ENSIGN

Harold 6Y-312

TVD
5":100’

Company: Petroleum Development Corp.
Well Name: Harold 6Y-312
API: 051234575200
County/Parish: Weld
State: Colorado
Country: United States
Job number: 161-155
Field: Wattenburg
Rig Id: Ensign 161
Survey Company: Ensign
Operator: Petroleum Development Corp.
Company Man: Brady Sharp / John Falton

Daylight DD: Zach Gentry
Swing Shift DD: Tony Callow
Night DD: Eric Mays
Daylight MWD: Ryan Prue
Night MWD: Paul Wilson

Log measurements: Gamma, ROP
Depth measured from: 1651 ft
Maximum temperature:

	Depth	Date
Start:	0 ft	12-23-18
End:	17675 ft	12-30-2018

Casing	Depth	Size
Surface:	1651 ft	9 5/8"
Intermediate:		

Mud Type: H2O
Density:
Viscosity:
Rm: **Rmf:** **Rmc:**

Elevations
KB: 23 ft
GL: 4788 ft
DF: 4811 ft

		Offsets		Depths		Dates	
Run	**Bit Size**	**Gamma**	**Survey**	**Start**	**End**	**Start**	**End**
1	12.25"		70.14 ft	0 ft	1655 ft	12-23-18	12-24-2018
2	8.5"	62.49 ft	57.42 ft	1655 ft	15392 ft	12-24-2018	12-28-2018
3	8.5"	62.70 ft	57.87 ft	15392 ft	17675 ft	12-28-2018	12-30-2018
4							
5							
6							
7							
8							
9							
10							

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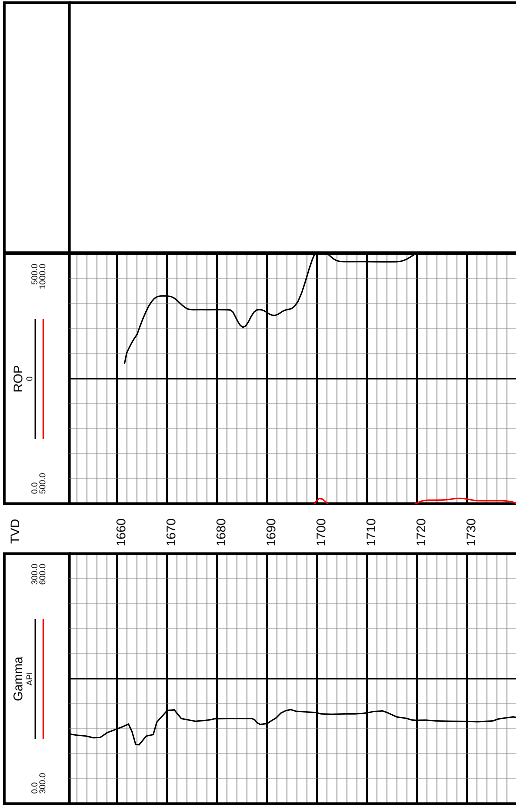
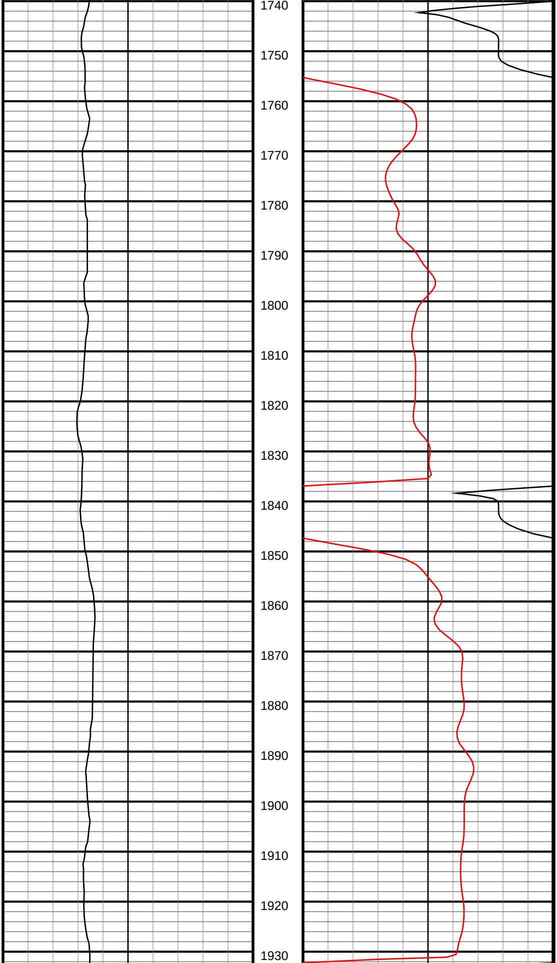
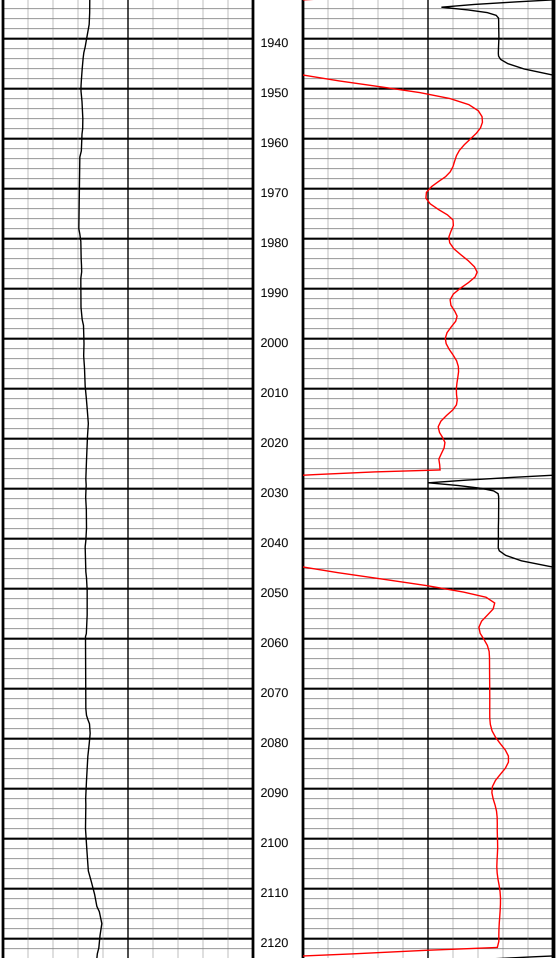




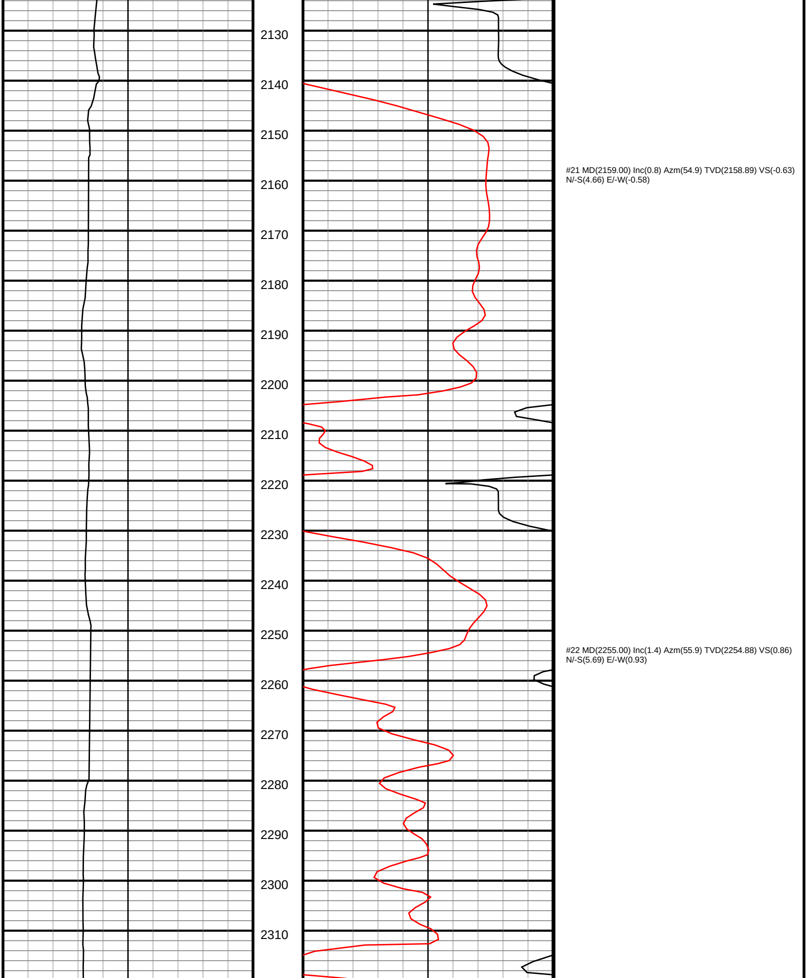
#17 MD(1778.00) Inc(0.5) Azm(46.5) TVD(1777.92) VS(-4.58)
N/-S(3.33) E/-W(-4.54)

#18 MD(1873.00) Inc(0.5) Azm(72.5) TVD(1872.92) VS(-3.91)
N/-S(3.72) E/-W(-3.87)



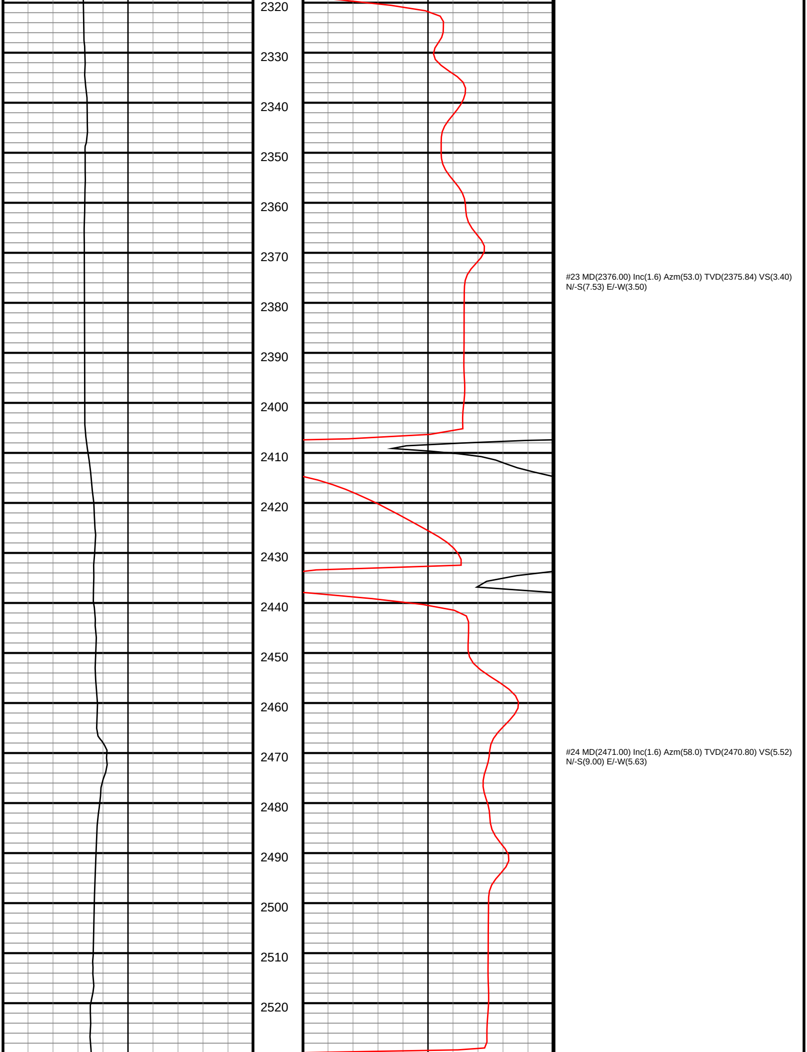
#19 MD(1969.00) Inc(0.8) Azm(81.3) TVD(1968.91) VS(-2.87)
N/-S(3.95) E/-W(-2.82)

#20 MD(2064.00) Inc(0.7) Azm(76.7) TVD(2063.90) VS(-1.69)
N/-S(4.17) E/-W(-1.63)



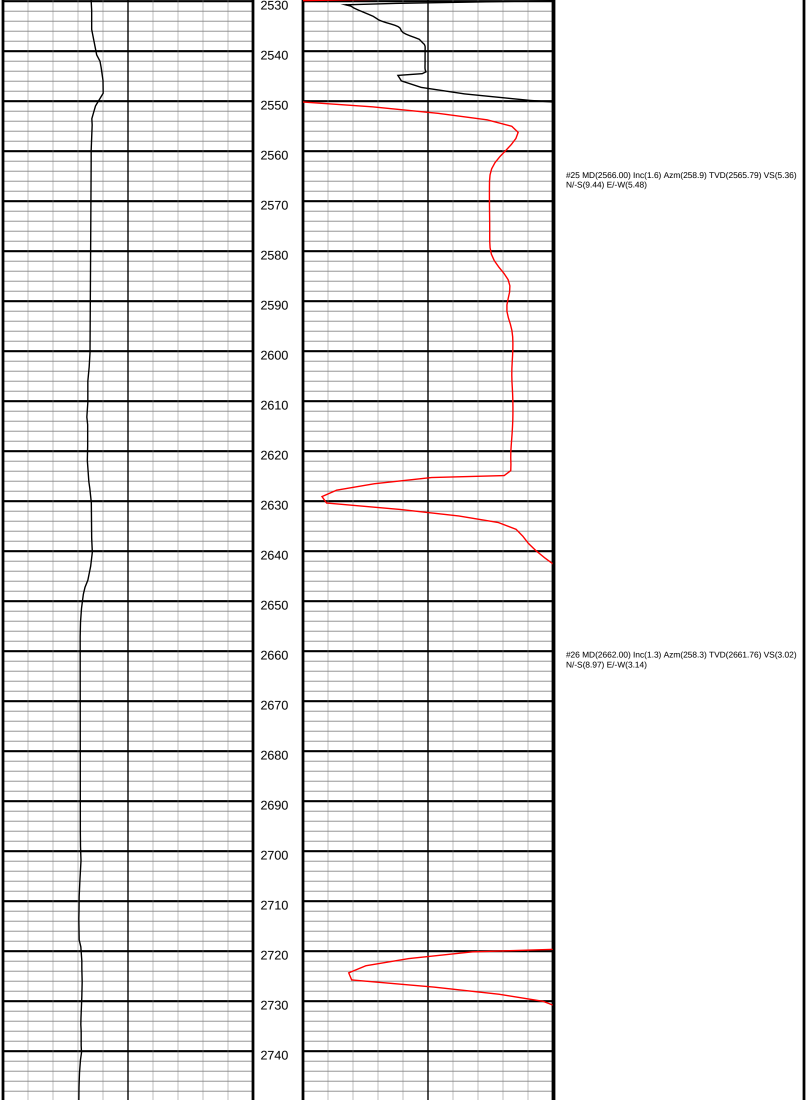
#21 MD(2159.00) Inc(0.8) Azm(54.9) TVD(2158.89) VS(-0.63)
N/-S(4.66) E/-W(-0.58)

#22 MD(2255.00) Inc(1.4) Azm(55.9) TVD(2254.88) VS(0.86)
N/-S(5.69) E/-W(0.93)



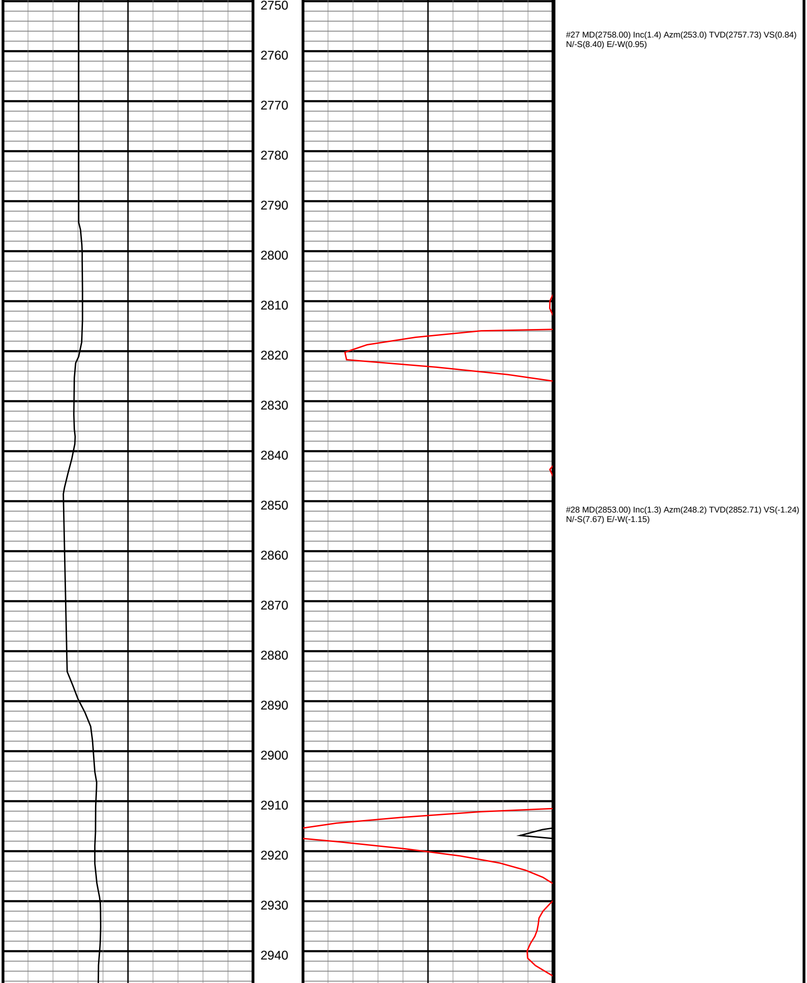
#23 MD(2376.00) Inc(1.6) Azm(53.0) TVD(2375.84) VS(3.40)
N/-S(7.53) E/-W(3.50)

#24 MD(2471.00) Inc(1.6) Azm(58.0) TVD(2470.80) VS(5.52)
N/-S(9.00) E/-W(5.63)



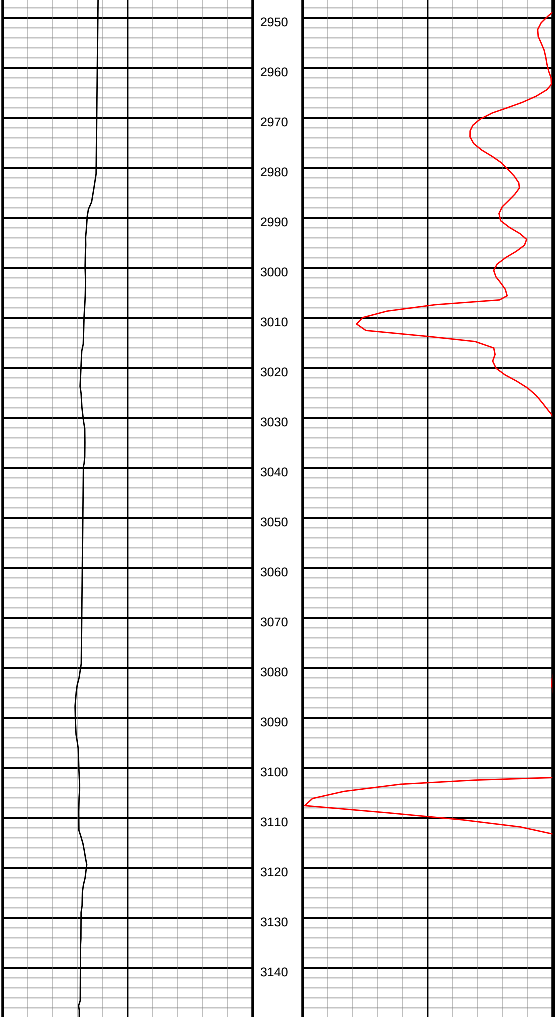
#25 MD(2566.00) Inc(1.6) Azm(258.9) TVD(2565.79) VS(5.36)
N/-S(9.44) E/-W(5.48)

#26 MD(2662.00) Inc(1.3) Azm(258.3) TVD(2661.76) VS(3.02)
N/-S(8.97) E/-W(3.14)



#27 MD(2758.00) Inc(1.4) Azm(253.0) TVD(2757.73) VS(0.84)
N/-S(8.40) E/-W(0.95)

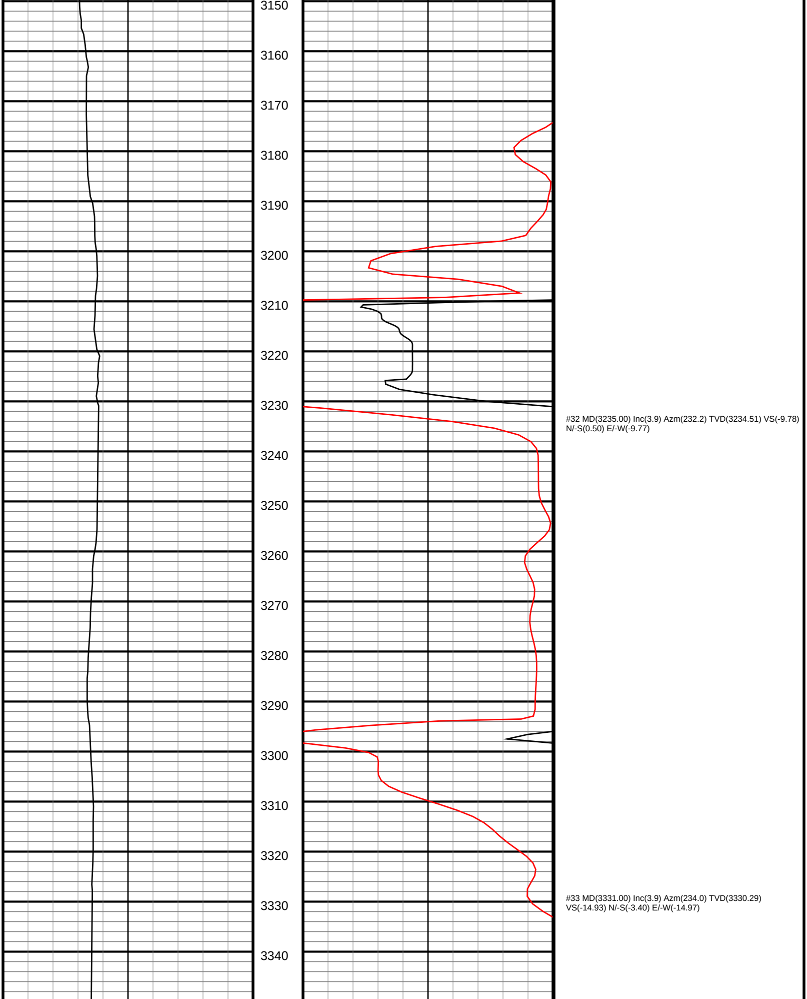
#28 MD(2853.00) Inc(1.3) Azm(248.2) TVD(2852.71) VS(-1.24)
N/-S(7.67) E/-W(-1.15)



#29 MD(2949.00) Inc(1.3) Azm(242.2) TVD(2948.68) VS(-3.16)
N/-S(6.78) E/-W(-3.08)

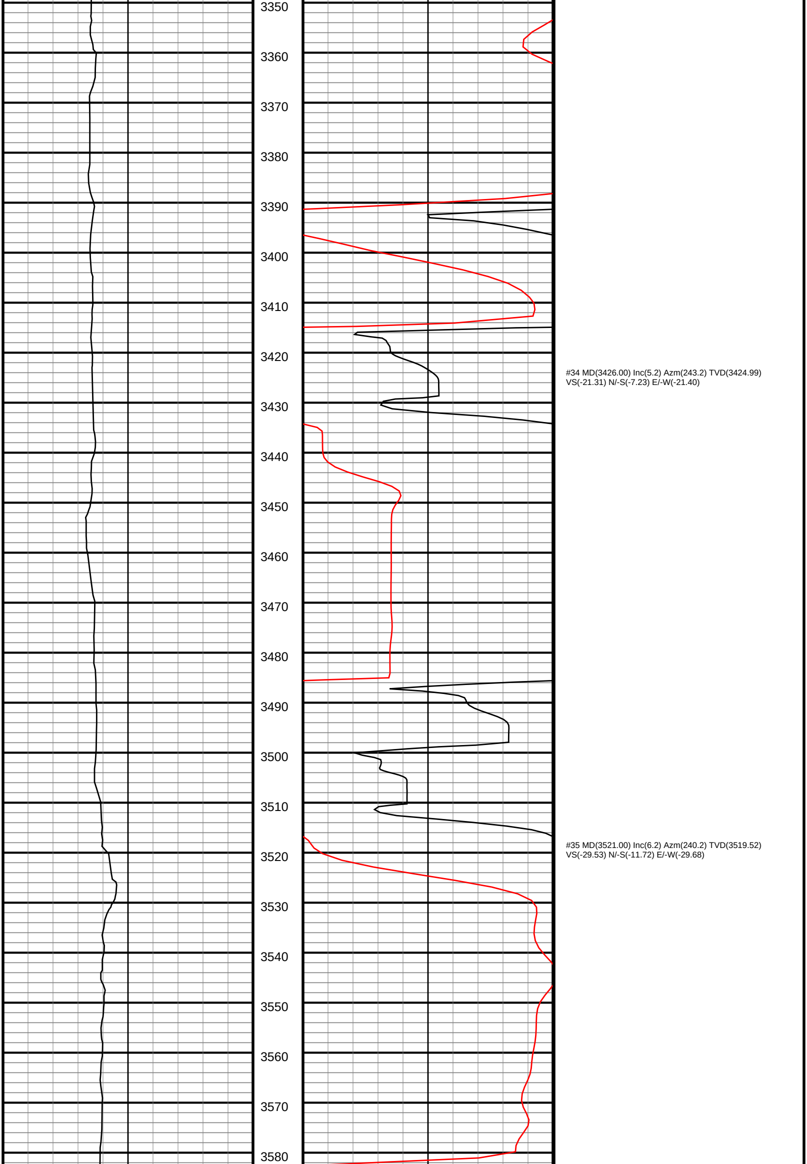
#30 MD(3044.00) Inc(1.4) Azm(223.0) TVD(3043.66) VS(-4.87)
N/-S(5.43) E/-W(-4.80)

#31 MD(3140.00) Inc(1.6) Azm(217.8) TVD(3139.62) VS(-6.47)
N/-S(3.52) E/-W(-6.42)



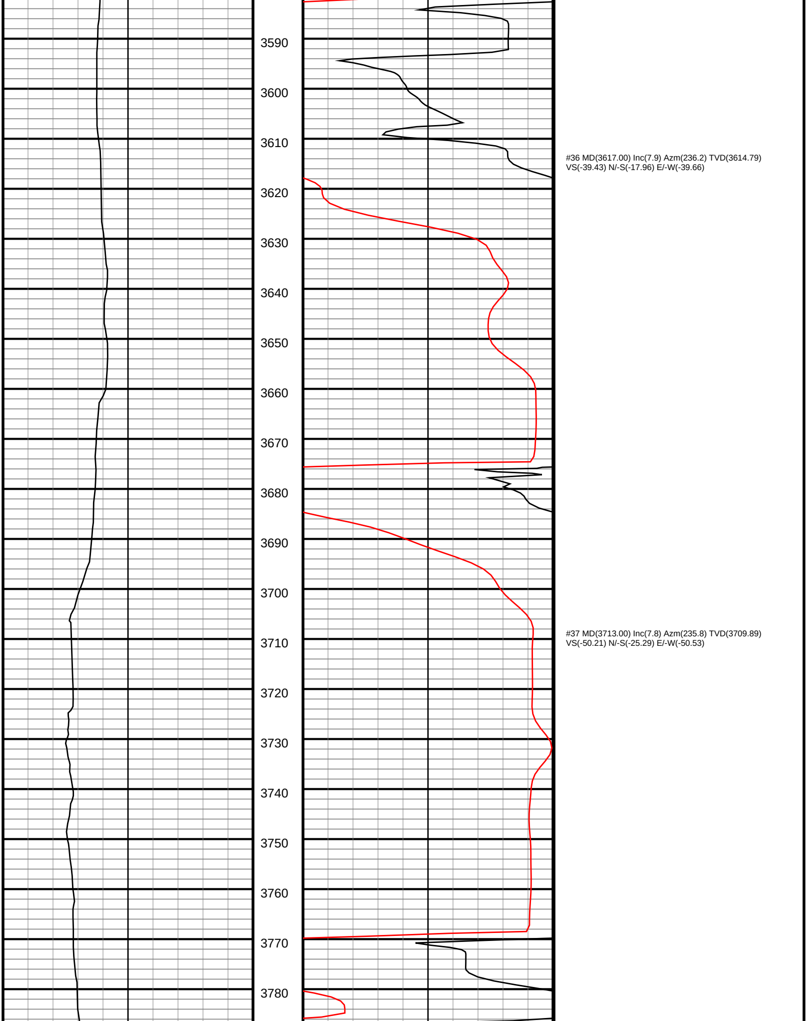
#32 MD(3235.00) Inc(3.9) Azm(232.2) TVD(3234.51) VS(-9.78)
N/-S(0.50) E/-W(-9.77)

#33 MD(3331.00) Inc(3.9) Azm(234.0) TVD(3330.29)
VS(-14.93) N/-S(-3.40) E/-W(-14.97)



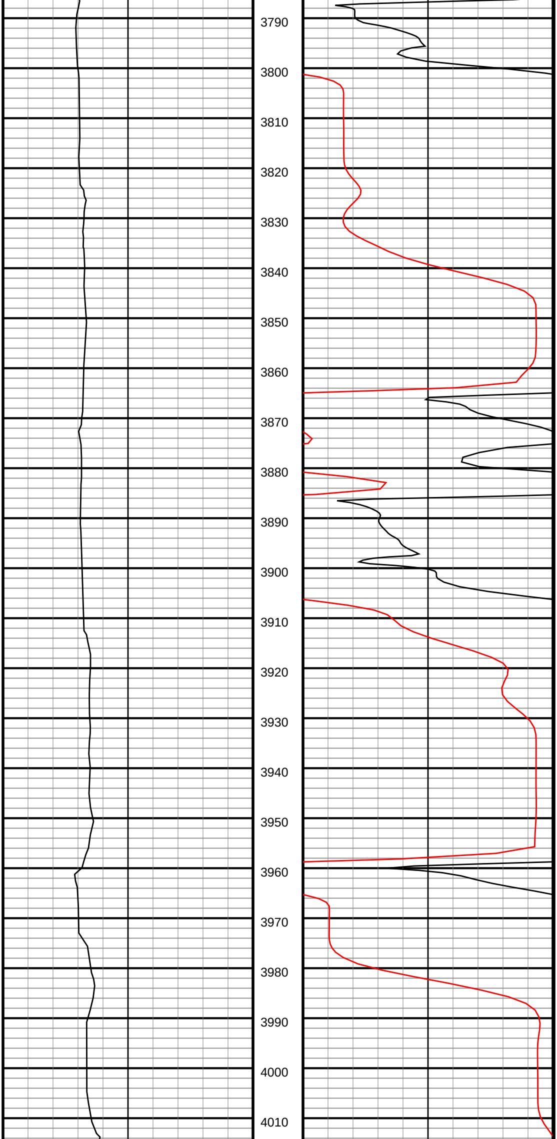
#34 MD(3426.00) Inc(5.2) Azm(243.2) TVD(3424.99)
VS(-21.31) N/-S(-7.23) E/-W(-21.40)

#35 MD(3521.00) Inc(6.2) Azm(240.2) TVD(3519.52)
VS(-29.53) N/-S(-11.72) E/-W(-29.68)



#36 MD(3617.00) Inc(7.9) Azm(236.2) TVD(3614.79)
VS(-39.43) N/-S(-17.96) E/-W(-39.66)

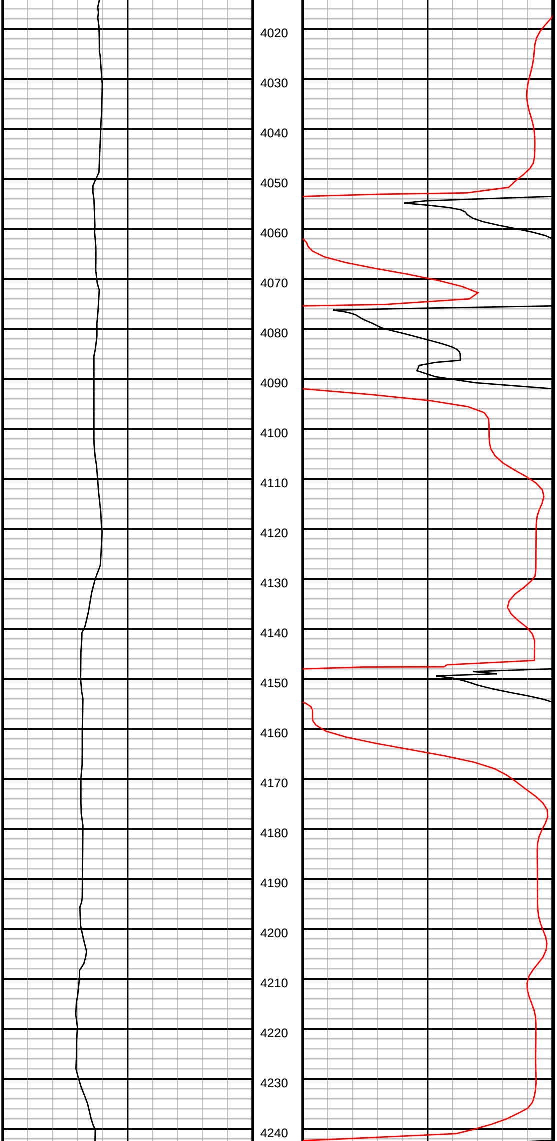
#37 MD(3713.00) Inc(7.8) Azm(235.8) TVD(3709.89)
VS(-50.21) N/-S(-25.29) E/-W(-50.53)



#38 MD(3808.00) Inc(9.1) Azm(230.1) TVD(3803.86)
VS(-61.23) N/-S(-33.76) E/-W(-61.65)

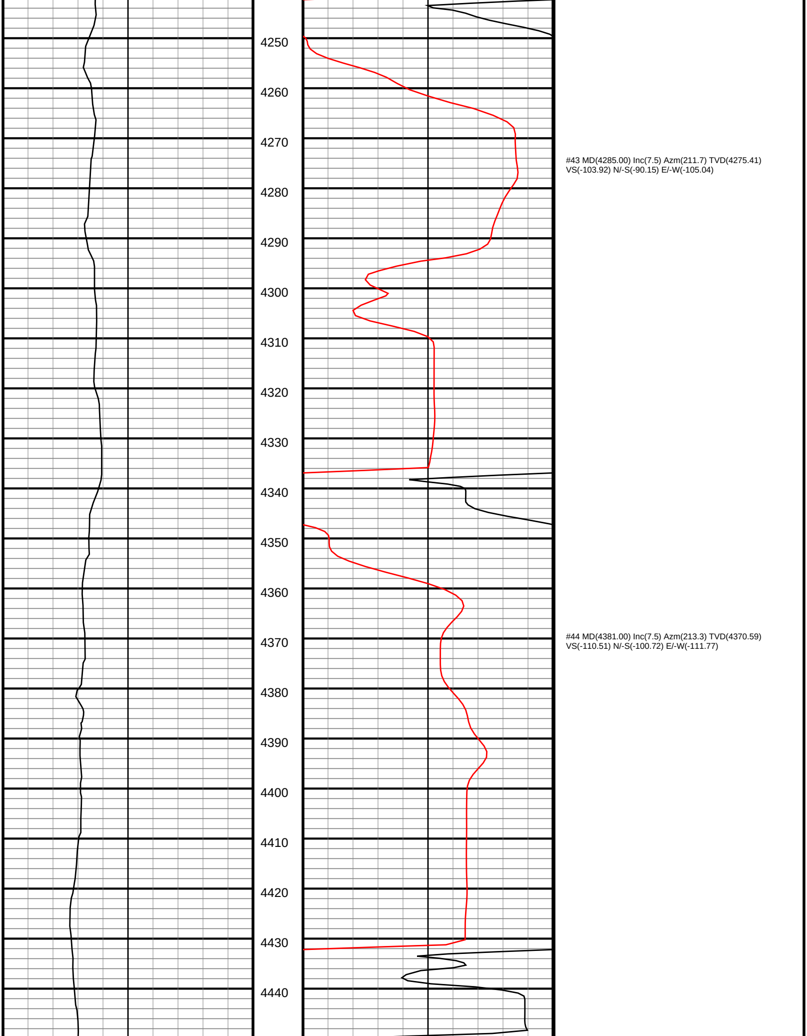
#39 MD(3903.00) Inc(9.5) Azm(222.9) TVD(3897.61)
VS(-72.20) N/-S(-44.31) E/-W(-72.76)

#40 MD(3999.00) Inc(9.6) Azm(220.0) TVD(3992.29)
VS(-82.57) N/-S(-56.24) E/-W(-83.27)



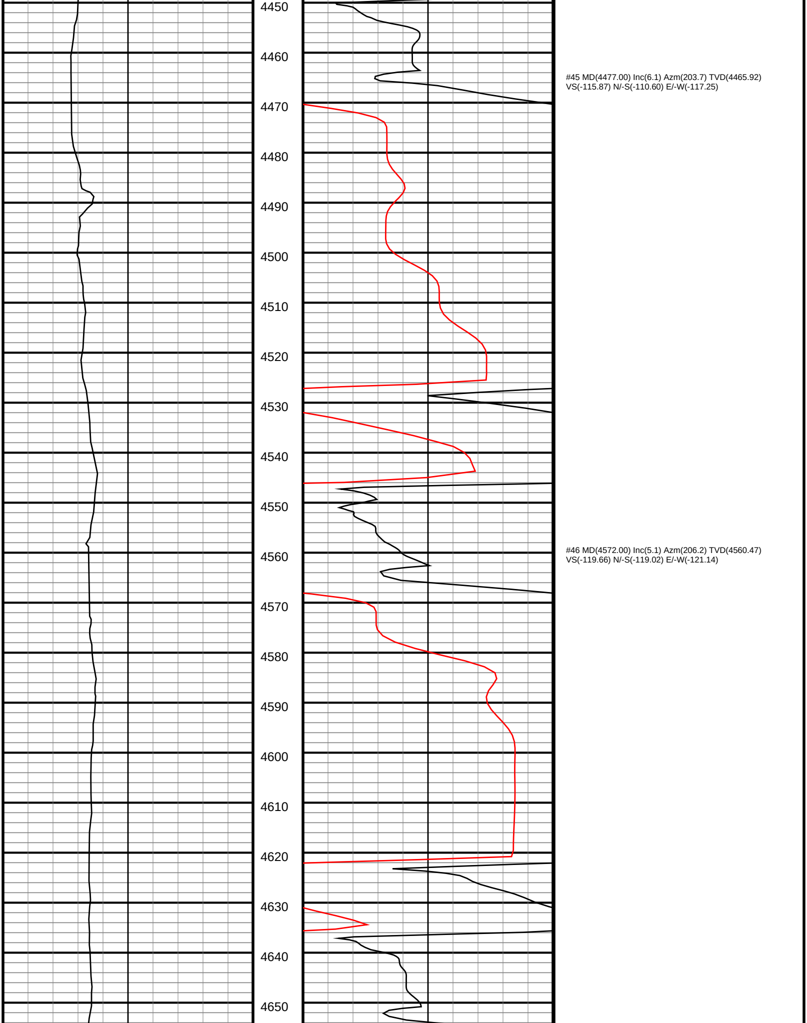
#41 MD(4095.00) Inc(8.0) Azm(209.6) TVD(4087.16)
VS(-90.86) N/-S(-68.18) E/-W(-91.72)

#42 MD(4190.00) Inc(7.8) Azm(211.9) TVD(4181.26)
VS(-97.39) N/-S(-79.39) E/-W(-98.38)



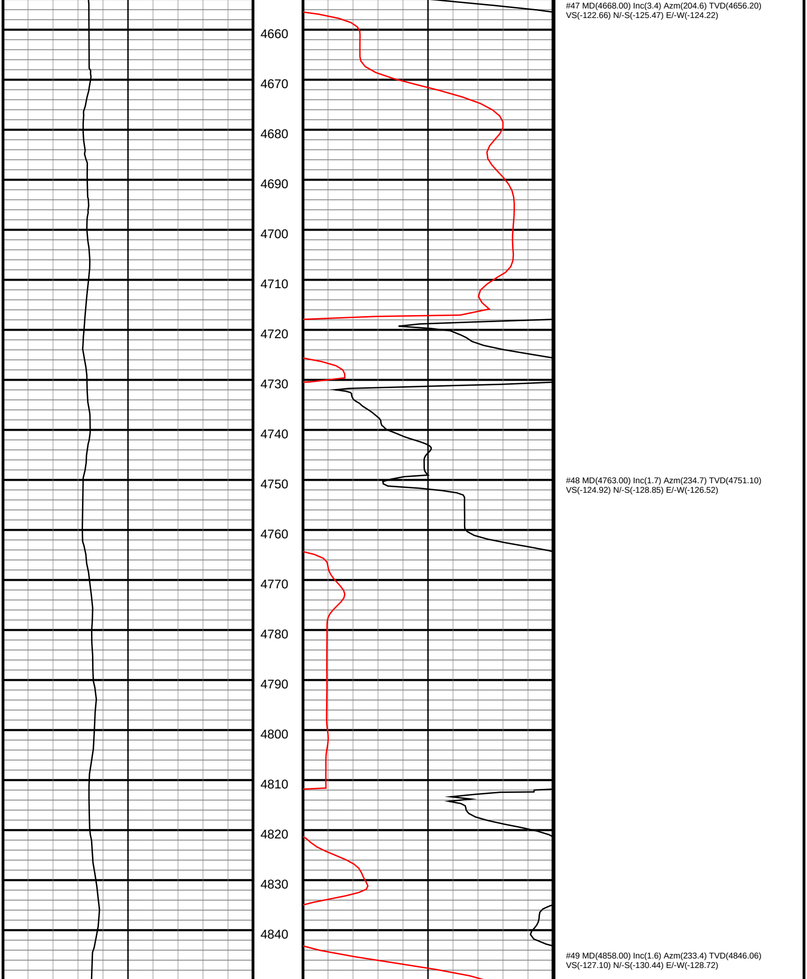
#43 MD(4285.00) Inc(7.5) Azm(211.7) TVD(4275.41)
VS(-103.92) N/-S(-90.15) E/-W(-105.04)

#44 MD(4381.00) Inc(7.5) Azm(213.3) TVD(4370.59)
VS(-110.51) N/-S(-100.72) E/-W(-111.77)



#45 MD(4477.00) Inc(6.1) Azm(203.7) TVD(4465.92)
VS(-115.87) N/-S(-110.60) E/-W(-117.25)

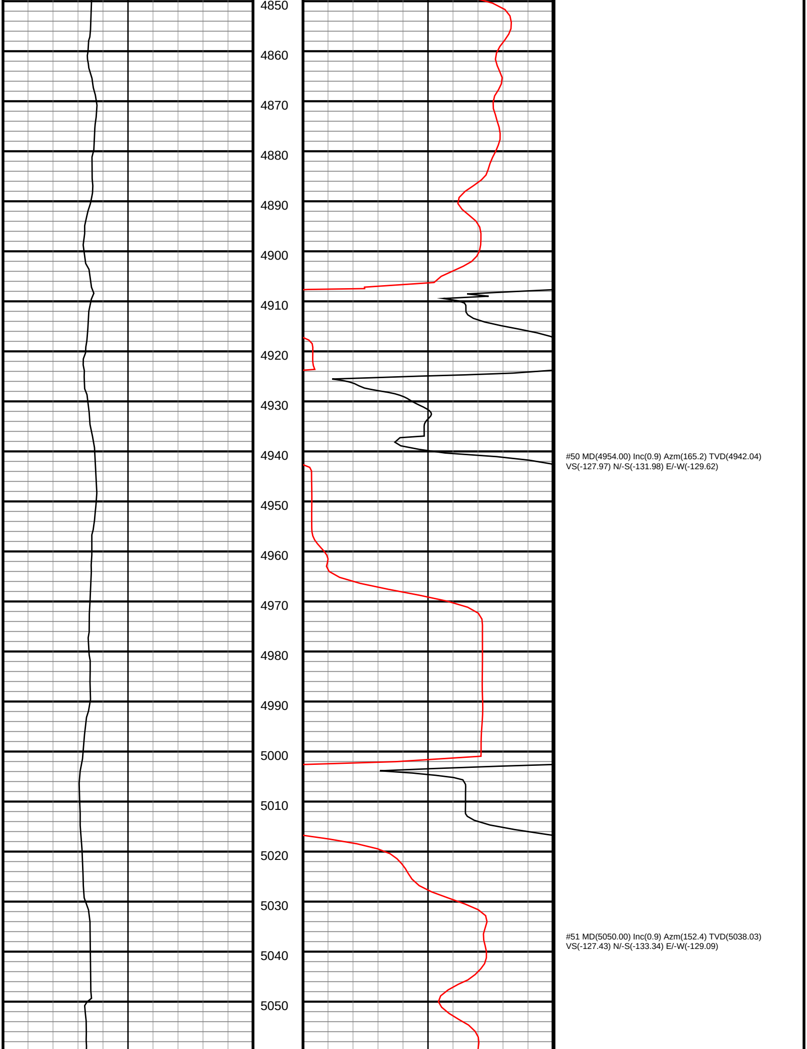
#46 MD(4572.00) Inc(5.1) Azm(206.2) TVD(4560.47)
VS(-119.66) N/-S(-119.02) E/-W(-121.14)

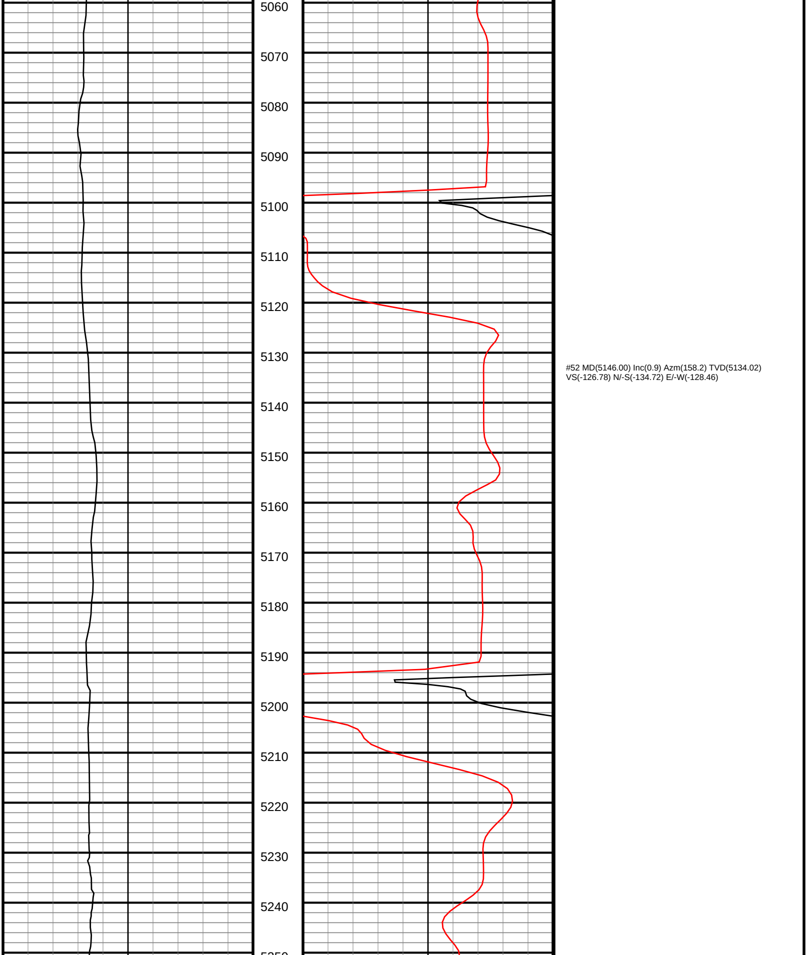


#47 MD(4668.00) Inc(3.4) Azm(204.6) TVD(4656.20)
VS(-122.66) N/-S(-125.47) E/-W(-124.22)

#48 MD(4763.00) Inc(1.7) Azm(234.7) TVD(4751.10)
VS(-124.92) N/-S(-128.85) E/-W(-126.52)

#49 MD(4858.00) Inc(1.6) Azm(233.4) TVD(4846.06)
VS(-127.10) N/-S(-130.44) E/-W(-128.72)





#52 MD(5146.00) Inc(0.9) Azm(158.2) TVD(5134.02)
VS(-126.78) N/-S(-134.72) E/-W(-128.46)

#53 MD(5264.00) Inc(0.8) Azm(152.6) TVD(5252.01)
VS(-126.02) N/-S(-136.37) E/-W(-127.72)

#54 MD(5359.00) Inc(0.5) Azm(89.0) TVD(5347.00)
VS(-125.26) N/-S(-136.96) E/-W(-126.97)

#55 MD(5455.00) Inc(0.6) Azm(85.9) TVD(5443.00)
VS(-124.32) N/-S(-136.92) E/-W(-126.02)

#56 MD(5550.00) Inc(0.8) Azm(102.7) TVD(5537.99)
VS(-123.15) N/-S(-137.03) E/-W(-124.86)

#57 MD(5645.00) Inc(0.9) Azm(72.1) TVD(5632.98)
VS(-121.73) N/-S(-136.94) E/-W(-123.44)

#58 MD(5741.00) Inc(1.0) Azm(66.7) TVD(5728.96)
VS(-120.20) N/-S(-136.36) E/-W(-121.89)

#59 MD(5837.00) Inc(0.6) Azm(76.8) TVD(5824.95)
VS(-118.97) N/-S(-135.91) E/-W(-120.66)

#60 MD(5932.00) Inc(0.2) Azm(325.0) TVD(5919.95)
VS(-118.63) N/-S(-135.66) E/-W(-120.32)

#61 MD(6028.00) Inc(0.1) Azm(348.7) TVD(6015.95)
VS(-118.76) N/-S(-135.39) E/-W(-120.45)

#62 MD(6123.00) Inc(0.3) Azm(37.0) TVD(6110.95)
VS(-118.65) N/-S(-135.10) E/-W(-120.33)

#63 MD(6219.00) Inc(0.6) Azm(10.8) TVD(6206.95)
VS(-118.43) N/-S(-134.43) E/-W(-120.10)

#64 MD(6315.00) Inc(8.2) Azm(101.0) TVD(6302.62)
VS(-111.63) N/-S(-135.25) E/-W(-113.31)

#65 MD(6411.00) Inc(16.4) Azm(96.6) TVD(6396.34)
VS(-91.36) N/-S(-138.11) E/-W(-93.08)

#66 MD(6506.00) Inc(20.3) Azm(95.9) TVD(6486.48)
VS(-61.57) N/-S(-141.34) E/-W(-63.32)

#67 MD(6602.00) Inc(27.6) Azm(92.5) TVD(6574.17)
VS(-22.73) N/-S(-144.03) E/-W(-24.52)

#68 MD(6698.00) Inc(38.4) Azm(95.0) TVD(6654.61) VS(29.33)
N/-S(-147.59) E/-W(27.50)

#69 MD(6793.00) Inc(47.0) Azm(94.3) TVD(6724.36) VS(93.54)
N/-S(-152.75) E/-W(91.65)

#70 MD(6889.00) Inc(52.1) Azm(90.7) TVD(6786.63)
VS(166.52) N/-S(-155.82) E/-W(164.60)

#71 MD(6985.00) Inc(57.2) Azm(88.2) TVD(6842.16)
VS(244.76) N/-S(-155.01) E/-W(242.86)

#72 MD(7081.00) Inc(63.7) Azm(87.5) TVD(6889.45)
VS(328.14) N/-S(-151.88) E/-W(326.29)

#183 MD(17615.00) Inc(91.1) Azm(90.8) TVD(6896.72)
VS(10847.83) N/-S(-147.68) E/-W(10846.83)