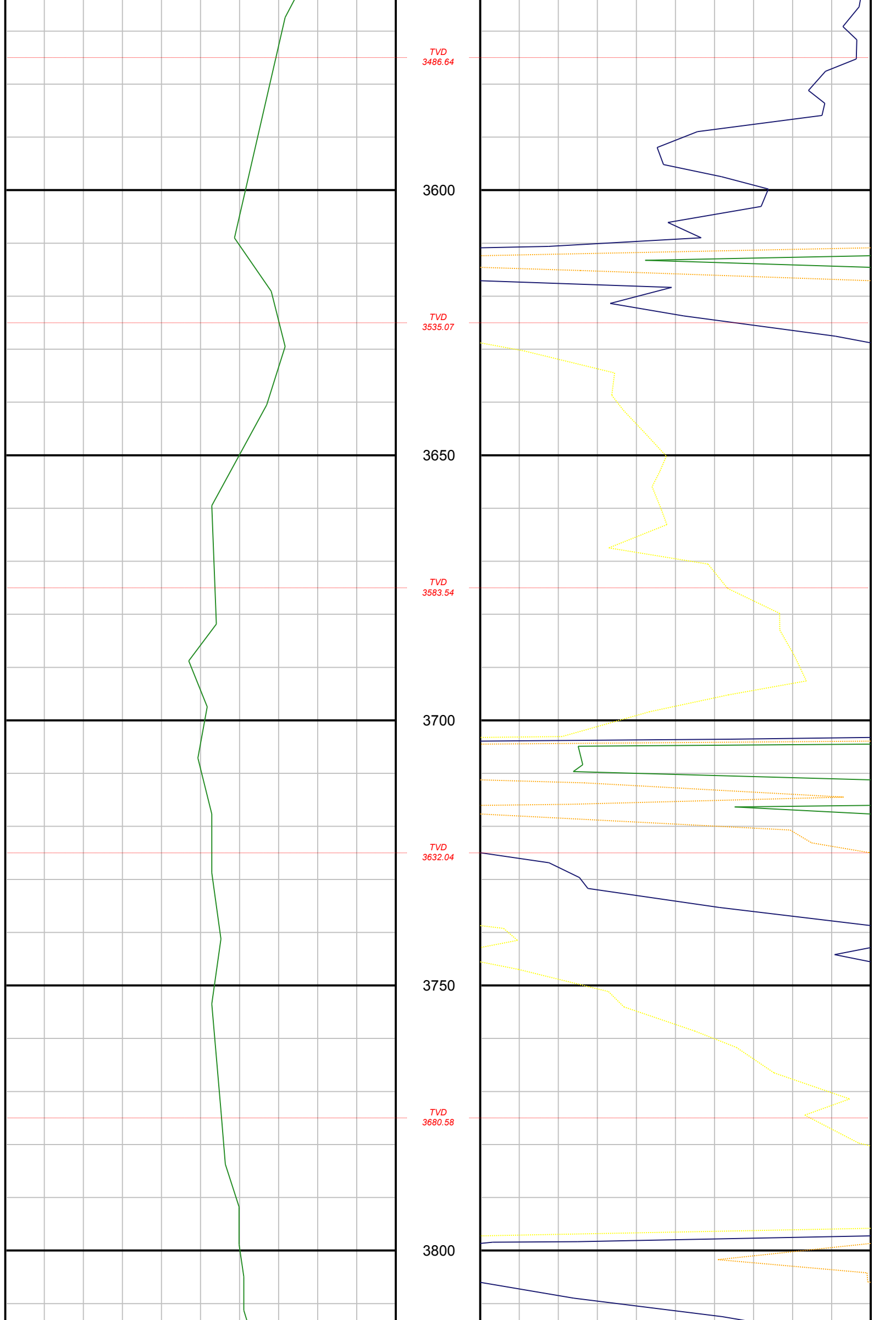


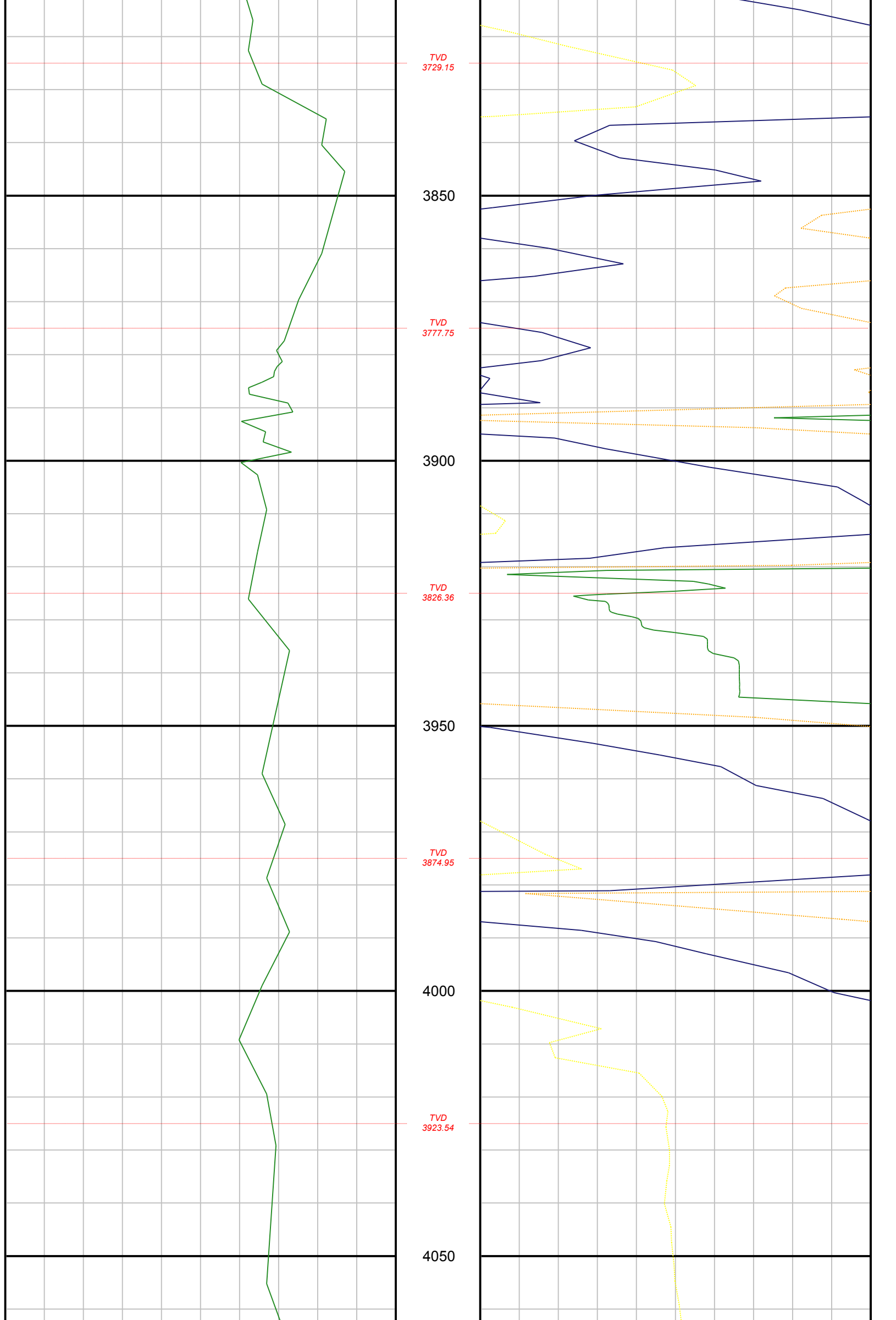


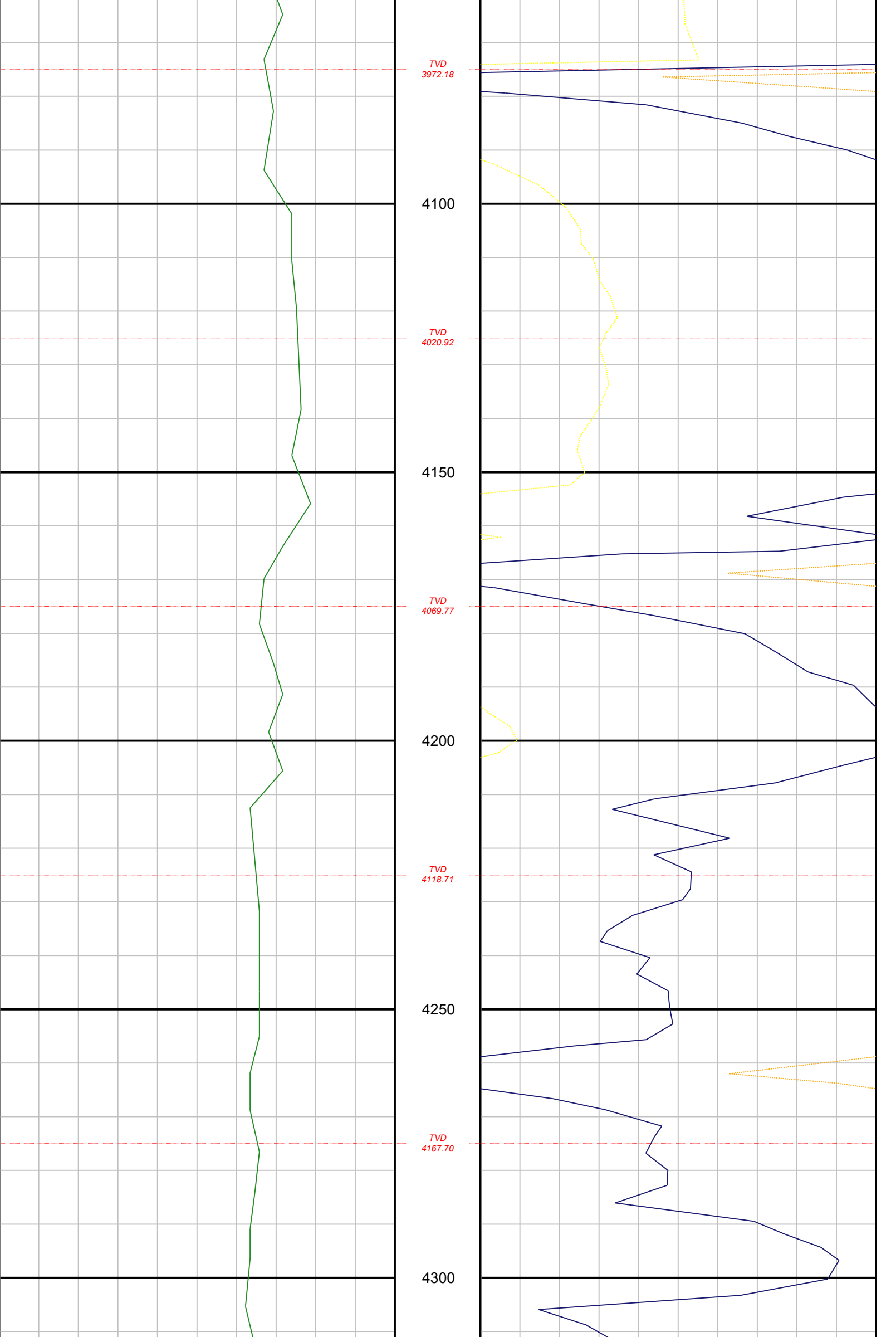


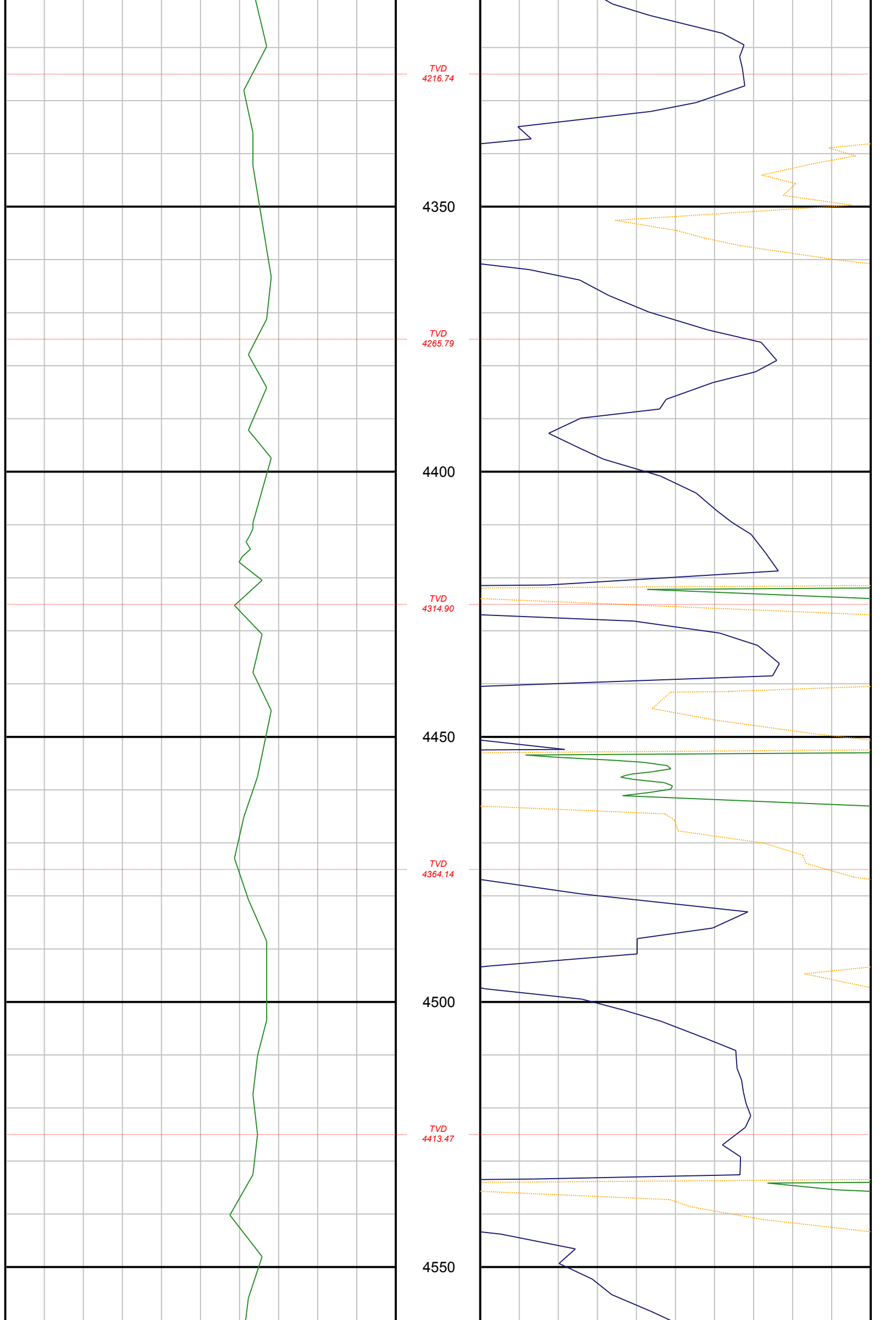


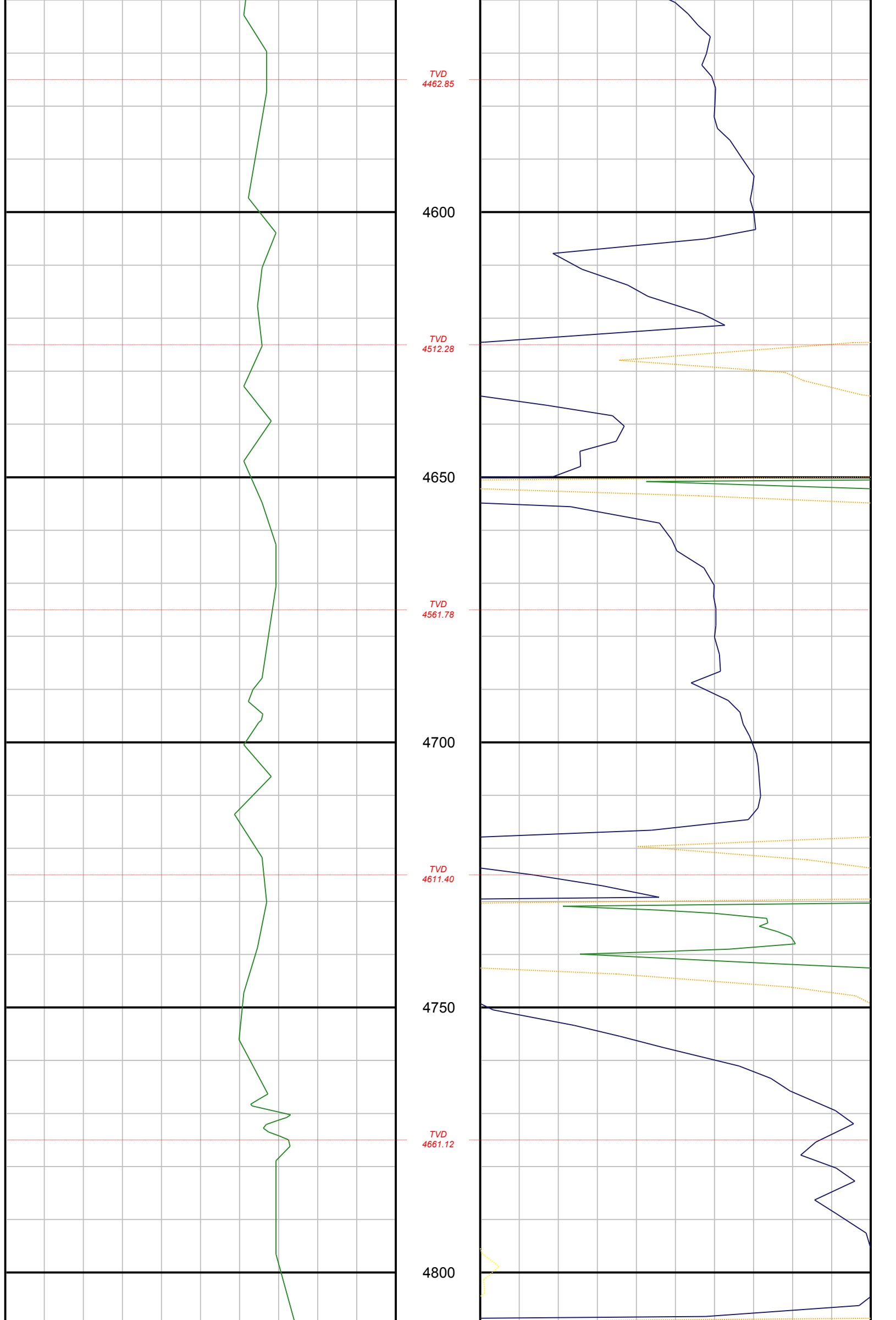


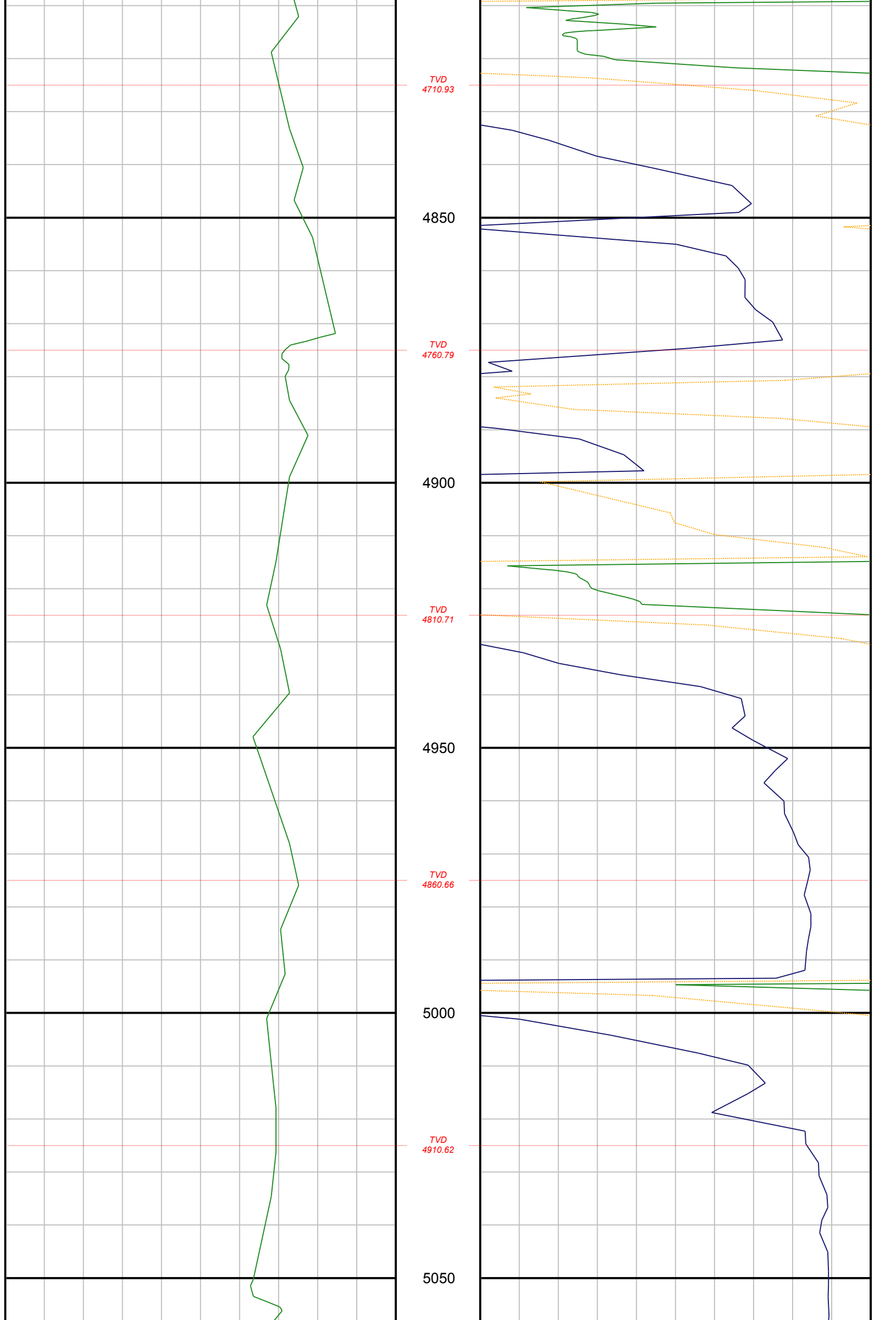


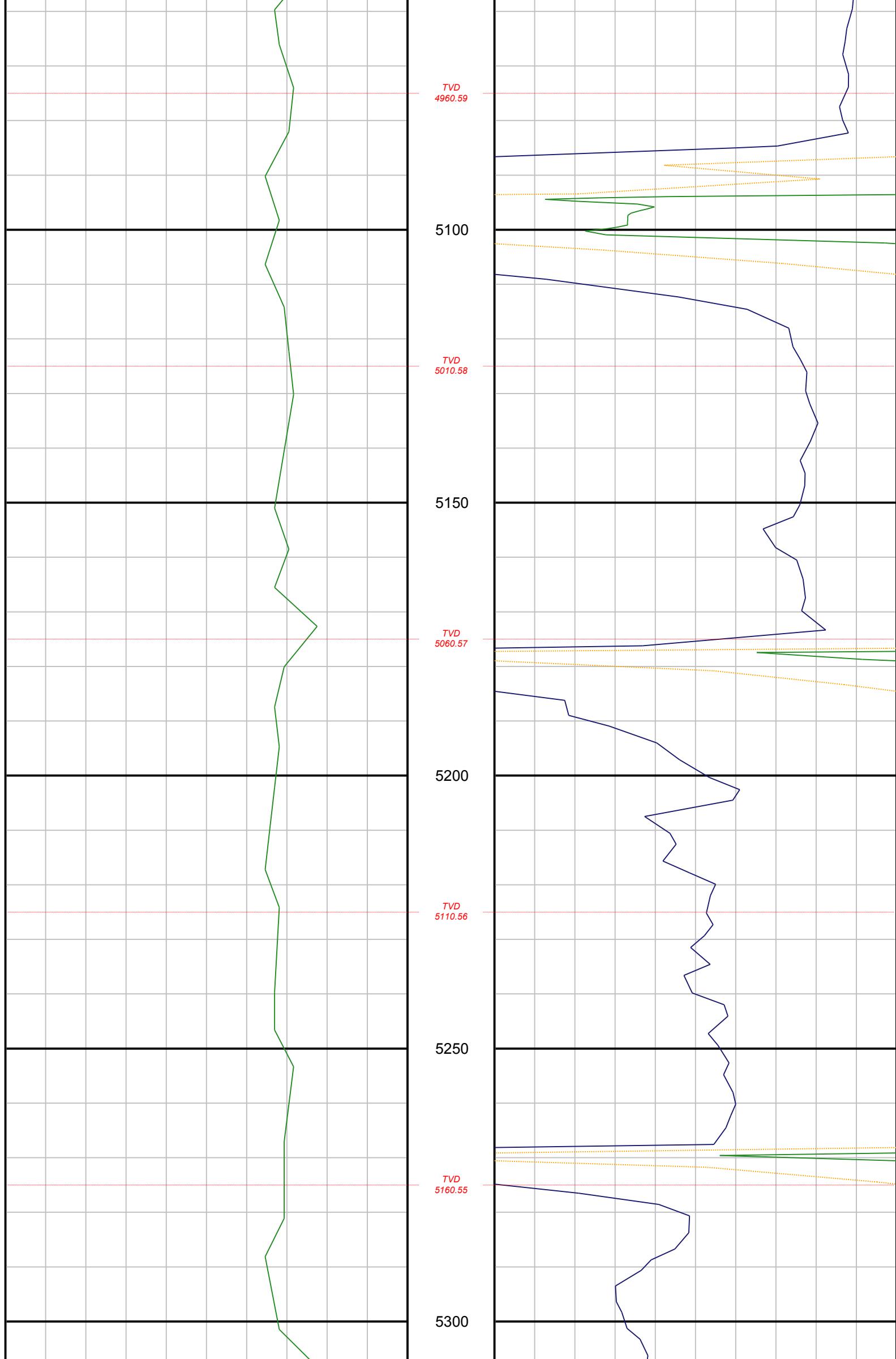


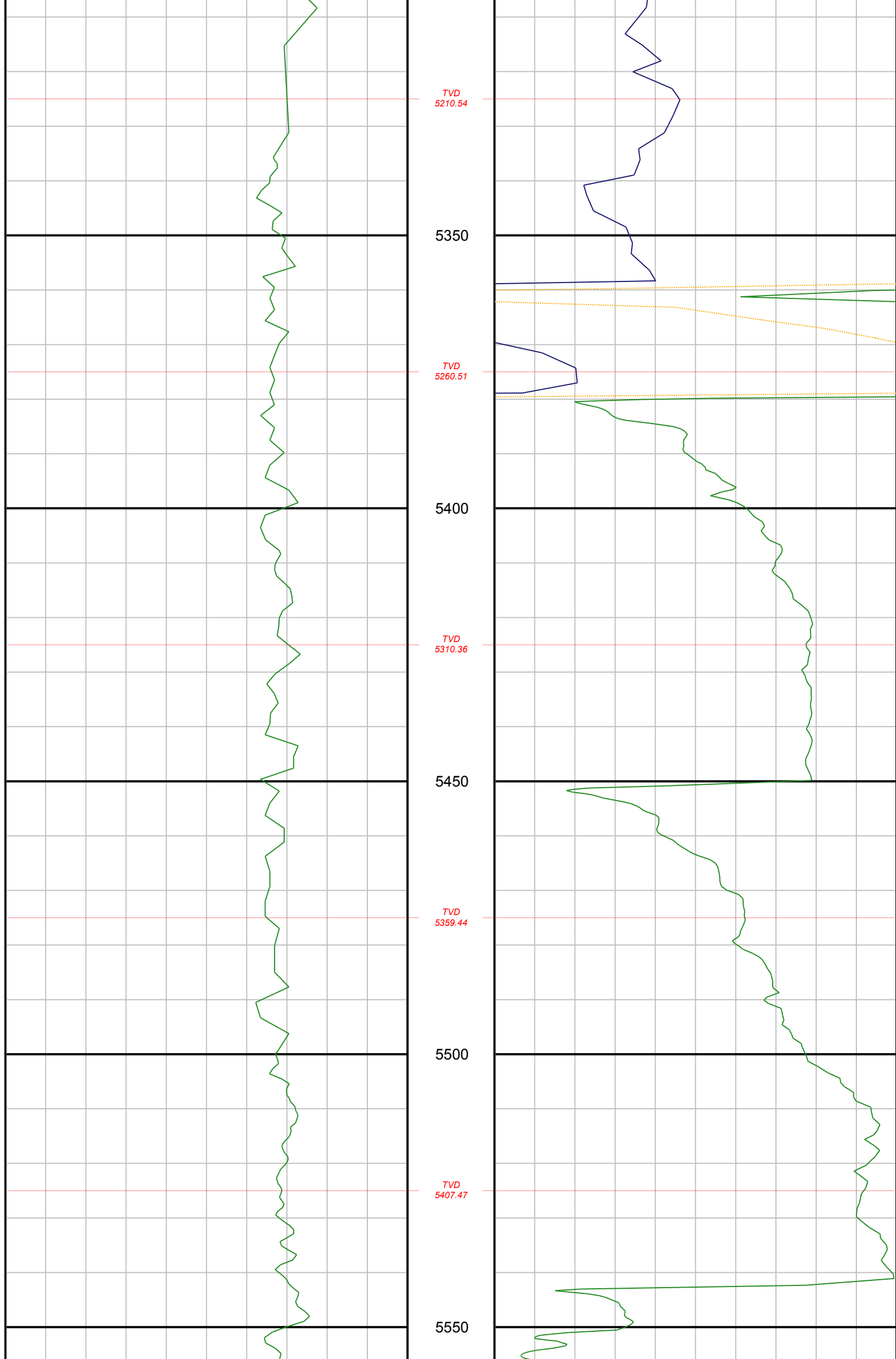


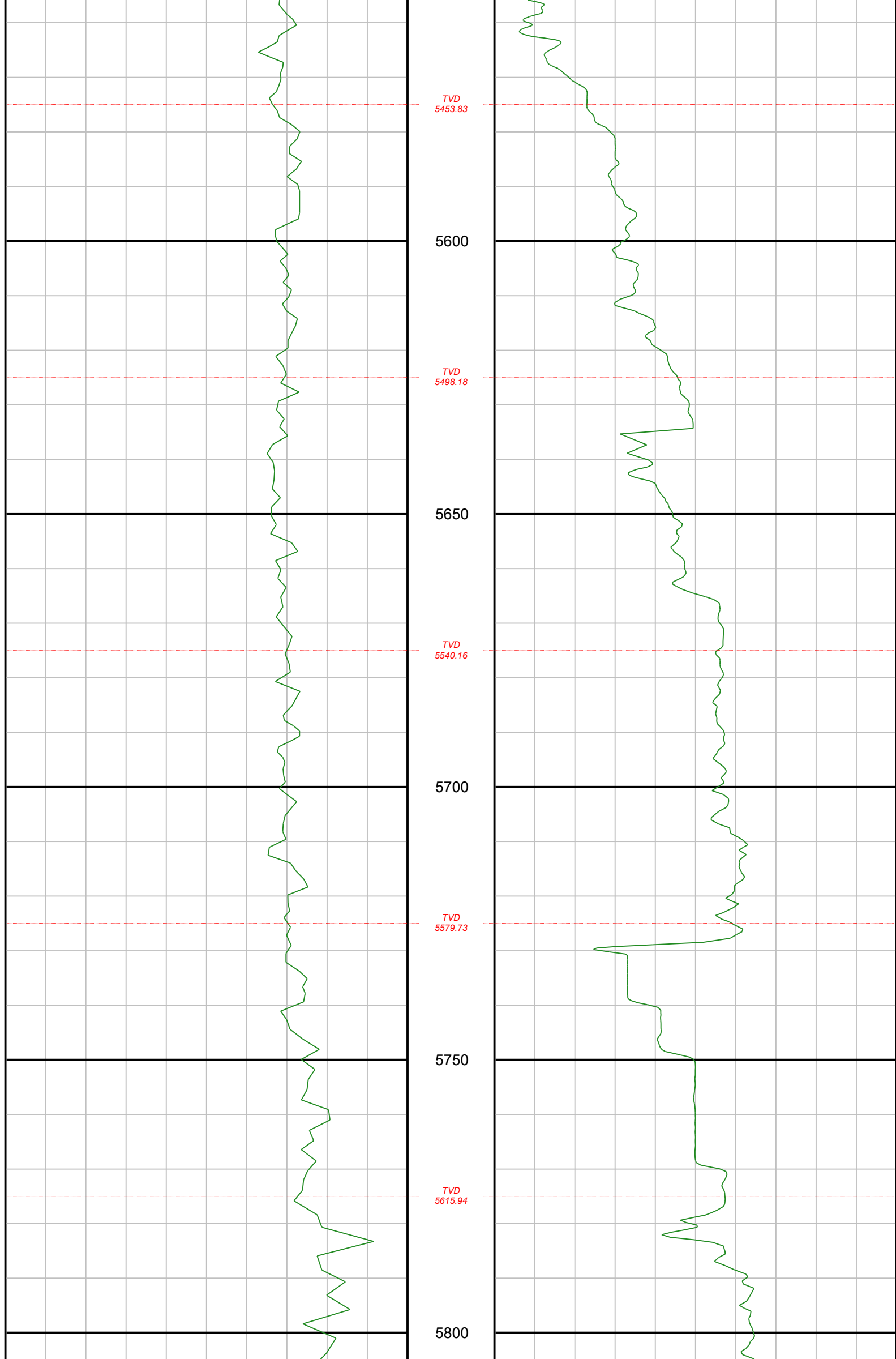


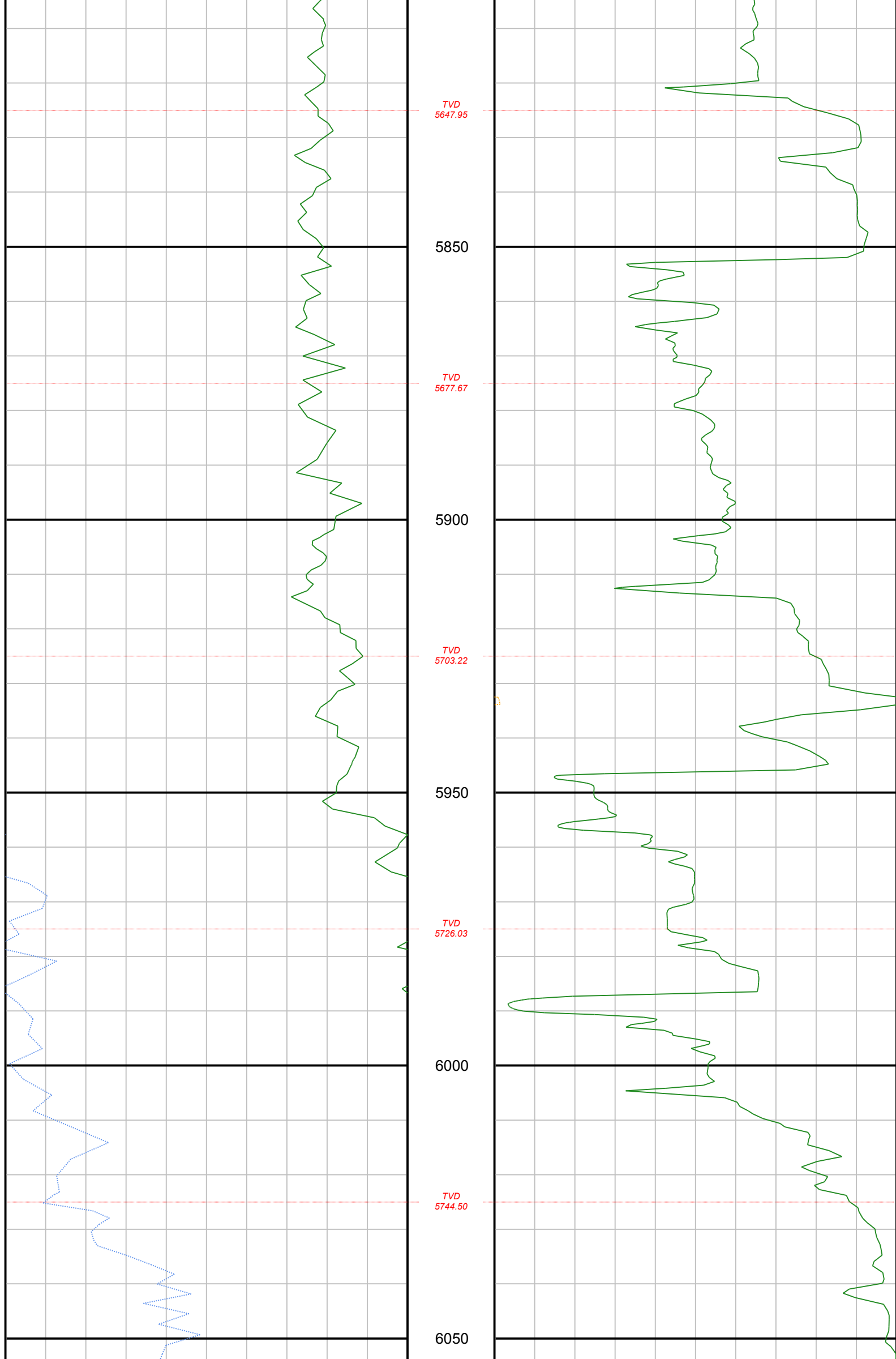


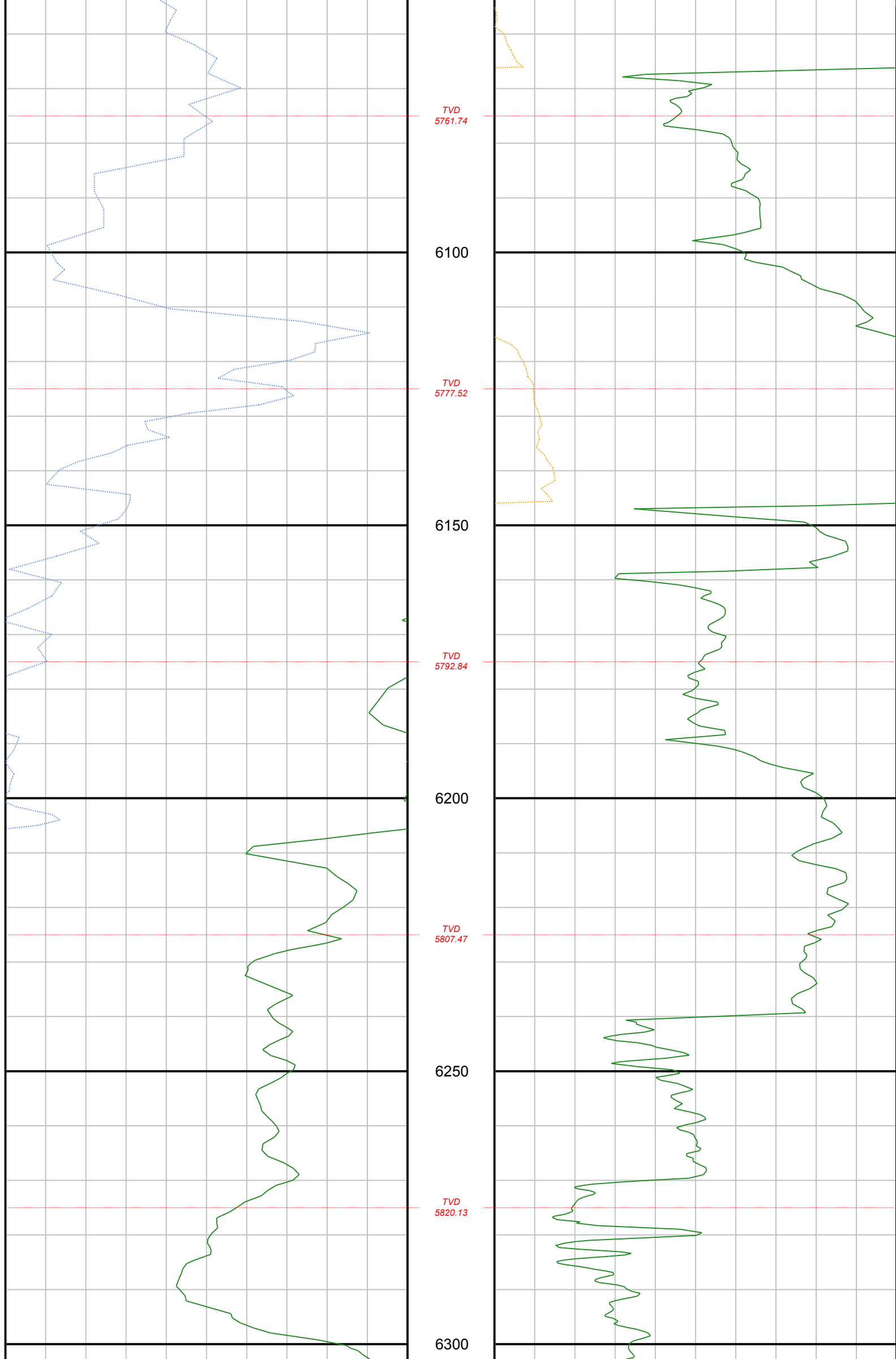


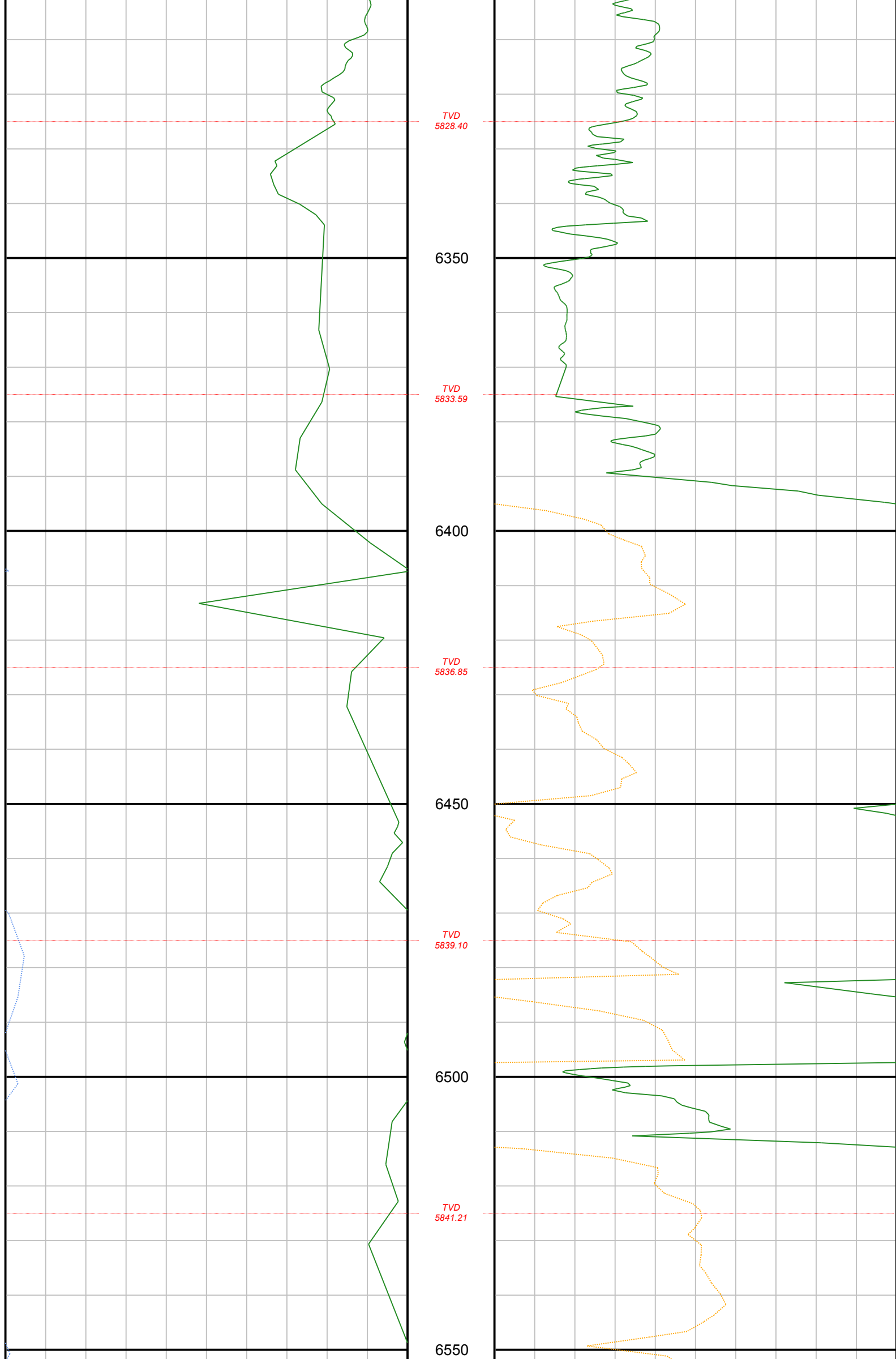


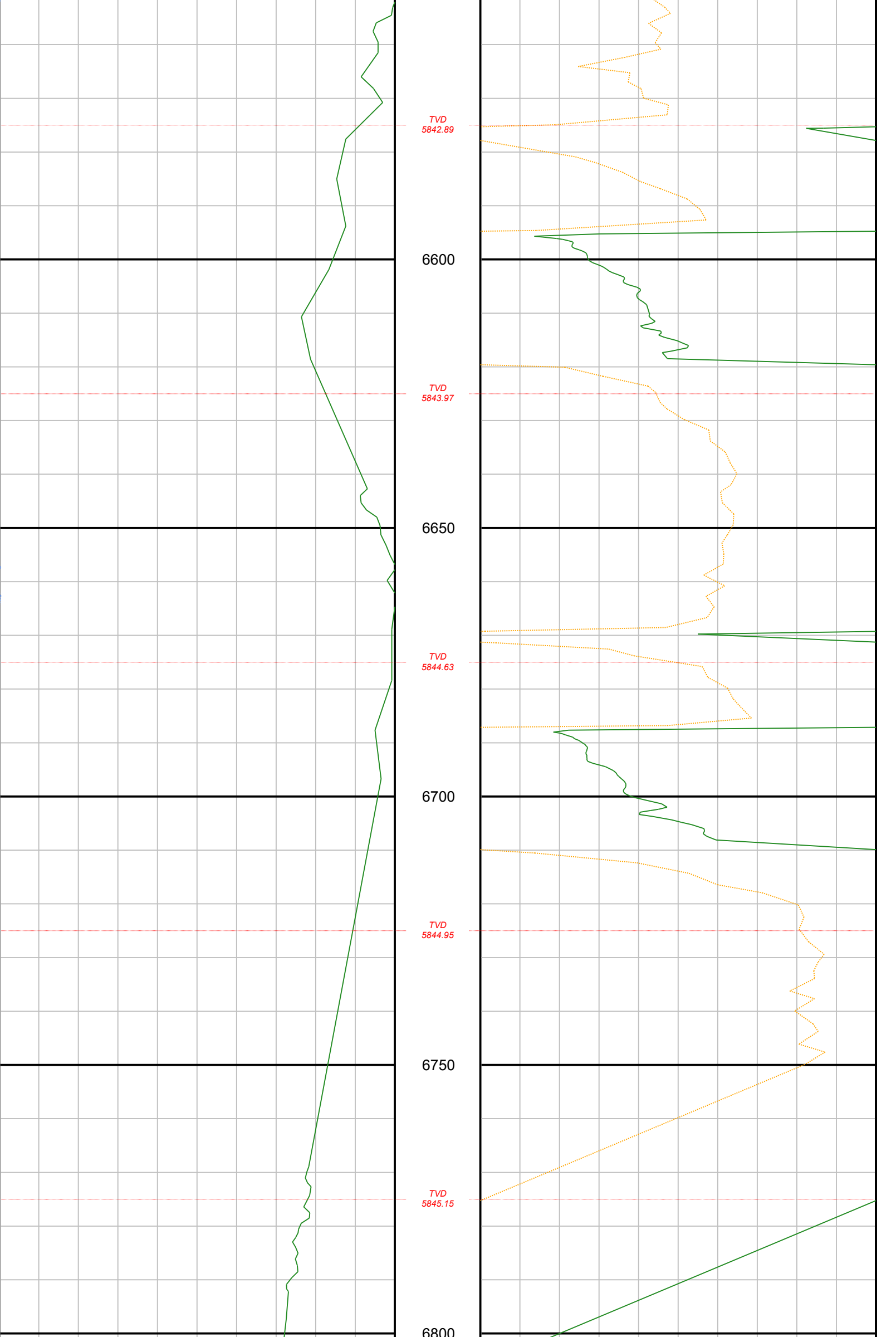


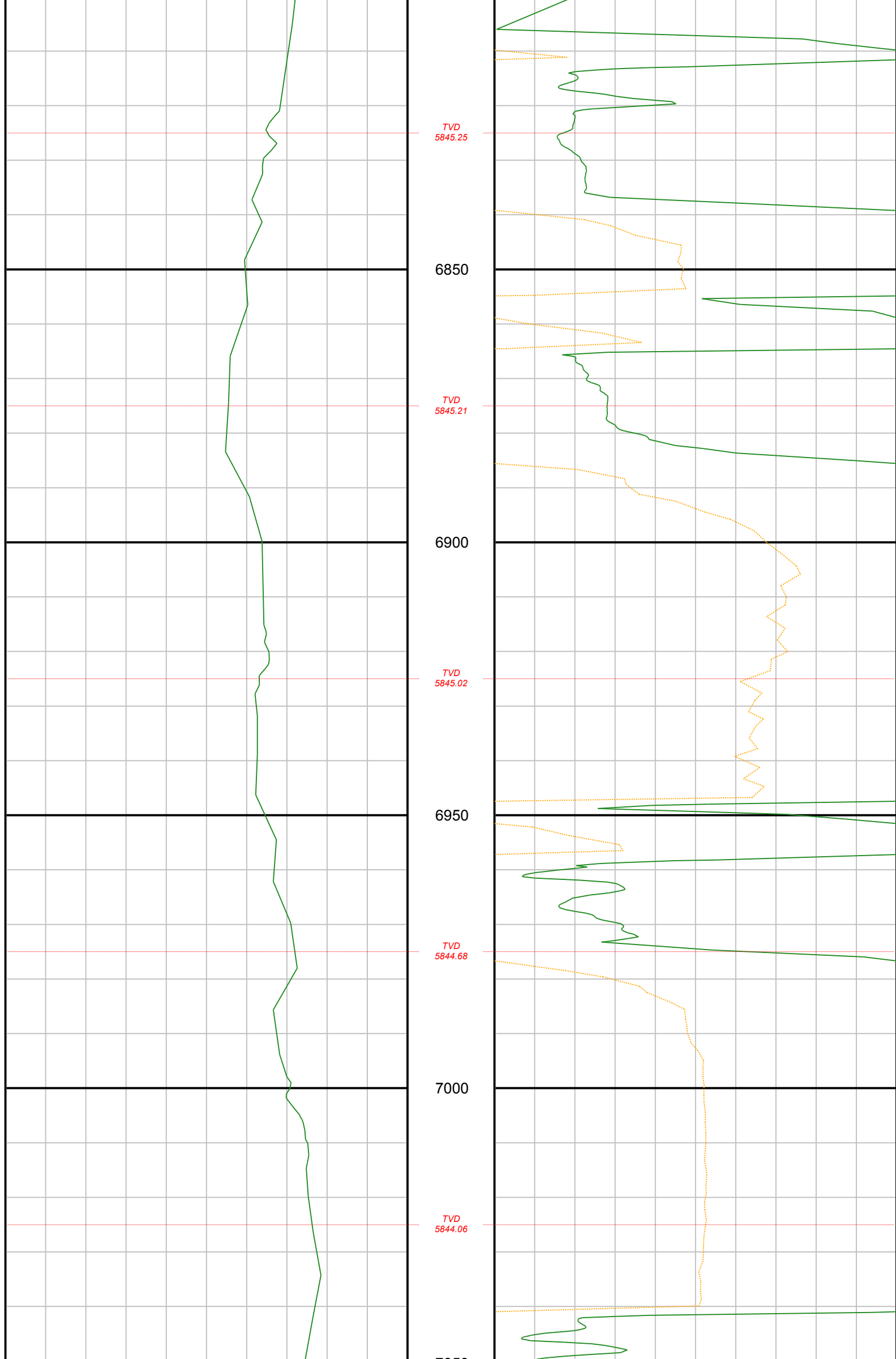


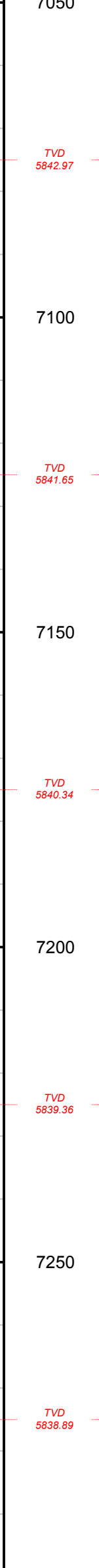
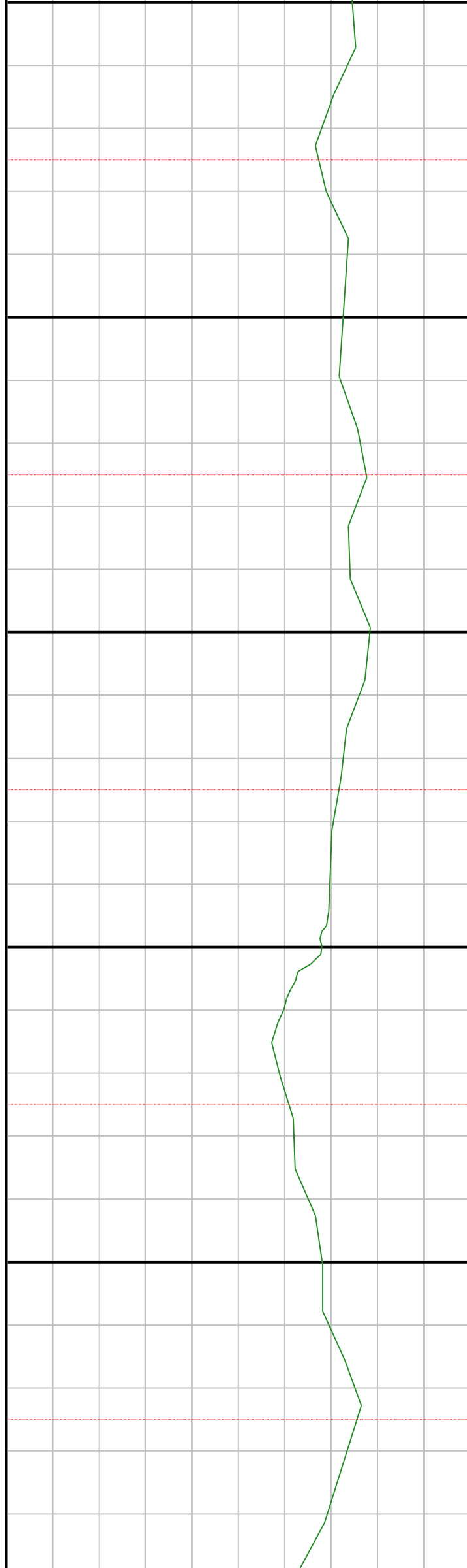


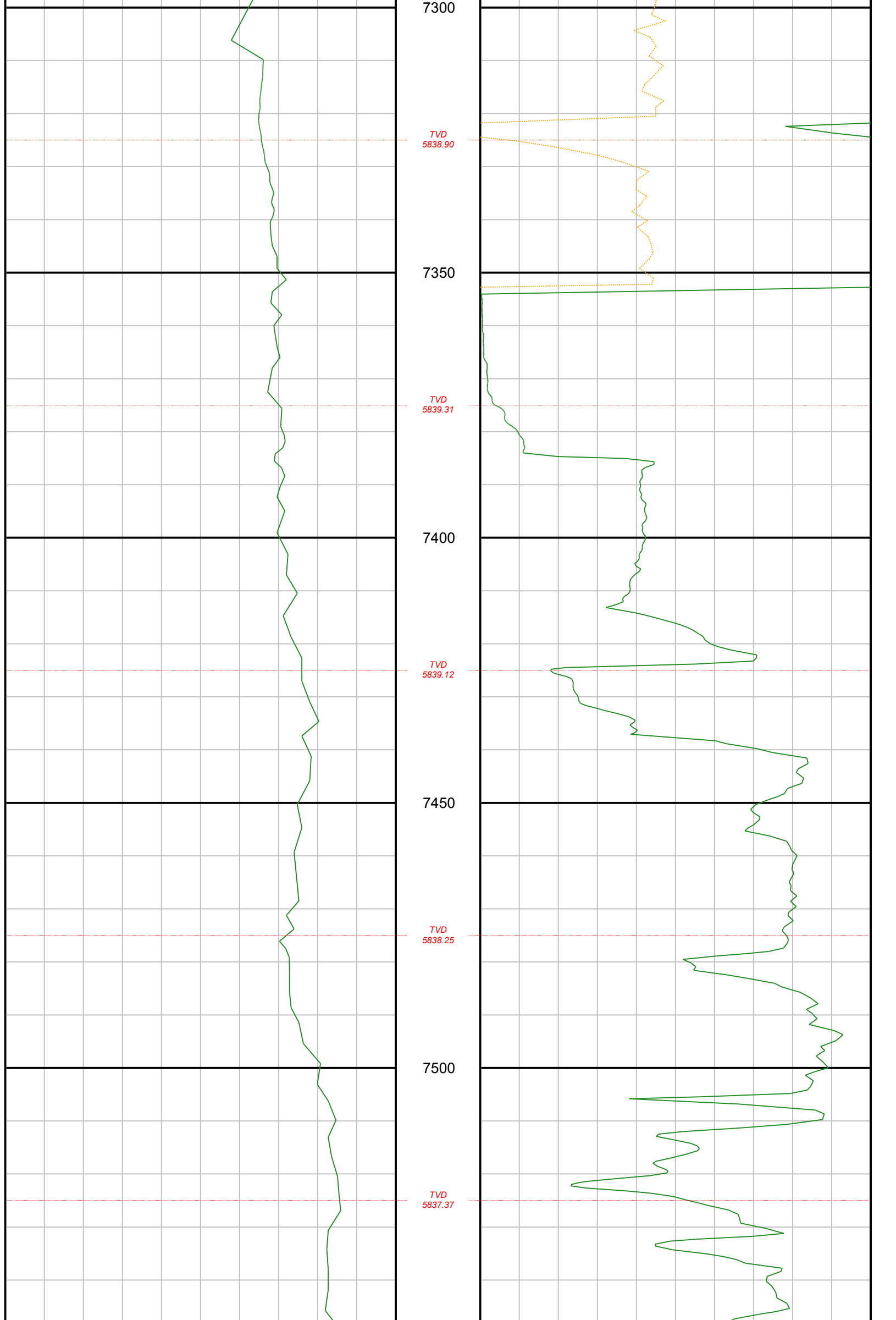


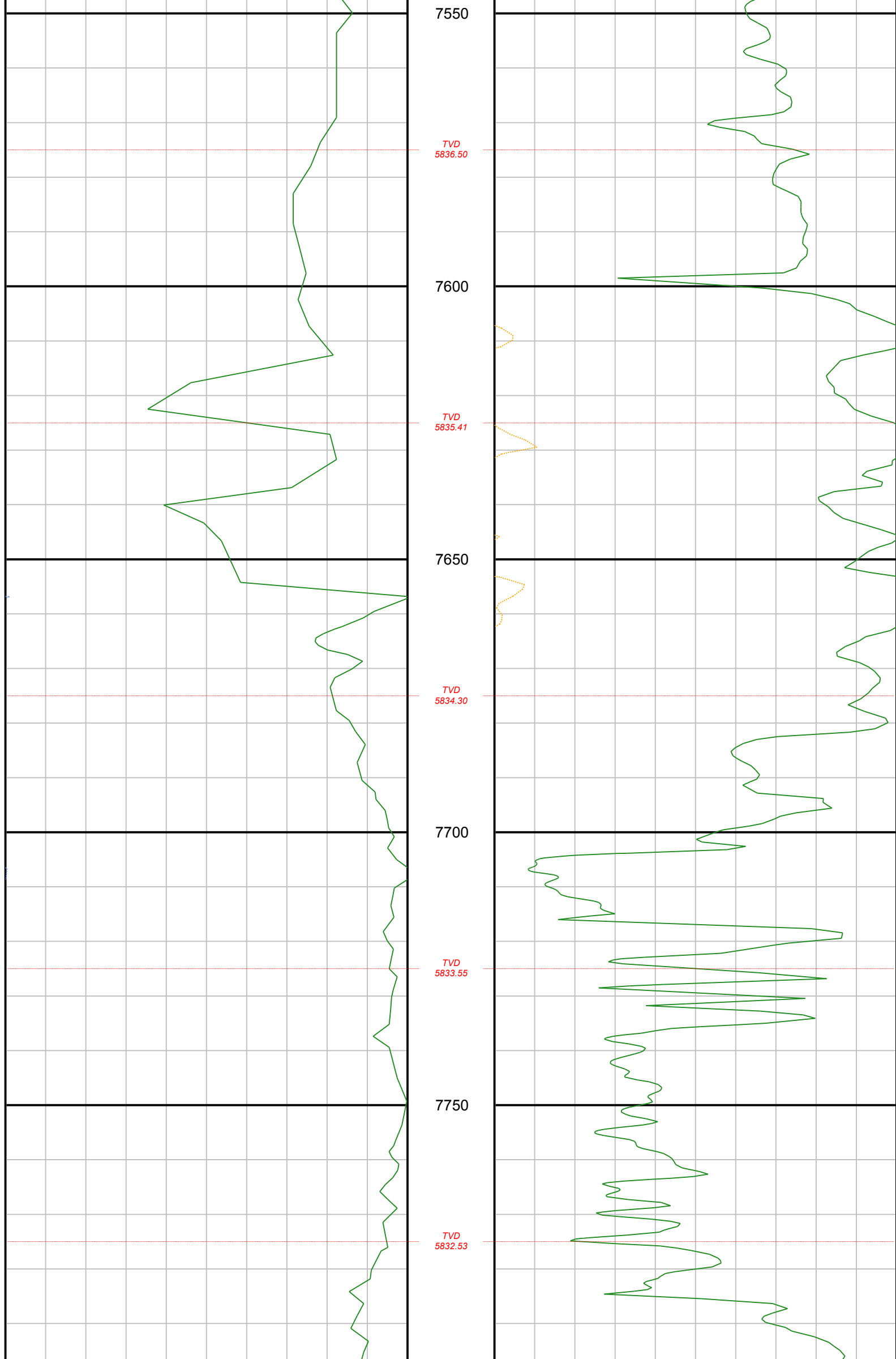


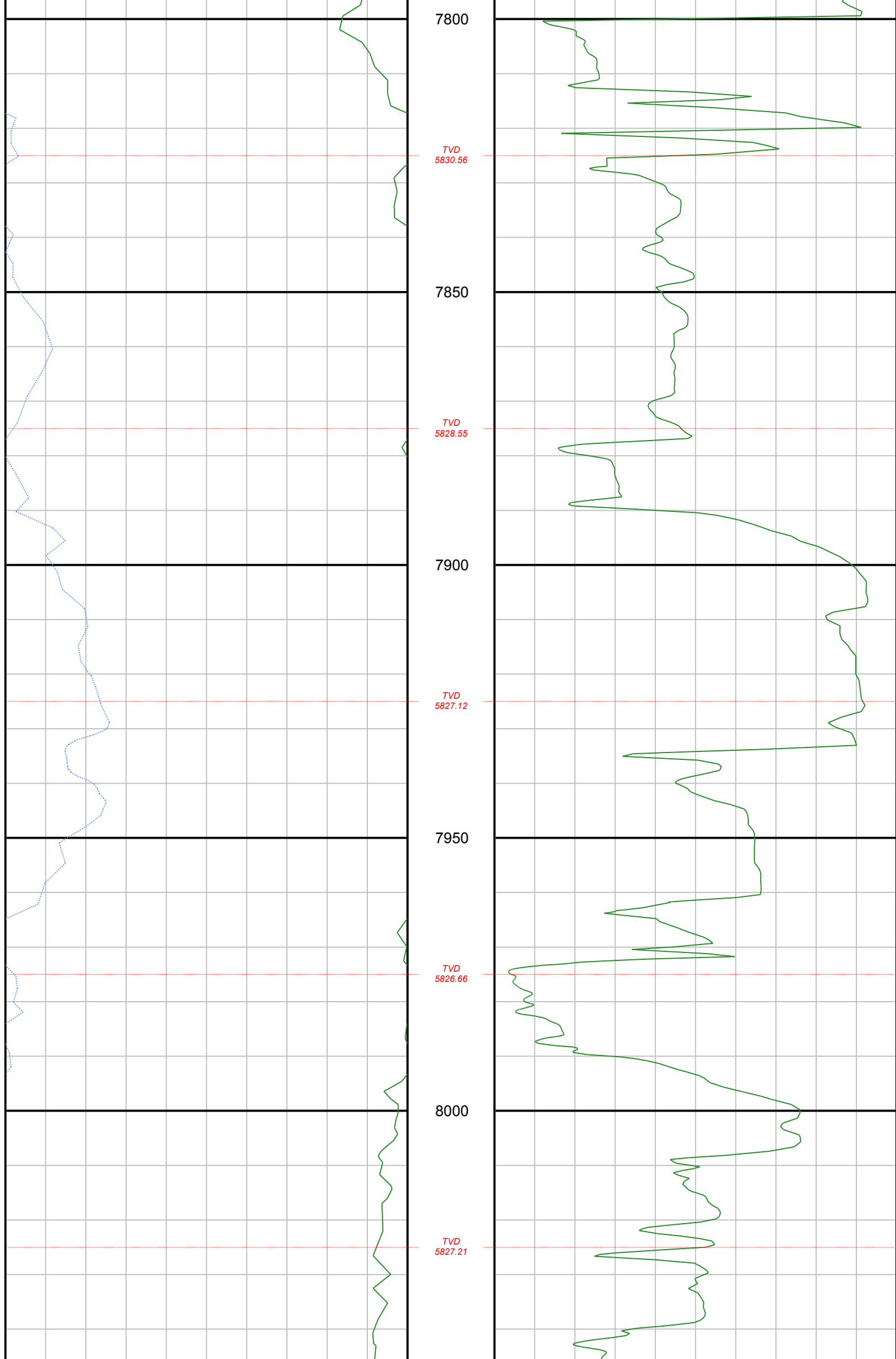


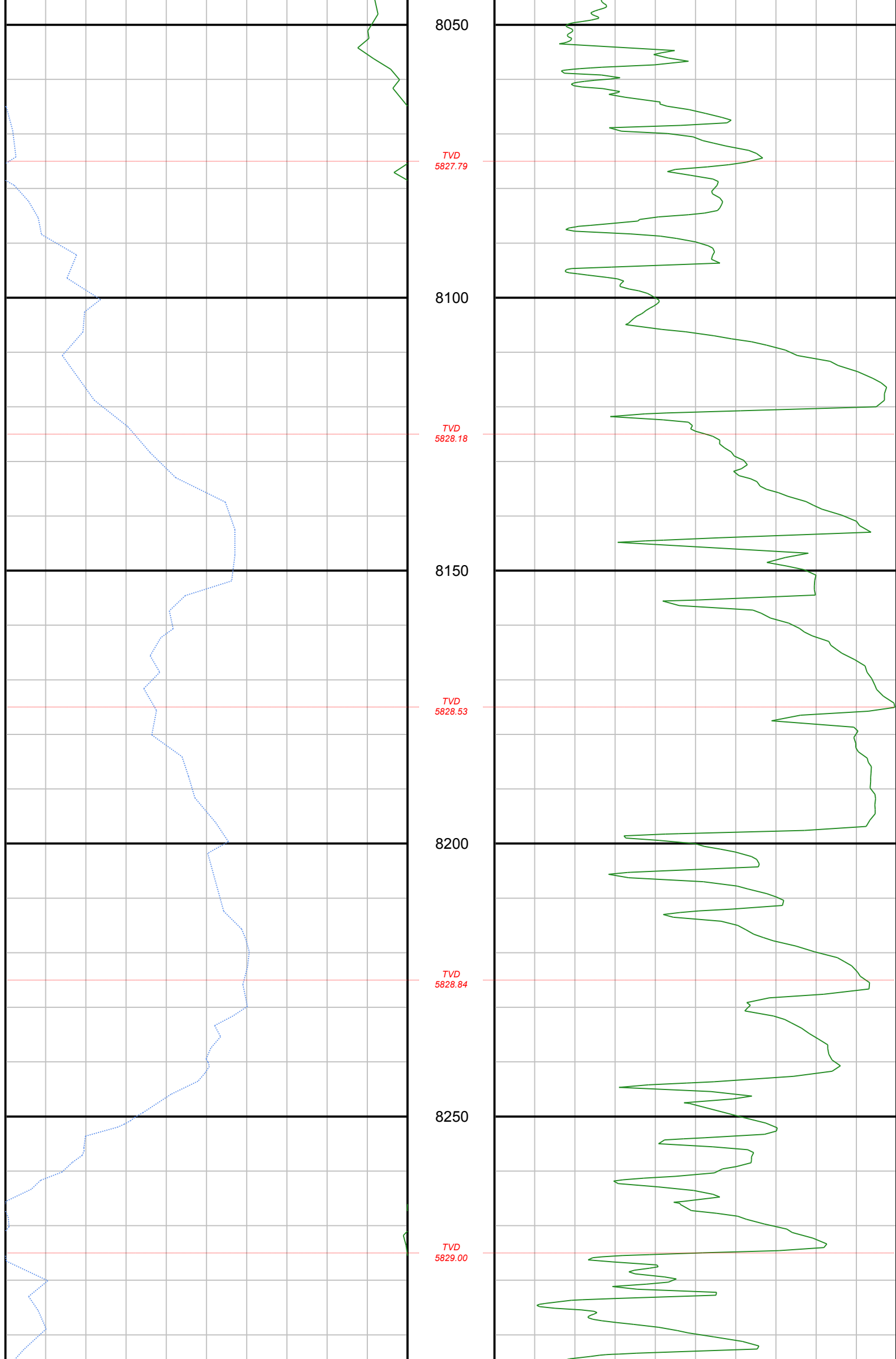


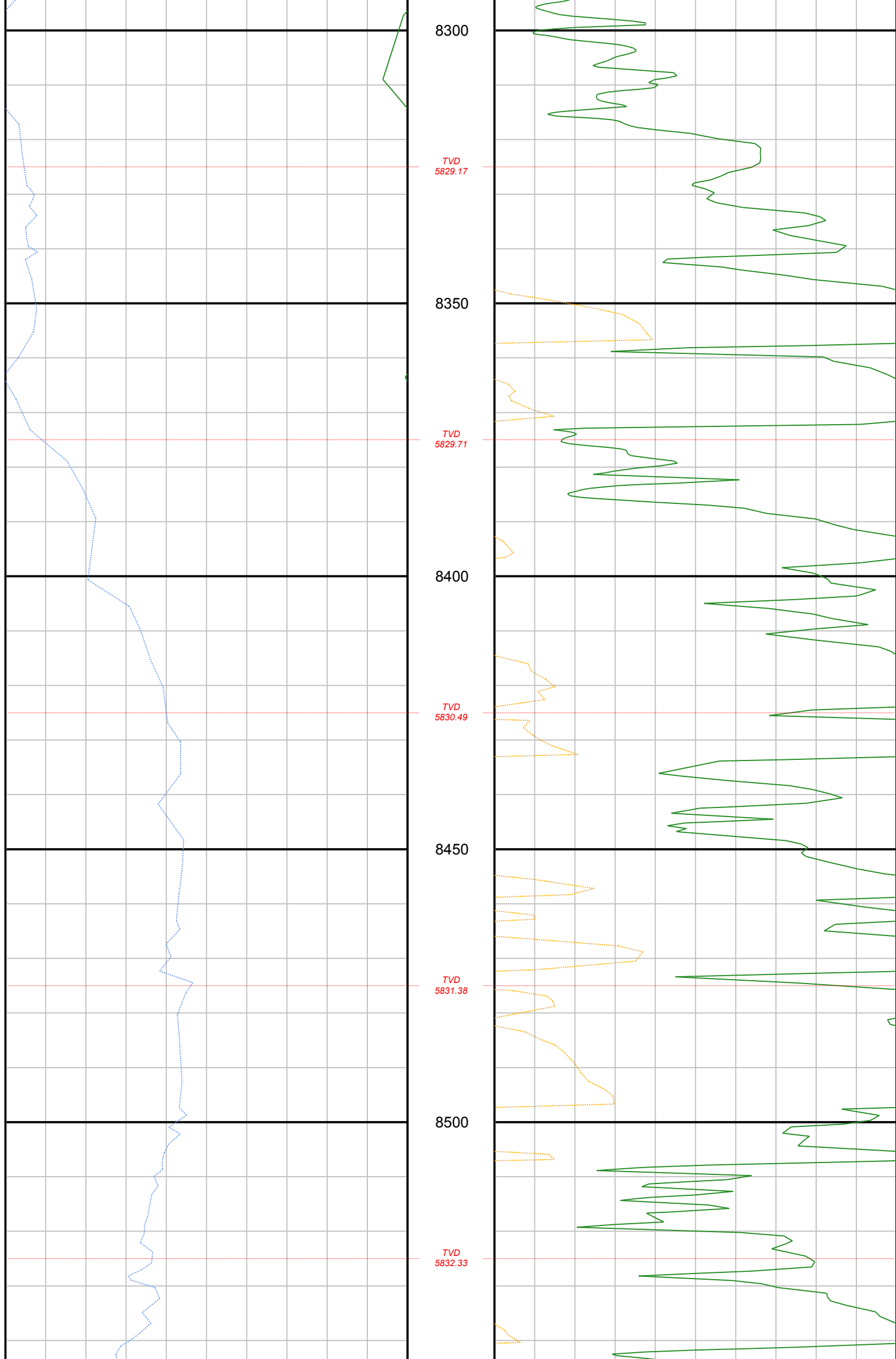


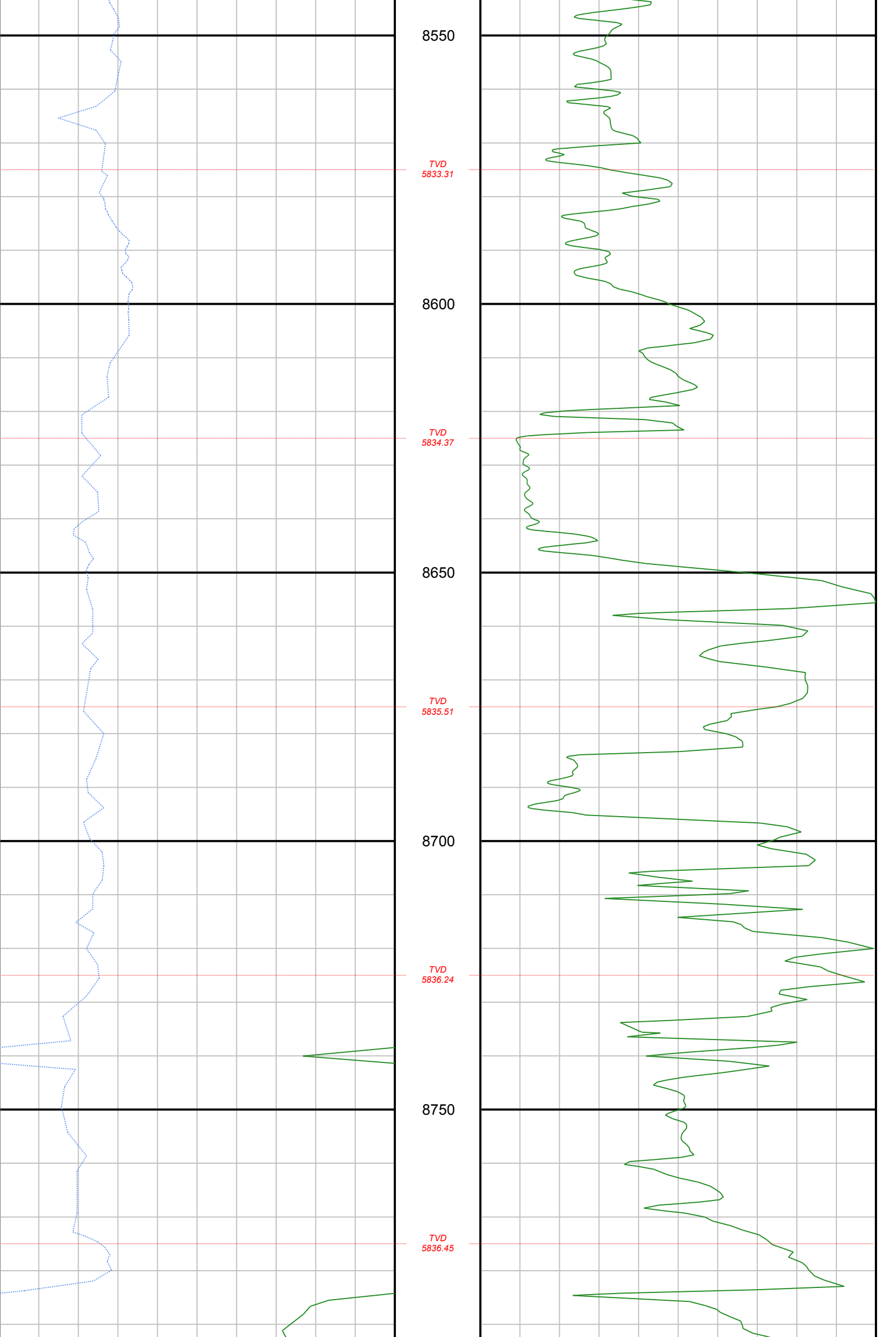


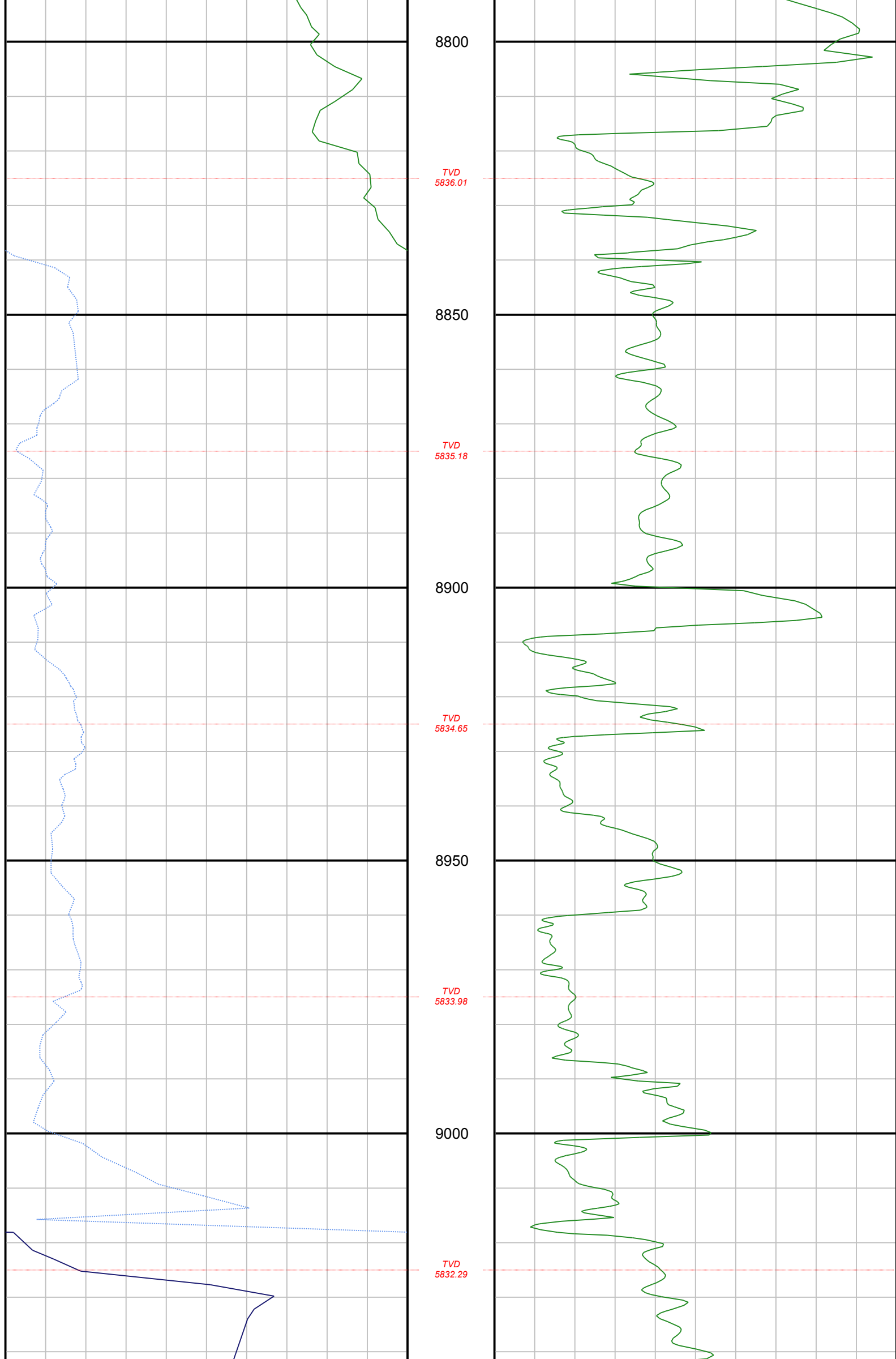


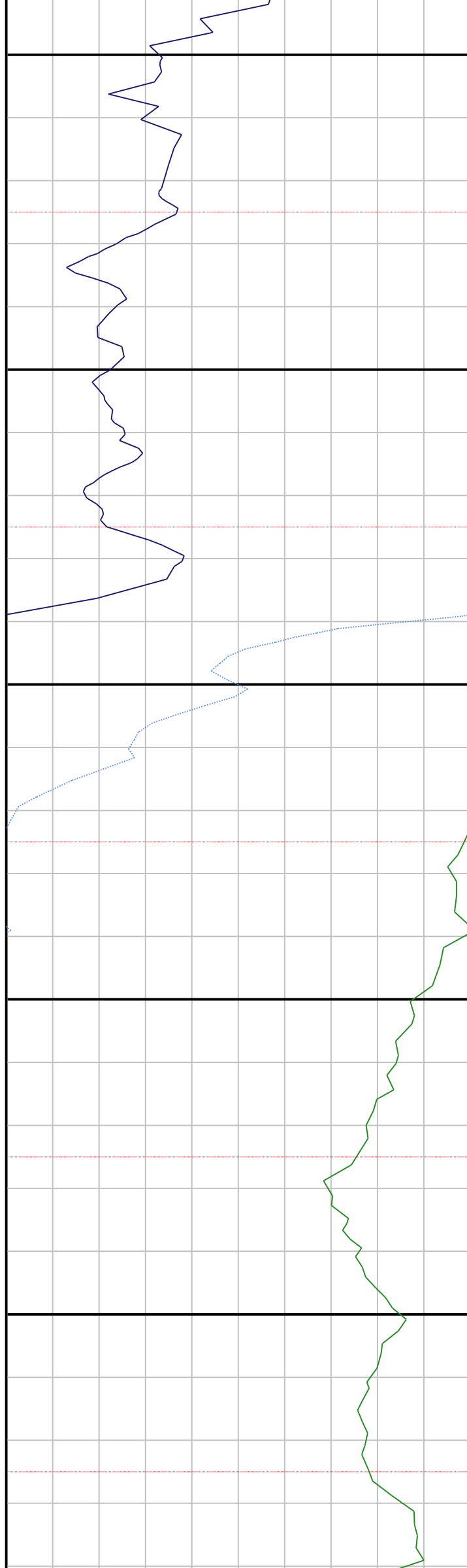












9050

TVD
5830.51

9100

TVD
5829.55

9150

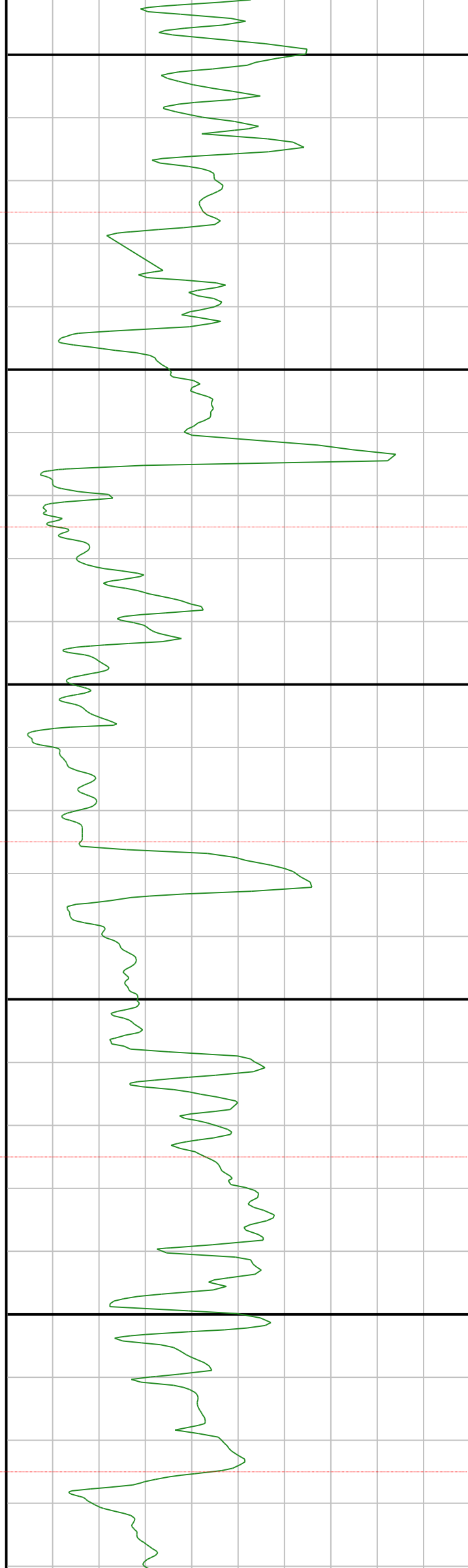
TVD
5828.66

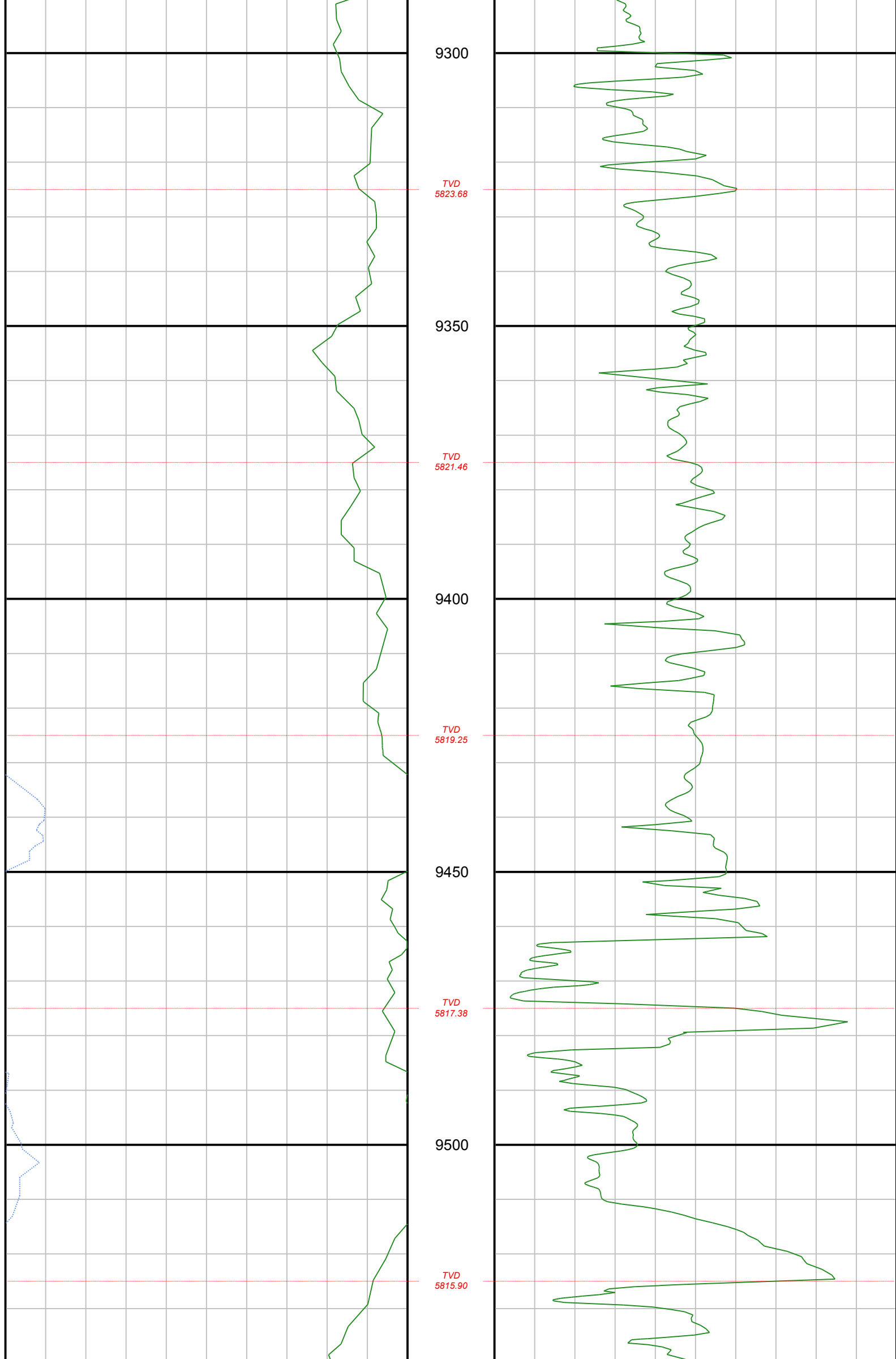
9200

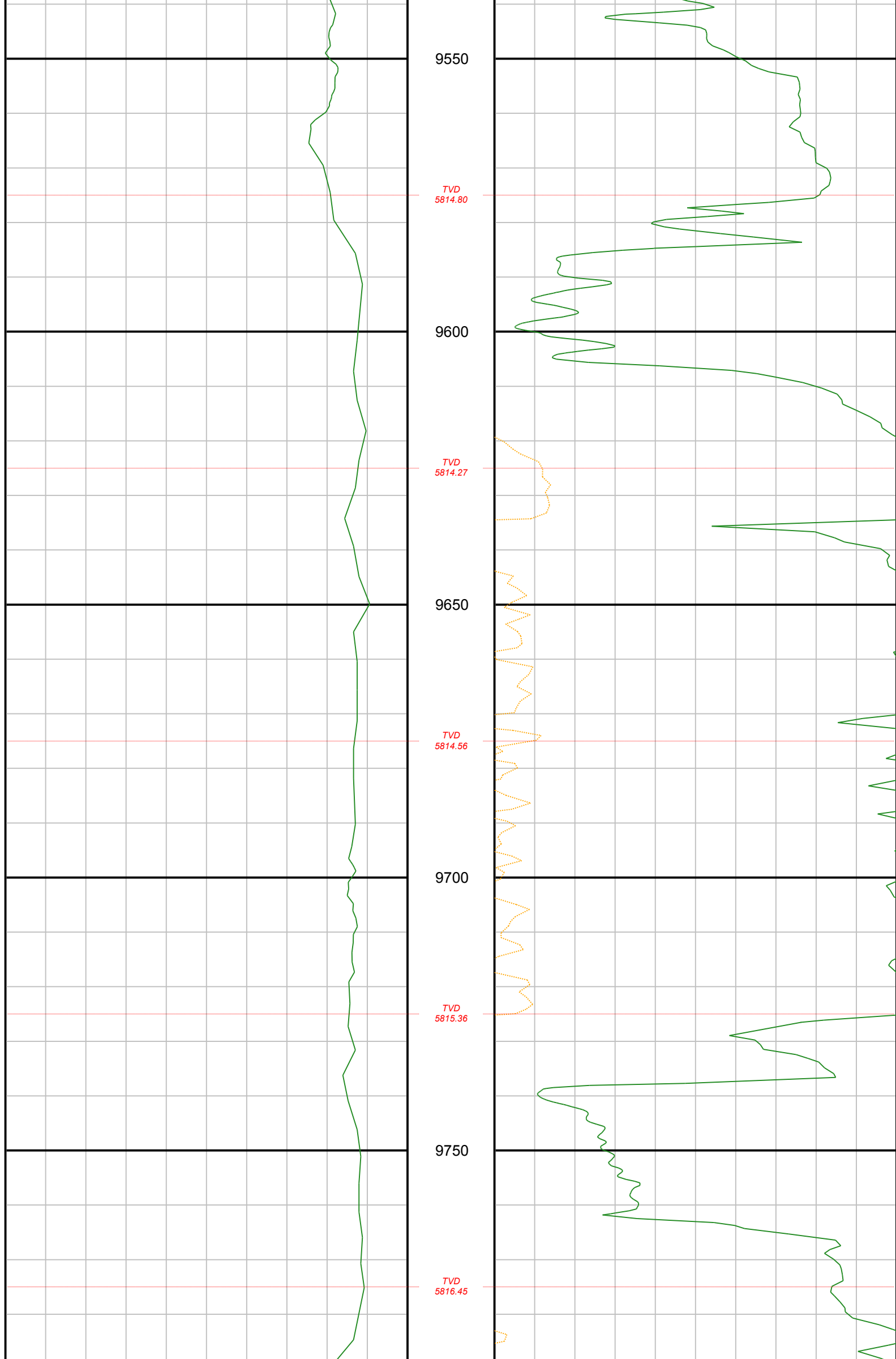
TVD
5827.42

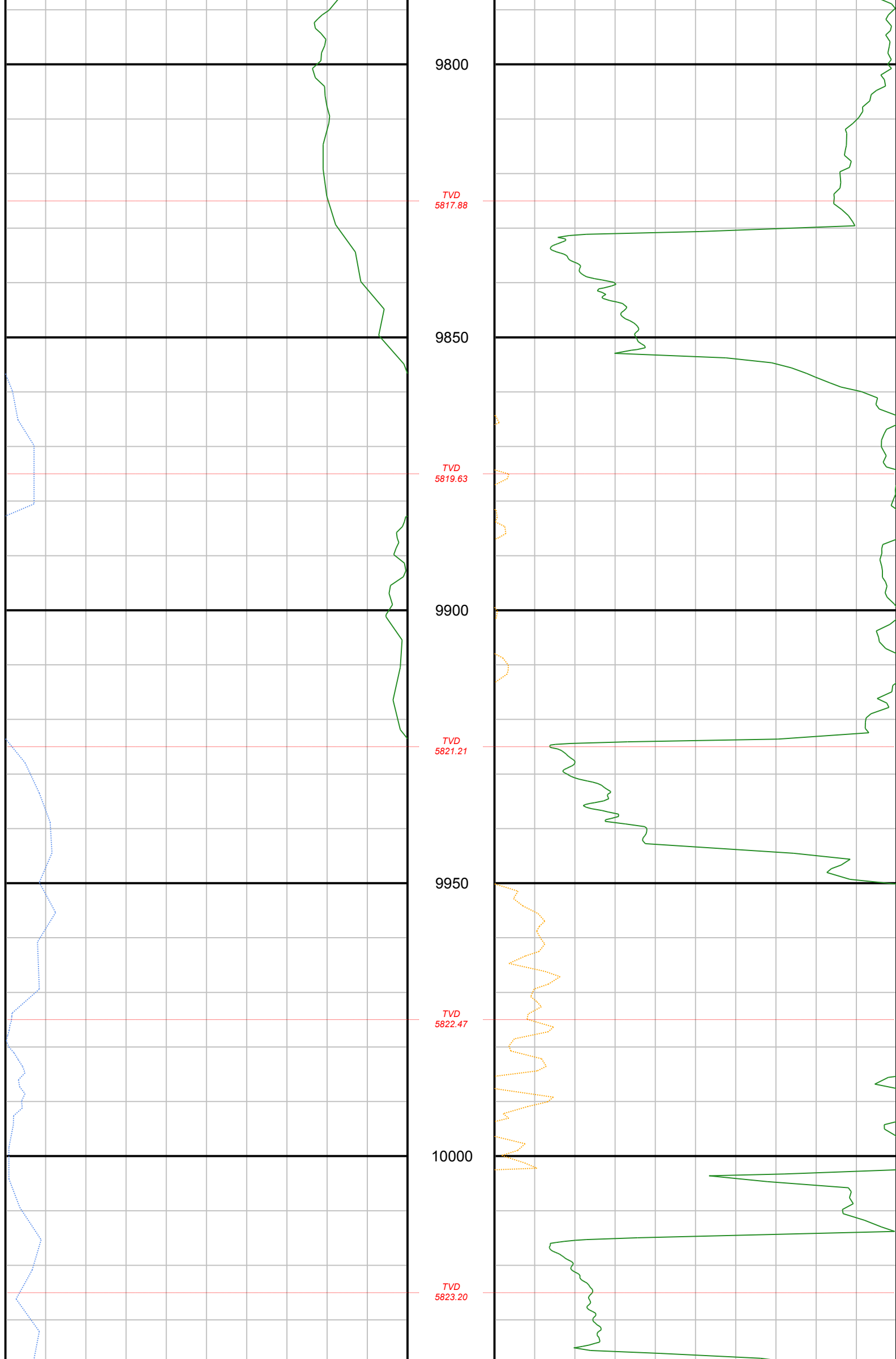
9250

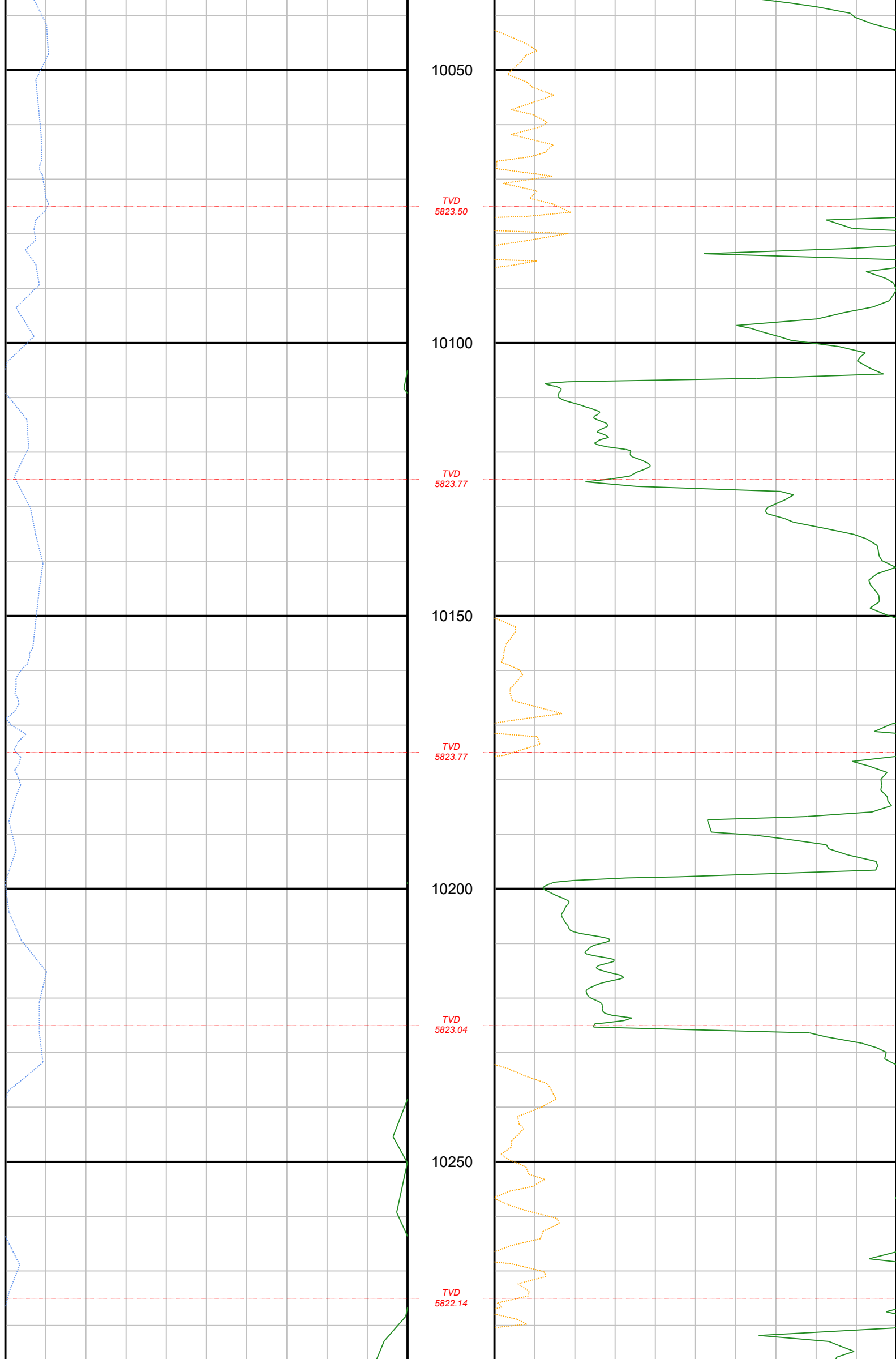
TVD
5825.76

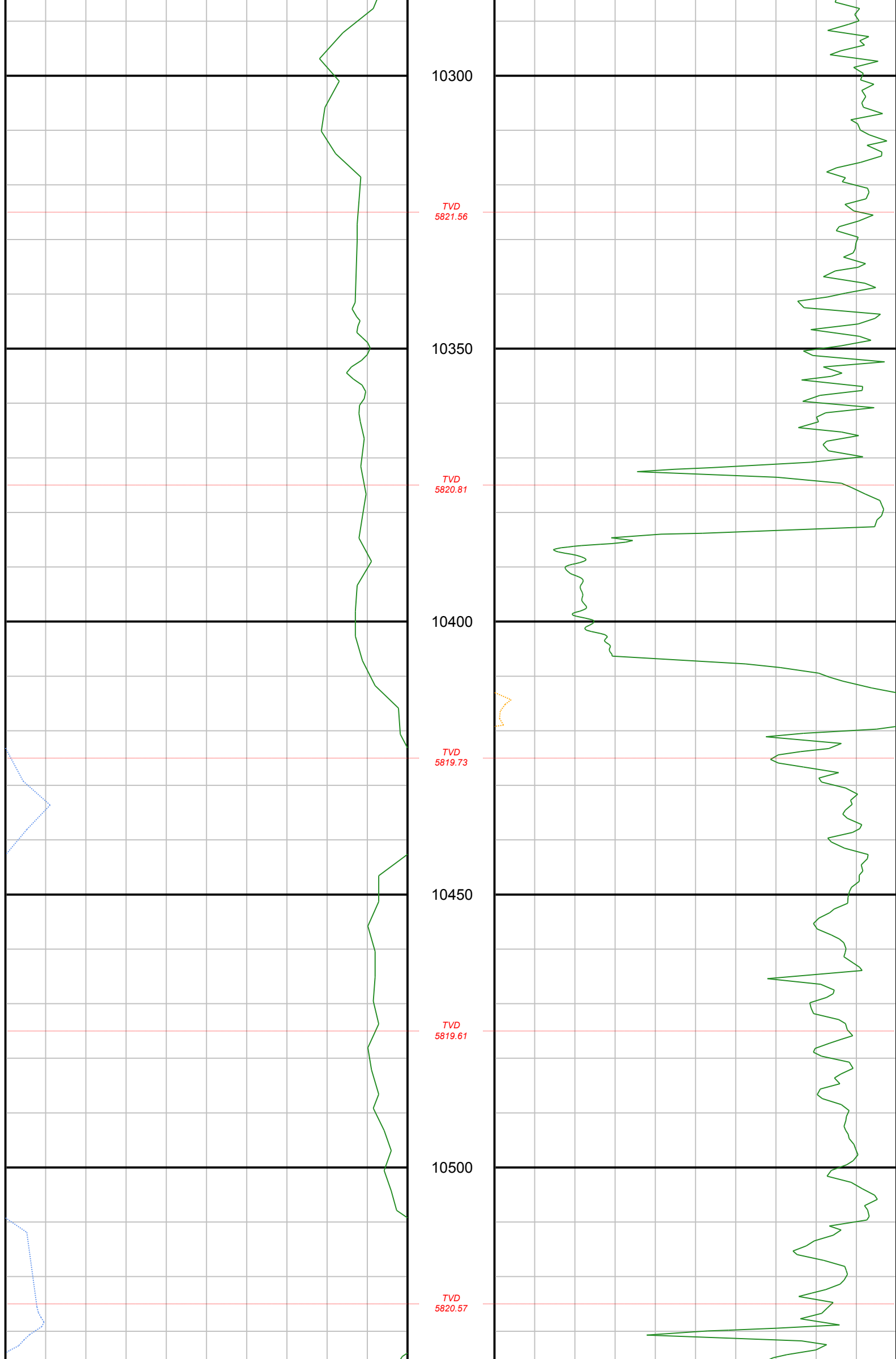


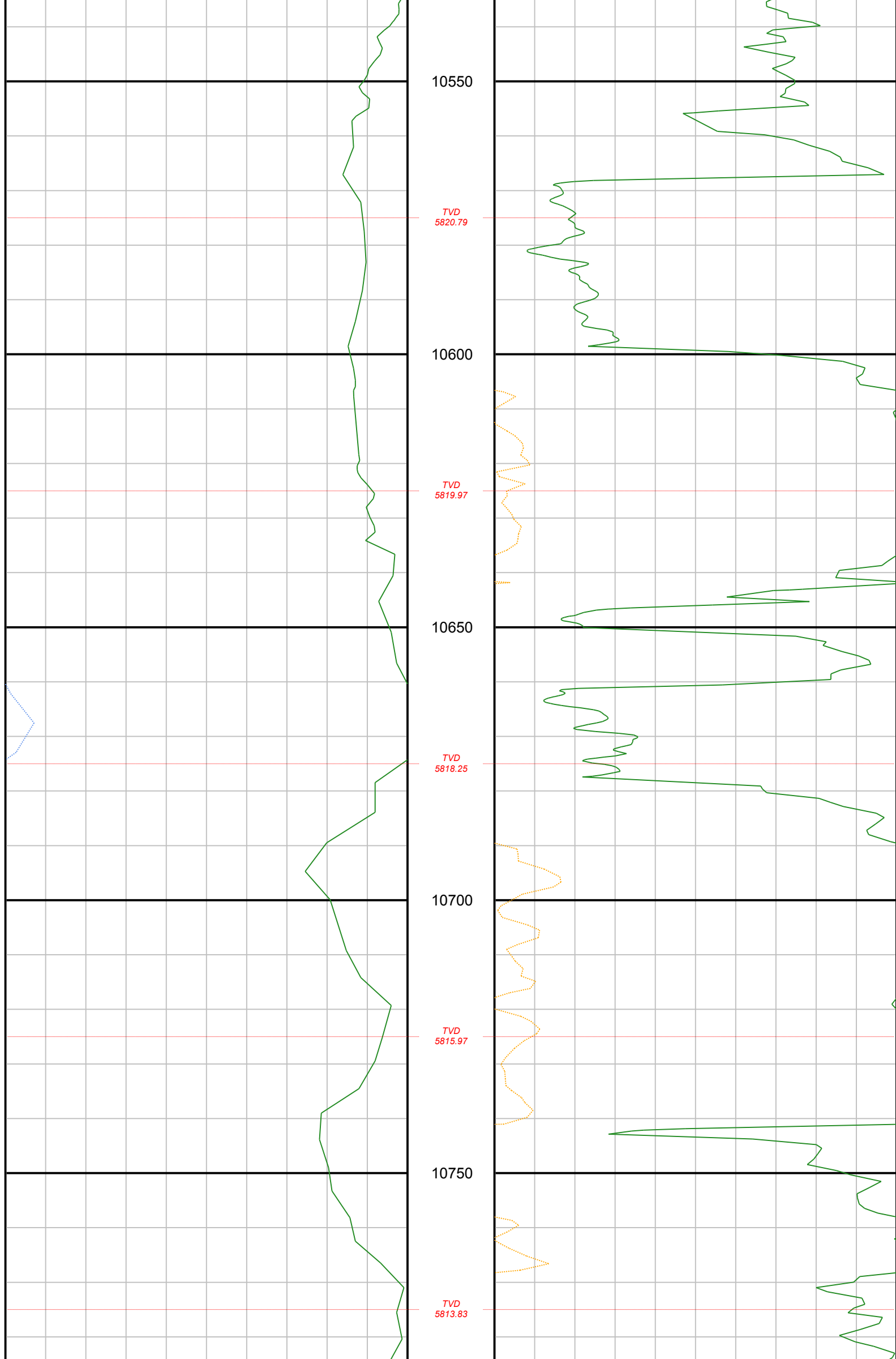


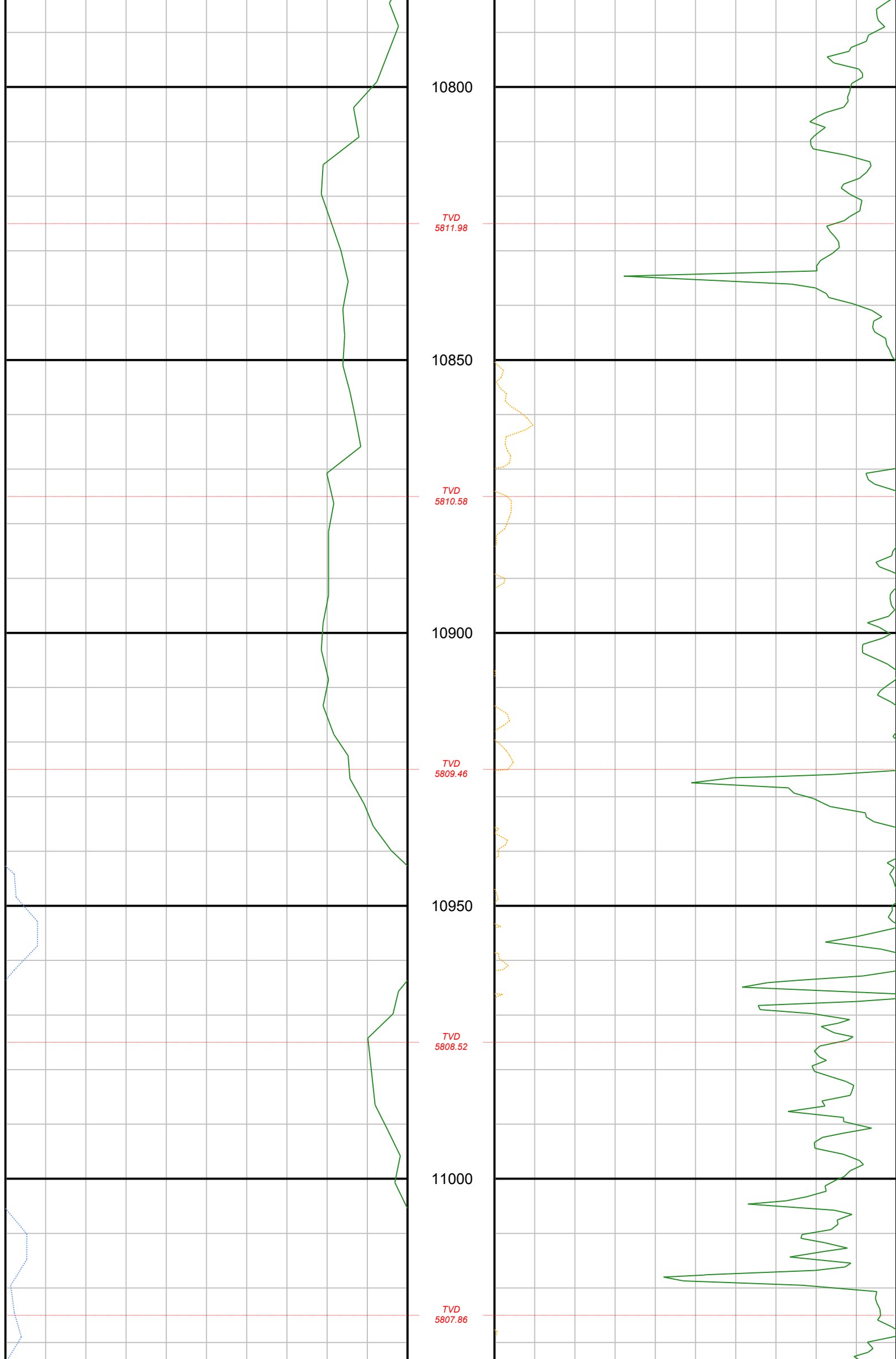


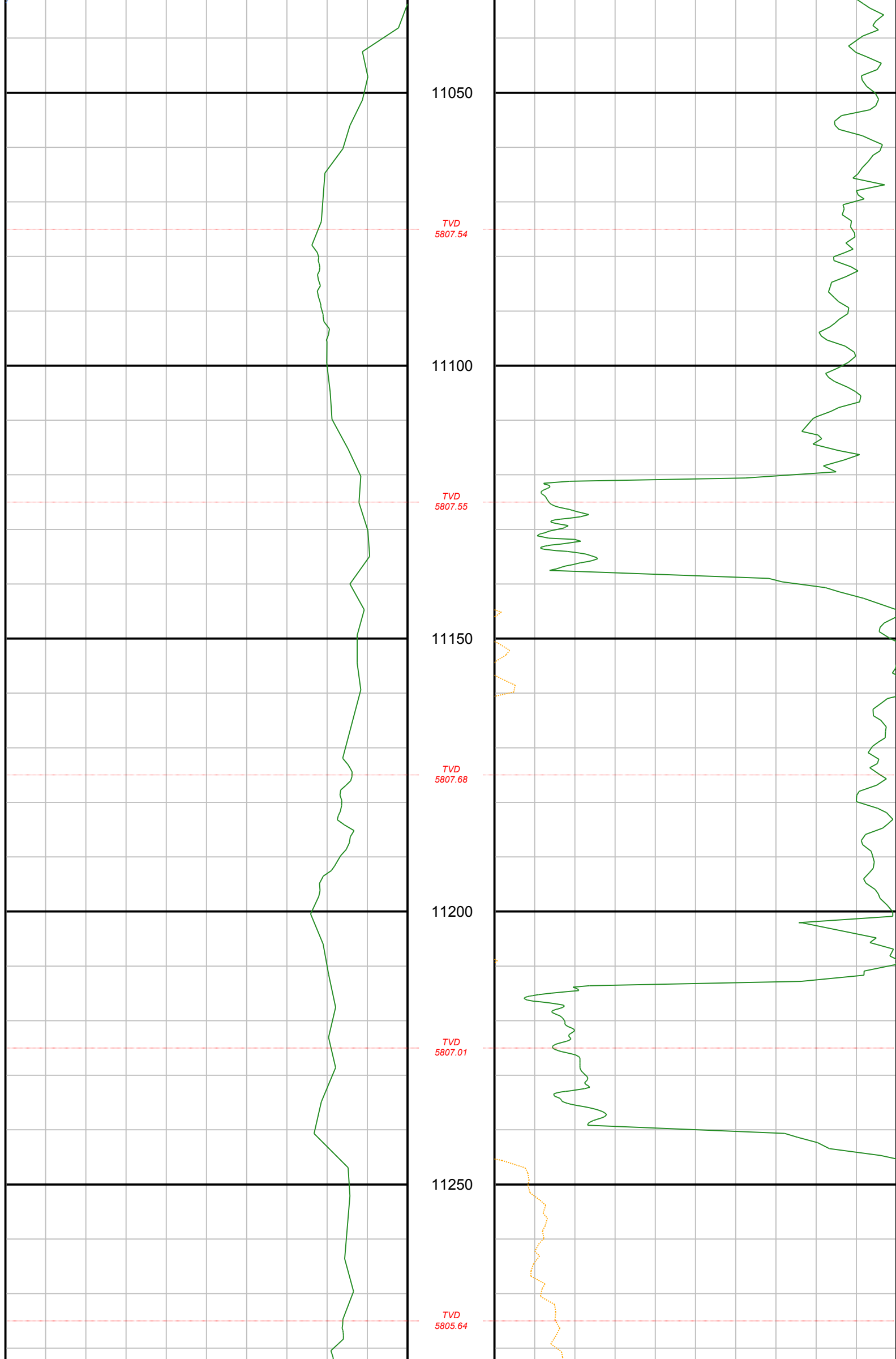


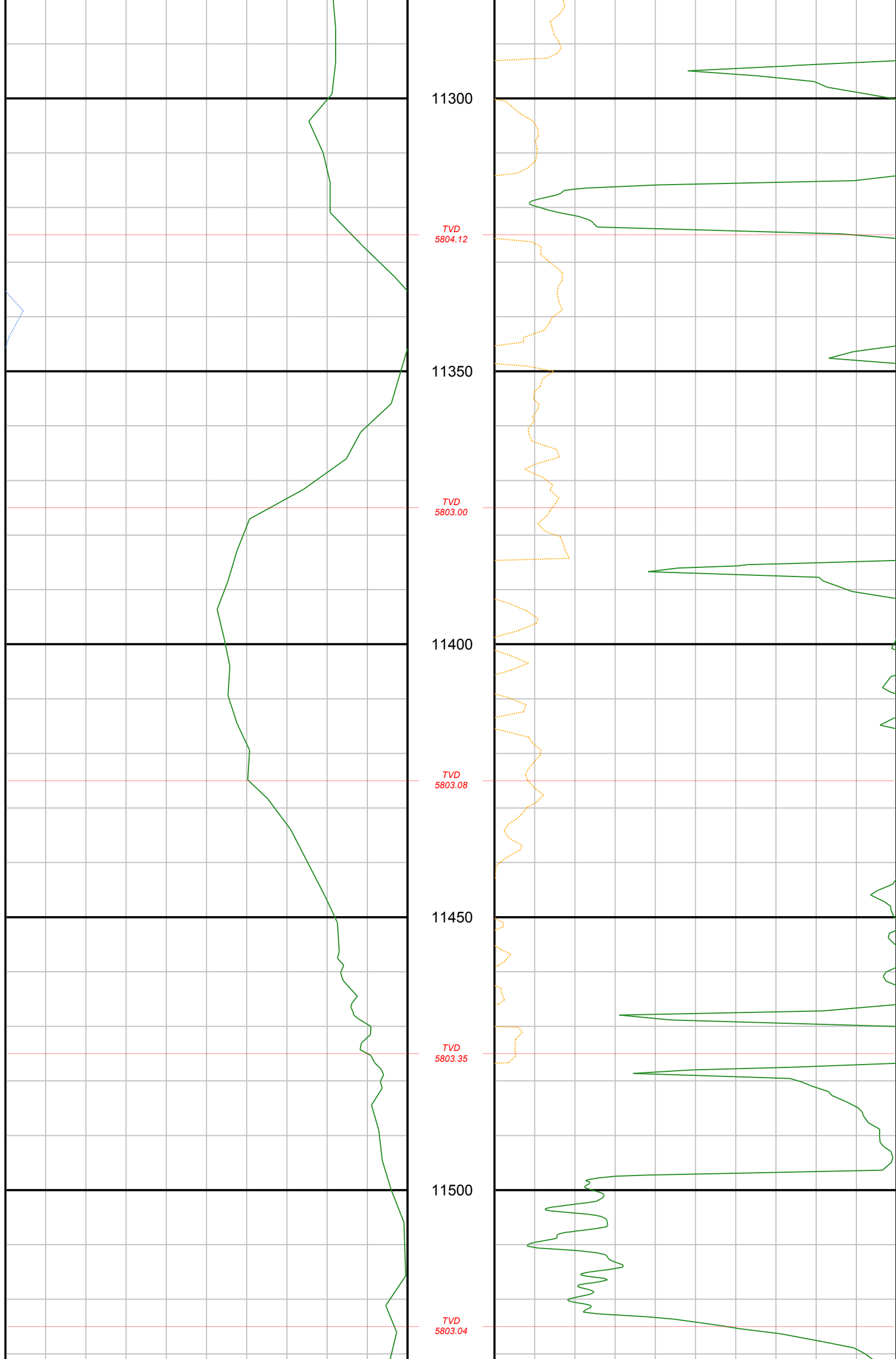


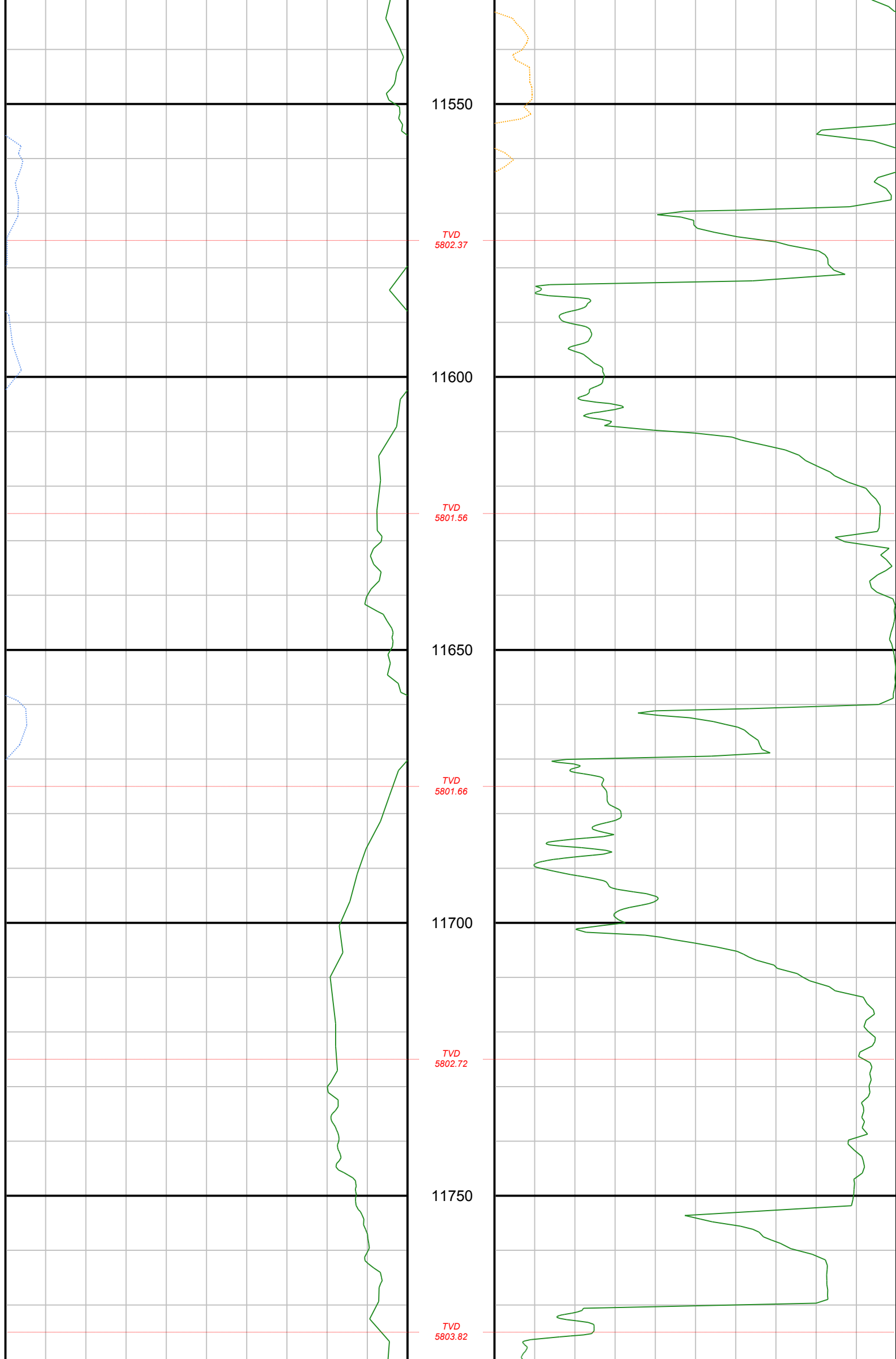


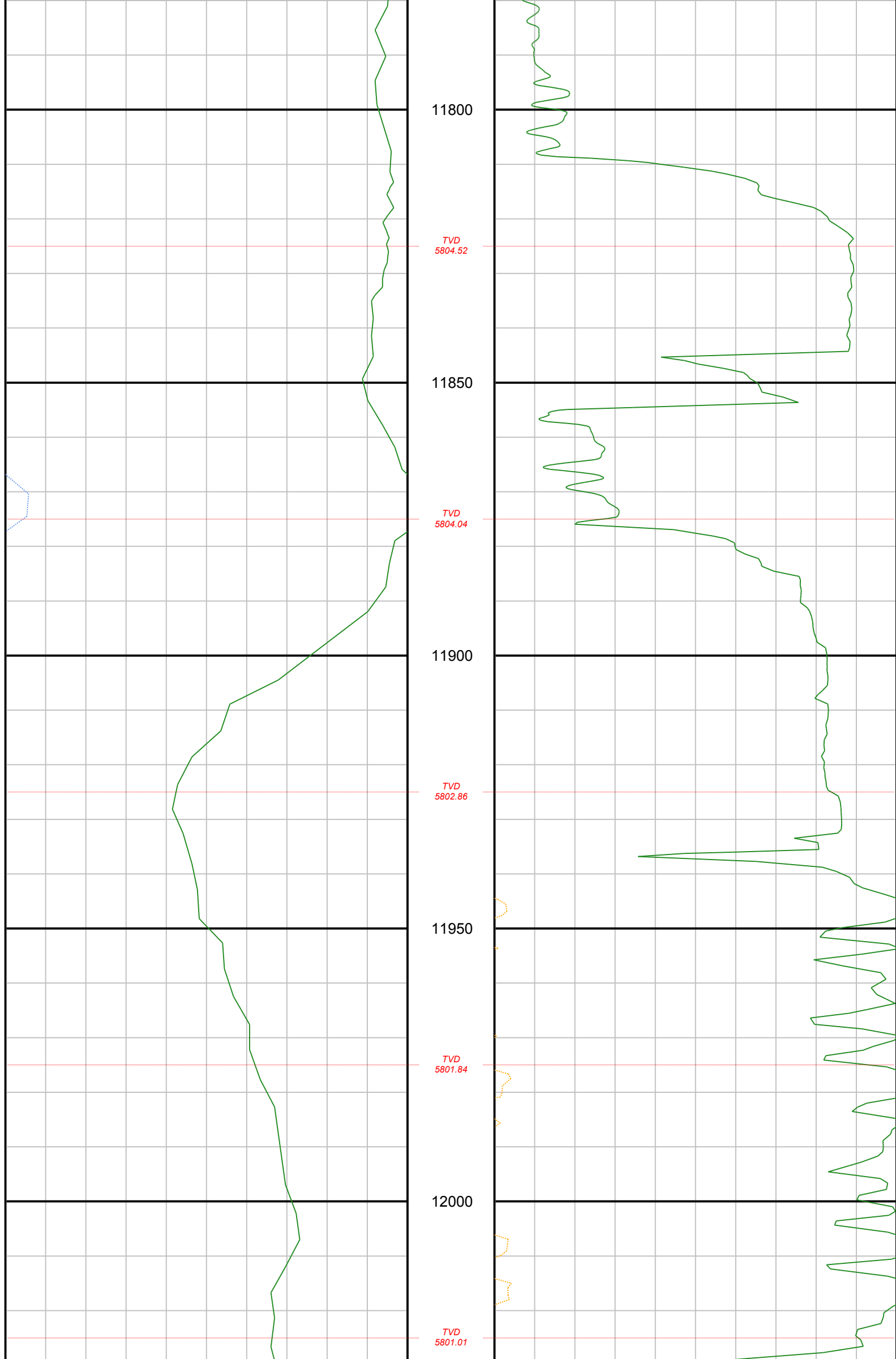


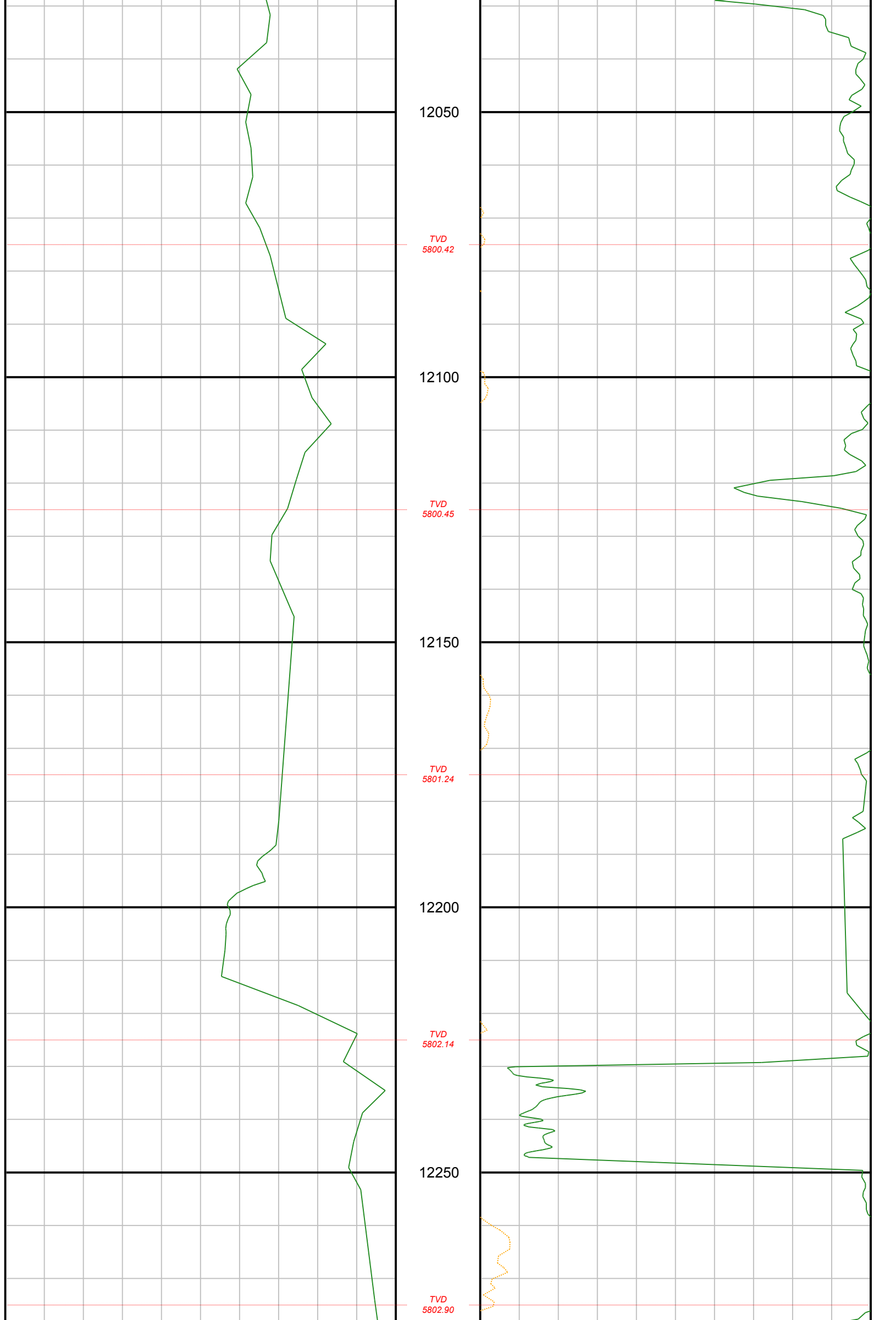


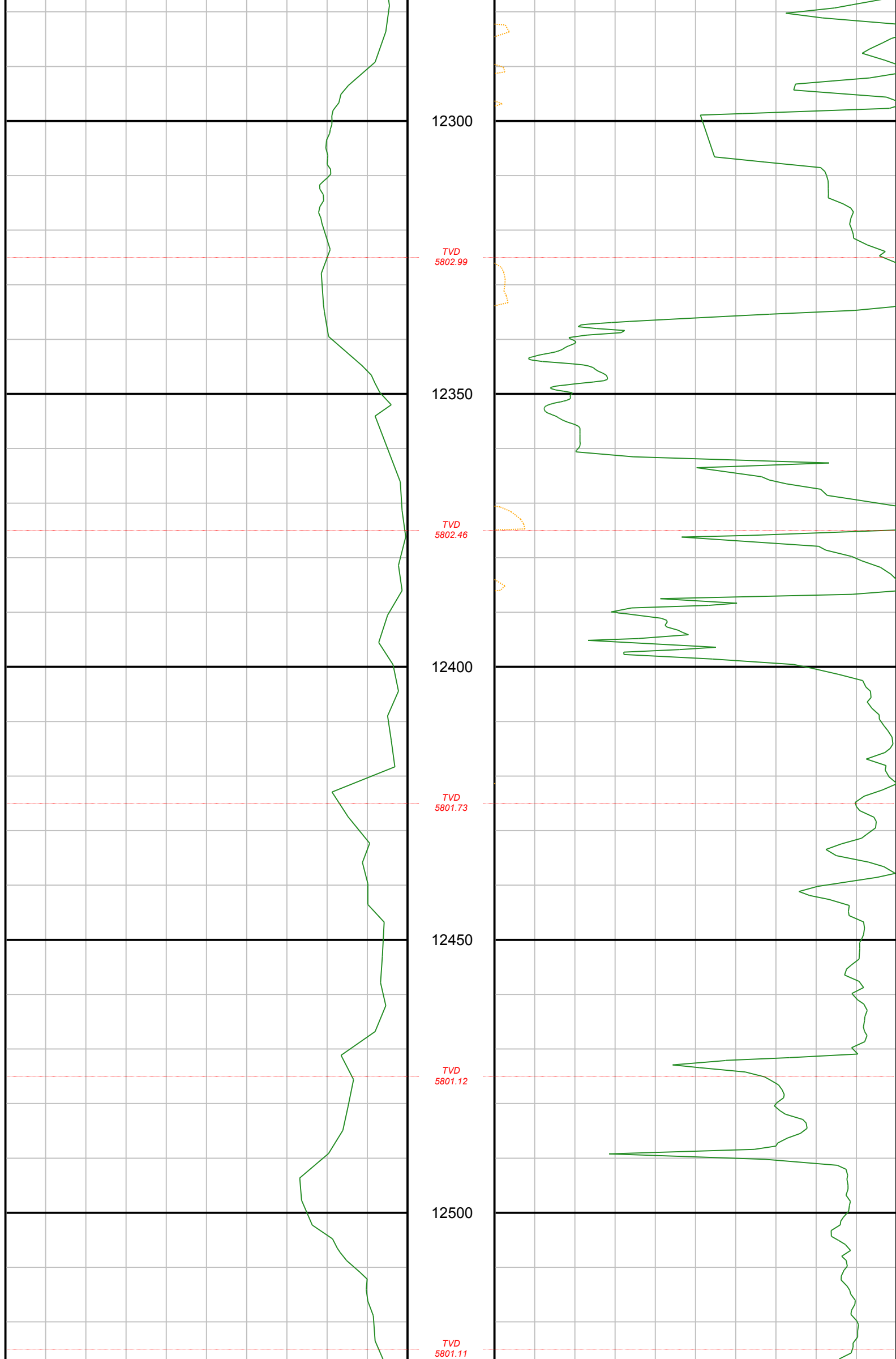


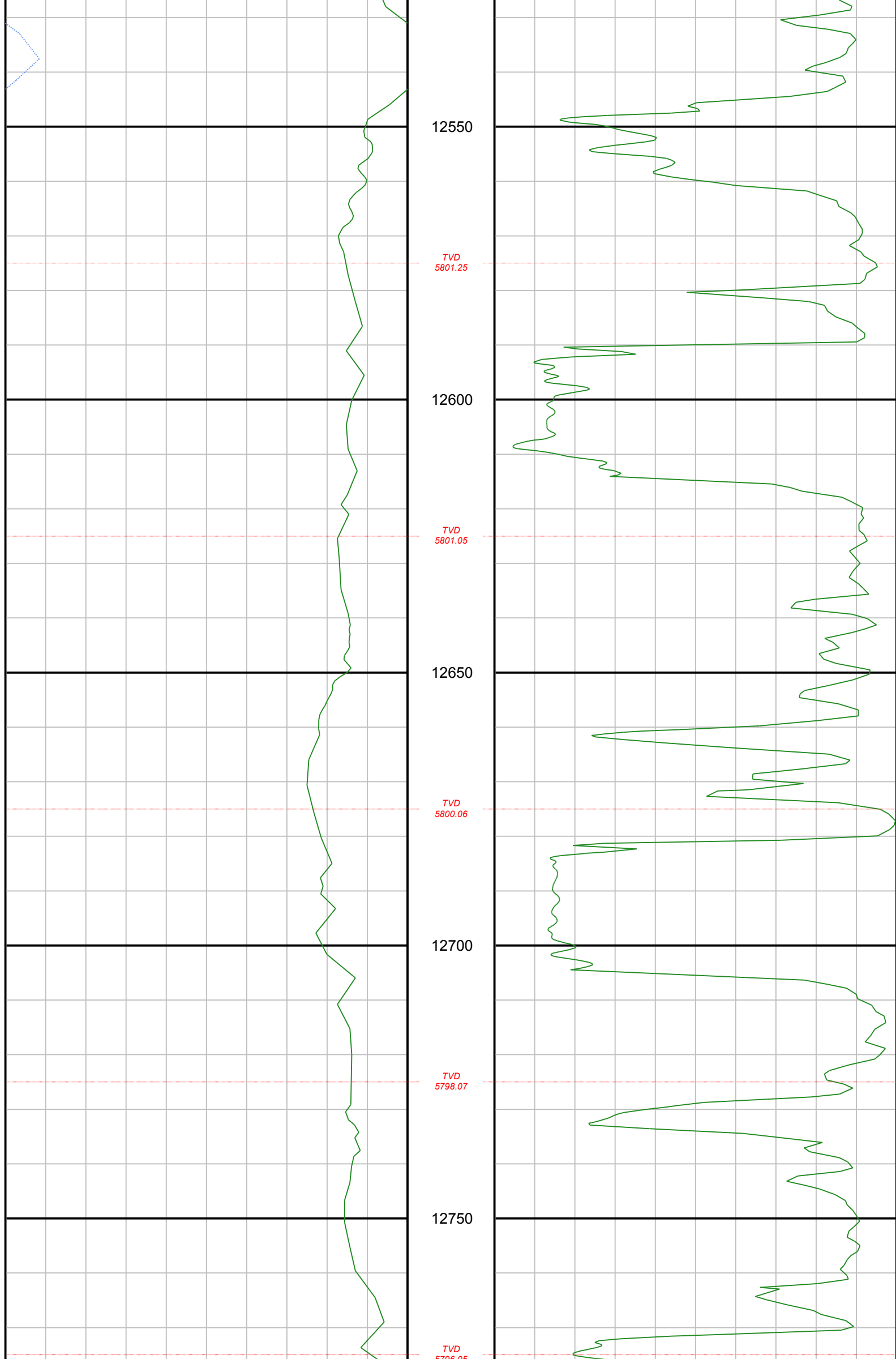


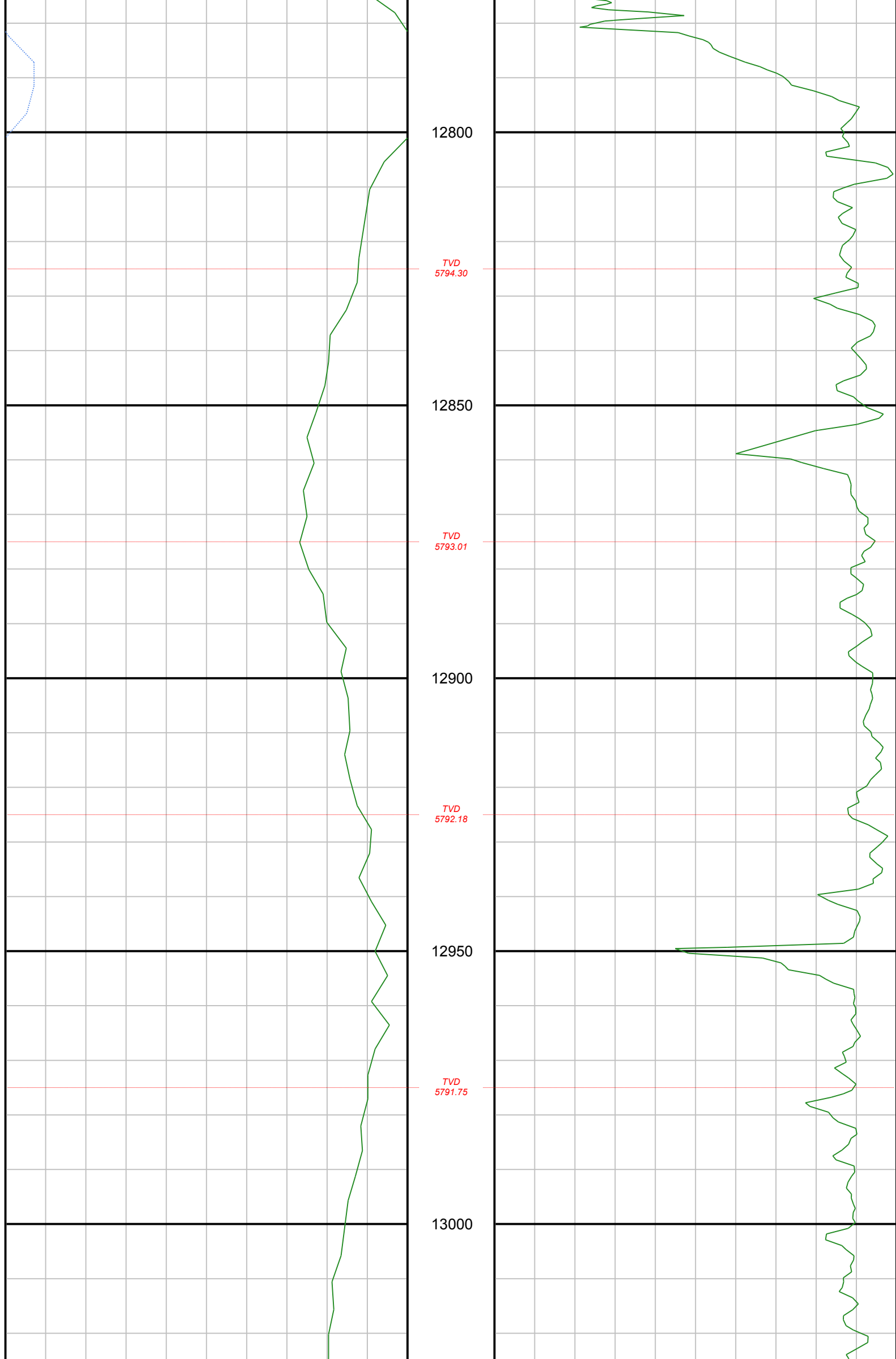


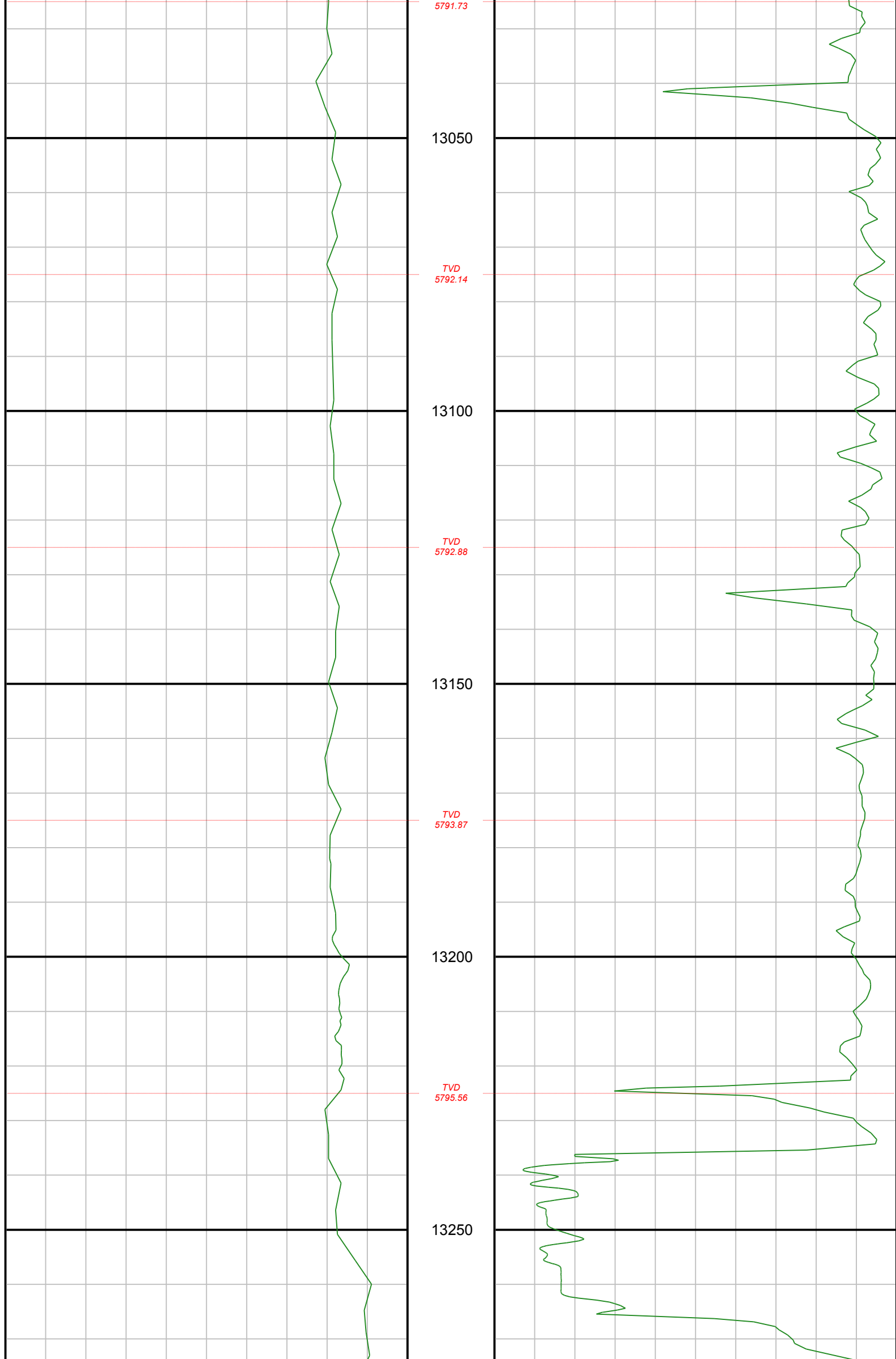


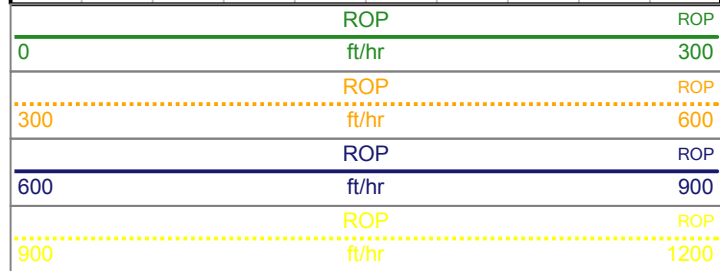
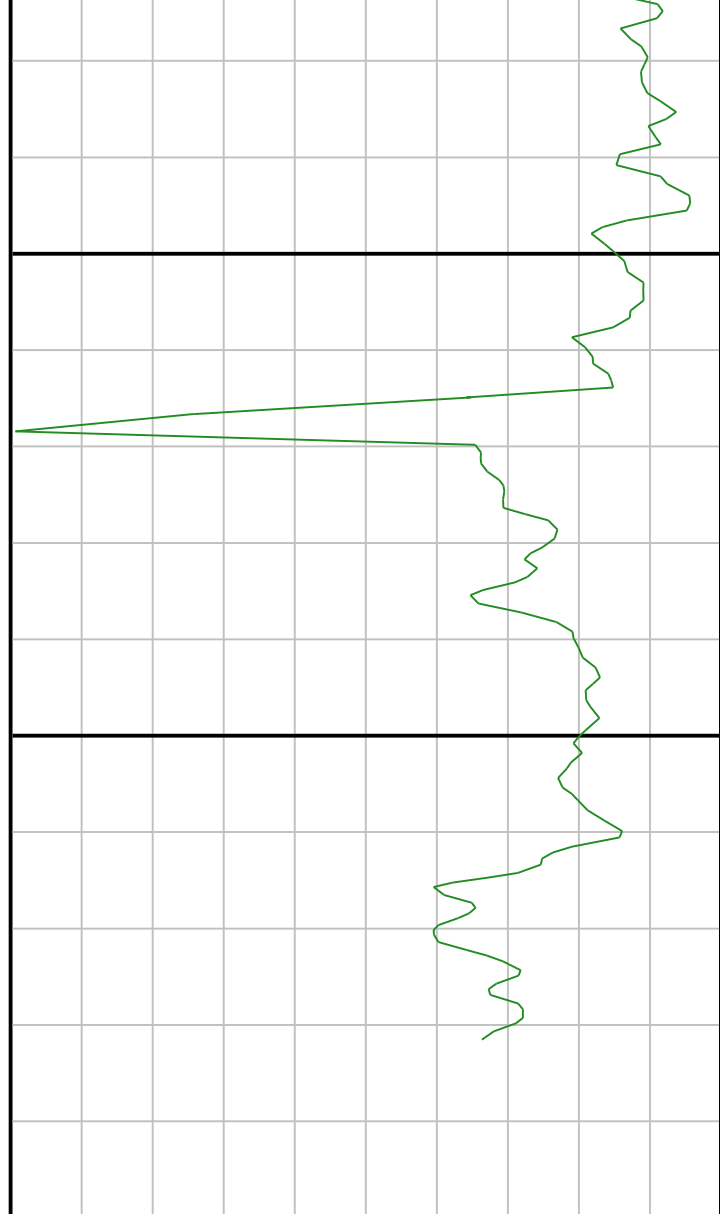
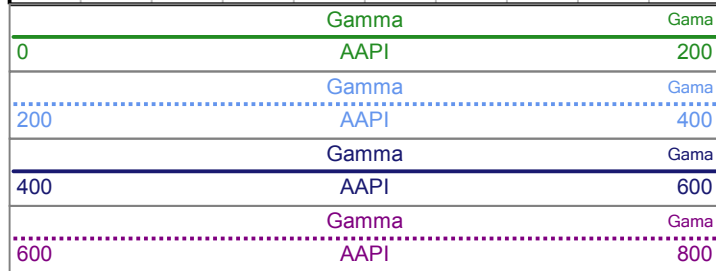
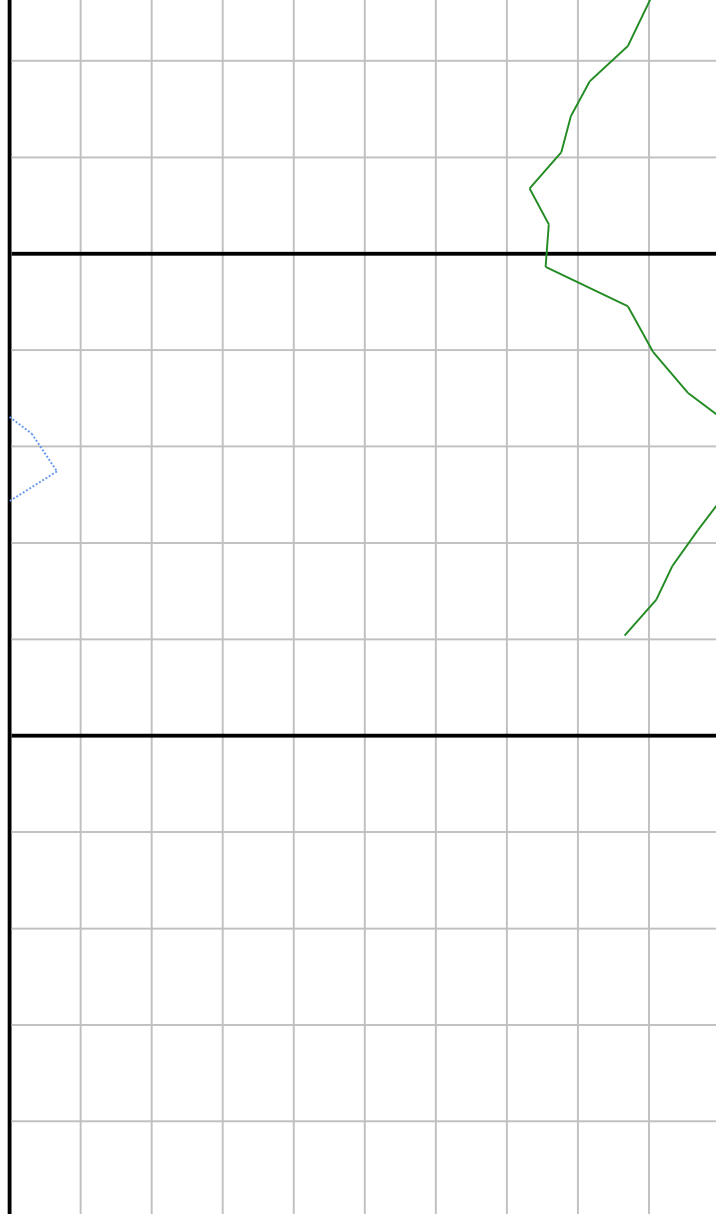












Survey Information

Seq	MD (ft)	Inc (°)	Azm (°)	TVD (ft)	V Sec (ft)	N/-S (ft)	E/-W (ft)	DLS (°/100ft)	Bld Rate (°/ft)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	114.00	0.16	151.14	114.00	-0.14	-0.14	0.08	0.14	0.00
3	232.00	0.17	179.40	232.00	-0.46	-0.46	0.16	0.07	0.00
4	509.00	5.44	221.50	508.57	-10.71	-10.71	-8.54	1.92	0.02
5	694.00	8.85	216.64	692.11	-28.70	-28.70	-22.85	1.87	0.02
6	786.00	13.42	212.92	782.36	-43.35	-43.35	-32.88	5.03	0.05
7	879.00	13.41	216.19	872.82	-61.11	-61.11	-45.12	0.82	0.00
8	971.00	15.64	213.72	961.88	-80.04	-80.04	-58.30	2.52	0.02
9	1156.00	15.02	214.63	1140.29	-120.51	-120.51	-85.77	0.36	0.00
10	1433.00	14.05	216.65	1408.43	-177.02	-177.02	-126.24	0.40	0.00
11	1617.00	13.22	221.47	1587.24	-210.71	-210.71	-153.50	0.76	0.00
12	1709.00	12.79	223.99	1676.88	-225.92	-225.92	-167.54	0.77	0.00
13	1801.00	11.48	223.43	1766.83	-239.89	-239.89	-180.91	1.43	-0.01
14	1841.00	10.73	223.68	1806.08	-245.48	-245.48	-186.22	1.88	-0.02
15	1990.00	9.18	221.56	1952.83	-264.40	-264.40	-203.68	1.07	-0.01
16	2083.00	10.87	218.68	2044.41	-276.80	-276.80	-214.09	1.89	0.02
17	2175.00	11.60	209.32	2134.65	-291.64	-291.64	-224.04	2.13	0.01
18	2267.00	15.17	217.54	2224.15	-309.25	-309.25	-235.91	4.39	0.04
19	2359.00	18.75	218.23	2312.13	-330.42	-330.42	-252.40	3.90	0.04
20	2451.00	17.77	216.02	2399.50	-353.39	-353.39	-269.80	1.30	-0.01
21	2543.00	16.81	216.95	2487.34	-375.38	-375.38	-286.06	1.09	-0.01
22	2636.00	15.78	213.84	2576.60	-396.63	-396.63	-301.18	1.45	-0.01

- *Tie-in Point*

23	2729.00	15.47	213.72	2666.17	-417.45	-417.45	-315.11	0.34	0.00
24	2821.00	14.94	215.02	2754.95	-437.37	-437.37	-328.73	0.68	-0.01
25	2913.00	14.67	214.04	2843.89	-456.73	-456.73	-342.05	0.40	0.00
26	3005.00	14.52	213.49	2932.92	-476.00	-476.00	-354.94	0.22	0.00
27	3098.00	13.76	214.27	3023.11	-494.87	-494.87	-367.60	0.84	-0.01
28	3189.00	14.56	212.46	3111.34	-513.46	-513.46	-379.83	1.00	0.01
29	3373.00	12.87	213.66	3290.09	-550.04	-550.04	-403.61	0.93	-0.01
30	3465.00	12.73	212.29	3379.80	-567.13	-567.13	-414.70	0.36	0.00
31	3557.00	14.52	209.21	3469.21	-585.77	-585.77	-425.74	2.10	0.02
32	3741.00	13.92	208.98	3647.57	-625.27	-625.27	-447.72	0.33	0.00
33	3833.00	13.62	207.89	3736.93	-644.52	-644.52	-458.15	0.43	0.00
34	3925.00	13.55	211.62	3826.36	-663.27	-663.27	-468.87	0.96	0.00
35	4017.00	13.75	219.41	3915.76	-680.90	-680.90	-481.46	2.01	0.00
36	4201.00	11.78	215.33	4095.21	-713.12	-713.12	-506.21	1.18	-0.01
37	4293.00	11.29	213.69	4185.35	-728.28	-728.28	-516.64	0.64	-0.01
38	4385.00	11.12	213.98	4275.60	-743.13	-743.13	-526.59	0.19	0.00
39	4477.00	9.50	213.25	4366.11	-756.83	-756.83	-535.71	1.77	-0.02
40	4569.00	8.95	213.85	4456.92	-769.12	-769.12	-543.86	0.61	-0.01
41	4661.00	8.02	212.10	4547.91	-780.50	-780.50	-551.26	1.05	-0.01
42	4753.00	5.90	206.85	4639.23	-790.16	-790.16	-556.81	2.40	-0.02
43	4845.00	4.31	222.45	4730.87	-796.93	-796.93	-561.27	2.28	-0.02
44	4937.00	2.62	232.20	4822.70	-800.77	-800.77	-565.27	1.94	-0.02
45	5028.00	2.23	232.87	4913.62	-803.12	-803.12	-568.32	0.43	0.00
46	5120.00	0.99	282.08	5005.58	-804.03	-804.03	-570.53	1.90	-0.01
47	5212.00	1.13	275.17	5097.56	-803.78	-803.78	-572.21	0.21	0.00
48	5304.00	1.02	269.28	5189.55	-803.71	-803.71	-573.93	0.17	0.00
49	5396.00	3.07	336.36	5281.49	-801.46	-801.46	-575.74	3.08	0.02
50	5442.00	10.53	359.78	5327.14	-796.12	-796.12	-576.25	16.97	0.16
51	5488.00	14.38	19.31	5372.07	-786.52	-786.52	-574.38	12.30	0.08
52	5534.00	20.60	25.72	5415.93	-773.83	-773.83	-568.97	14.14	0.14
53	5580.00	24.68	22.42	5458.38	-757.65	-757.65	-561.79	9.29	0.09
54	5626.00	31.02	17.18	5499.03	-737.43	-737.43	-554.62	14.76	0.14
55	5672.00	34.67	8.75	5537.69	-713.15	-713.15	-549.12	12.70	0.08
56	5718.00	39.64	359.06	5574.38	-685.51	-685.51	-547.37	16.67	0.11
57	5764.00	45.28	355.04	5608.31	-654.52	-654.52	-549.03	13.60	0.12
58	5810.00	51.87	350.92	5638.73	-620.33	-620.33	-553.30	15.82	0.14
59	5856.00	53.27	350.74	5666.69	-584.27	-584.27	-559.12	3.06	0.03
60	5902.00	60.13	351.03	5691.93	-546.33	-546.33	-565.20	14.92	0.15
61	5948.00	61.99	350.77	5714.19	-506.58	-506.58	-571.57	4.07	0.04
62	5994.00	68.75	350.77	5733.35	-465.33	-465.33	-578.28	14.70	0.15
63	6040.00	69.23	350.85	5749.84	-422.94	-422.94	-585.13	1.06	0.01
64	6086.00	71.60	352.52	5765.26	-380.06	-380.06	-591.40	6.18	0.05
65	6132.00	71.80	352.82	5779.70	-336.75	-336.75	-596.97	0.76	0.00
66	6179.00	72.71	354.52	5794.03	-292.26	-292.26	-601.90	3.95	0.02
67	6225.00	73.30	354.21	5807.47	-248.48	-248.48	-606.22	1.44	0.01
68	6271.00	77.03	354.17	5819.25	-204.25	-204.25	-610.72	8.11	0.08
69	6317.00	82.57	353.19	5827.39	-159.27	-159.27	-615.71	12.22	0.12
70	6424.00	87.34	351.41	5836.80	-53.68	-53.68	-629.99	4.76	0.04
71	6517.00	87.62	352.65	5840.89	38.33	38.33	-642.87	1.37	0.00
72	6610.00	88.91	352.61	5843.70	130.52	130.52	-654.79	1.39	0.01
73	6703.00	89.69	353.98	5844.84	222.87	222.87	-665.65	1.70	0.01
74	6796.00	89.86	353.84	5845.21	315.35	315.35	-675.52	0.24	0.00
75	6981.00	90.50	359.76	5844.62	499.97	499.97	-685.84	3.22	0.00
76	7074.00	91.51	0.77	5842.99	592.96	592.96	-685.41	1.54	0.01
77	7166.00	91.51	0.38	5840.57	684.92	684.92	-684.49	0.42	0.00
78	7261.00	90.42	2.83	5838.97	779.86	779.86	-681.83	2.82	-0.01
79	7355.00	89.36	3.07	5839.15	873.73	873.73	-676.99	1.16	-0.01
80	7448.00	91.12	6.13	5838.76	966.42	966.42	-669.53	3.80	0.02
81	7540.00	90.92	5.98	5837.12	1057.89	1057.89	-659.83	0.27	0.00
82	7633.00	91.43	5.55	5835.21	1150.40	1150.40	-650.49	0.72	0.01
83	7726.00	90.64	7.28	5833.53	1242.80	1242.80	-640.10	2.04	-0.01
84	7819.00	92.69	6.64	5830.83	1335.07	1335.07	-628.84	2.31	0.02
85	7912.00	91.51	6.24	5827.42	1427.42	1427.42	-618.41	1.34	-0.01
86	8005.00	89.11	3.98	5826.92	1520.03	1520.03	-610.13	3.54	-0.03
87	8098.00	89.58	2.83	5827.98	1612.86	1612.86	-604.61	1.34	0.01
88	8191.00	89.61	2.05	5828.64	1705.78	1705.78	-600.65	0.84	0.00
89	8284.00	89.94	1.70	5829.01	1798.72	1798.72	-597.61	0.52	0.00
90	8377.00	89.16	0.90	5829.74	1891.70	1891.70	-595.50	1.20	-0.01
91	8469.00	88.93	0.55	5831.27	1983.68	1983.68	-594.33	0.46	0.00
92	8562.00	88.88	0.23	5833.05	2076.66	2076.66	-593.70	0.35	0.00

92	8562.00	88.63	359.83	5835.07	2169.63	2169.63	-593.65	0.51	0.00
93	8655.00	88.63	359.83	5835.07	2169.63	2169.63	-593.65	0.51	0.00
94	8748.00	89.72	0.43	5836.41	2262.62	2262.62	-593.44	1.34	0.01
95	8840.00	91.09	359.43	5835.76	2354.62	2354.62	-593.55	1.84	0.01
96	8932.00	90.34	357.80	5834.61	2446.58	2446.58	-595.78	1.95	-0.01
97	9025.00	92.52	357.56	5832.29	2539.47	2539.47	-599.54	2.36	0.02
98	9117.00	90.76	357.80	5829.66	2631.35	2631.35	-603.26	1.93	-0.02
99	9209.00	91.48	0.53	5827.86	2723.31	2723.31	-604.60	3.07	0.01
100	9301.00	92.44	3.07	5824.71	2815.21	2815.21	-601.71	2.95	0.01
101	9394.00	92.63	3.35	5820.60	2907.97	2907.97	-596.51	0.36	0.00
102	9486.00	91.82	3.71	5817.03	2999.73	2999.73	-590.85	0.96	-0.01
103	9579.00	91.01	3.18	5814.73	3092.53	3092.53	-585.27	1.04	-0.01
104	9671.00	89.27	3.72	5814.50	3184.36	3184.36	-579.73	1.98	-0.02
105	9764.00	88.66	1.82	5816.18	3277.23	3277.23	-575.24	2.15	-0.01
106	9855.00	87.90	359.51	5818.92	3368.17	3368.17	-574.18	2.67	-0.01
107	9948.00	88.49	359.12	5821.85	3461.12	3461.12	-575.29	0.76	0.01
108	10040.00	89.69	357.64	5823.31	3553.07	3553.07	-577.89	2.07	0.01
109	10132.00	89.69	356.69	5823.80	3644.95	3644.95	-582.44	1.03	0.00
110	10224.00	91.23	355.74	5823.07	3736.75	3736.75	-588.51	1.97	0.02
111	10316.00	90.53	356.42	5821.65	3828.52	3828.52	-594.80	1.06	-0.01
112	10409.00	91.43	357.06	5820.06	3921.35	3921.35	-600.09	1.19	0.01
113	10501.00	88.54	355.28	5820.09	4013.13	4013.13	-606.24	3.69	-0.03
114	10594.00	90.84	355.53	5820.59	4105.83	4105.83	-613.69	2.49	0.02
115	10686.00	92.69	356.89	5817.76	4197.58	4197.58	-619.76	2.50	0.02
116	10778.00	92.35	357.73	5813.71	4289.39	4289.39	-624.08	0.98	0.00
117	10870.00	91.40	358.23	5810.70	4381.28	4381.28	-627.32	1.17	-0.01
118	10962.00	91.04	359.49	5808.74	4473.24	4473.24	-629.15	1.42	0.00
119	11146.00	89.64	359.83	5807.65	4657.23	4657.23	-630.24	0.78	-0.01
120	11238.00	91.56	359.34	5806.69	4749.21	4749.21	-630.91	2.15	0.02
121	11330.00	91.84	359.38	5803.96	4841.17	4841.17	-631.93	0.31	0.00
122	11422.00	89.30	357.77	5803.04	4933.12	4933.12	-634.22	3.27	-0.03
123	11514.00	90.56	357.27	5803.15	5025.04	5025.04	-638.20	1.47	0.01
124	11605.00	91.09	357.38	5801.84	5115.93	5115.93	-642.45	0.59	0.01
125	11697.00	88.63	357.37	5802.07	5207.82	5207.82	-646.66	2.67	-0.03
126	11789.00	88.83	359.29	5804.11	5299.76	5299.76	-649.34	2.10	0.00
127	11881.00	91.43	2.19	5803.90	5391.73	5391.73	-648.15	4.23	0.03
128	11973.00	91.09	1.93	5801.88	5483.65	5483.65	-644.85	0.47	0.00
129	12065.00	90.61	1.60	5800.51	5575.60	5575.60	-642.01	0.63	-0.01
130	12157.00	88.91	0.97	5800.90	5667.57	5667.57	-639.95	1.97	-0.02
131	12249.00	89.02	0.71	5802.56	5759.54	5759.54	-638.60	0.31	0.00
132	12341.00	90.61	2.47	5802.86	5851.50	5851.50	-636.05	2.58	0.02
133	12433.00	90.95	2.56	5801.60	5943.40	5943.40	-632.01	0.38	0.00
134	12525.00	89.66	2.90	5801.11	6035.29	6035.29	-627.63	1.45	-0.01
135	12617.00	90.34	1.54	5801.11	6127.22	6127.22	-624.07	1.65	0.01
136	12709.00	92.57	1.20	5798.78	6219.16	6219.16	-621.87	2.45	0.02
137	12801.00	92.02	1.19	5795.09	6311.07	6311.07	-619.95	0.60	-0.01
138	12893.00	91.01	1.42	5792.66	6403.01	6403.01	-617.86	1.13	-0.01
139	12985.00	90.17	2.13	5791.71	6494.96	6494.96	-615.01	1.20	-0.01
140	13077.00	89.27	2.74	5792.16	6586.87	6586.87	-611.10	1.18	-0.01
141	13169.00	88.77	3.55	5793.74	6678.72	6678.72	-606.05	1.03	-0.01
142	13261.00	86.67	3.63	5797.40	6770.46	6770.46	-600.30	2.28	-0.02