ENSIGN Directional Services

70 Ranch State BB18-647

TVD
2":100'

Company: Noble Energy
Well Name: 70 Ranch State BB18-647
API:
Rig Id: H&P 326
State: Colorado
County/Parish: Weld
Country: USA
Survey Company: ENSIGN Directional
Job number: HP326-207-18
DD1 Zach Gentry
DD2 Tyler Bachelder
DD3 Colby Hansen
MWD1 Andrew Demrow
MWD2 Derek Saykally
MWD3 Buster Snider

Log measurements: Gama, ROP
Depth measured from:
Maximum temperature:

	Depth	Date
Start:	777 ft	08/1/2015
End:	ft	

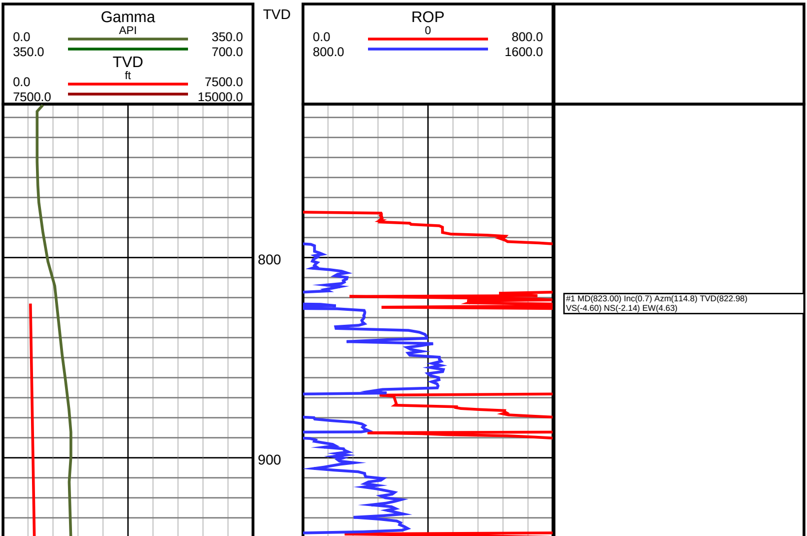
Casing	Depth	Size
Surface:	777	9 5/8
Intermediate:	6912	7

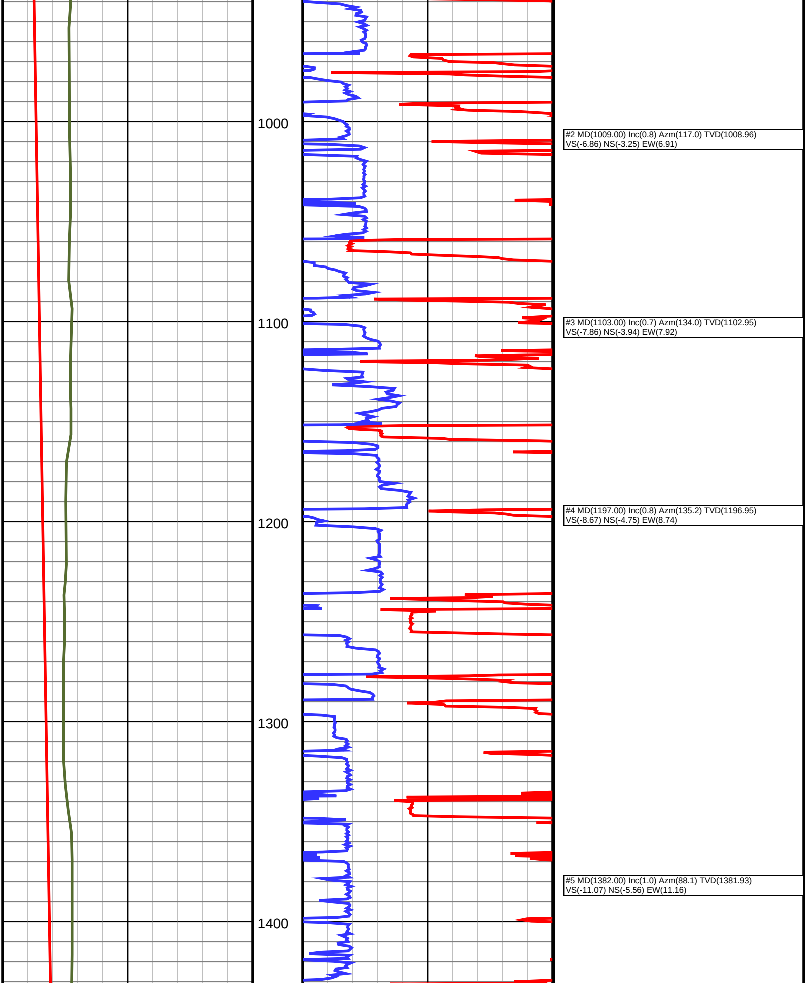
Mud Type:
Density:
Viscosity:
Rm: **Rmf:** **Rmc:**

Elevations
KB: 30
GL: 4855
DF: 4885

		Offsets		Depths		Dates	
Run	**Bit Size**	**Gamma**	**Survey**	**Start**	**End**	**Start**	**End**
1	8.75	54.98	49.98	777	6683	08/1/2015	08/3/2015
2	8.75	54.44	59.44	6683	6912	08/3/2015	08/3/2015
3	6.125	61.09	66.09	6912	11344	08/4/2015	08/6/2015
4	6.125	61.09	66.09	11344	16057	08/7/2015	08/10/2015
5							
6							
7							
8							
9							
10							

ENSIGN Directional uses its best efforts to provide its customers with accurate information and interpretations in conjunction with services performed but will not be held liable or responsible for the accuracy of such information or interpretation.



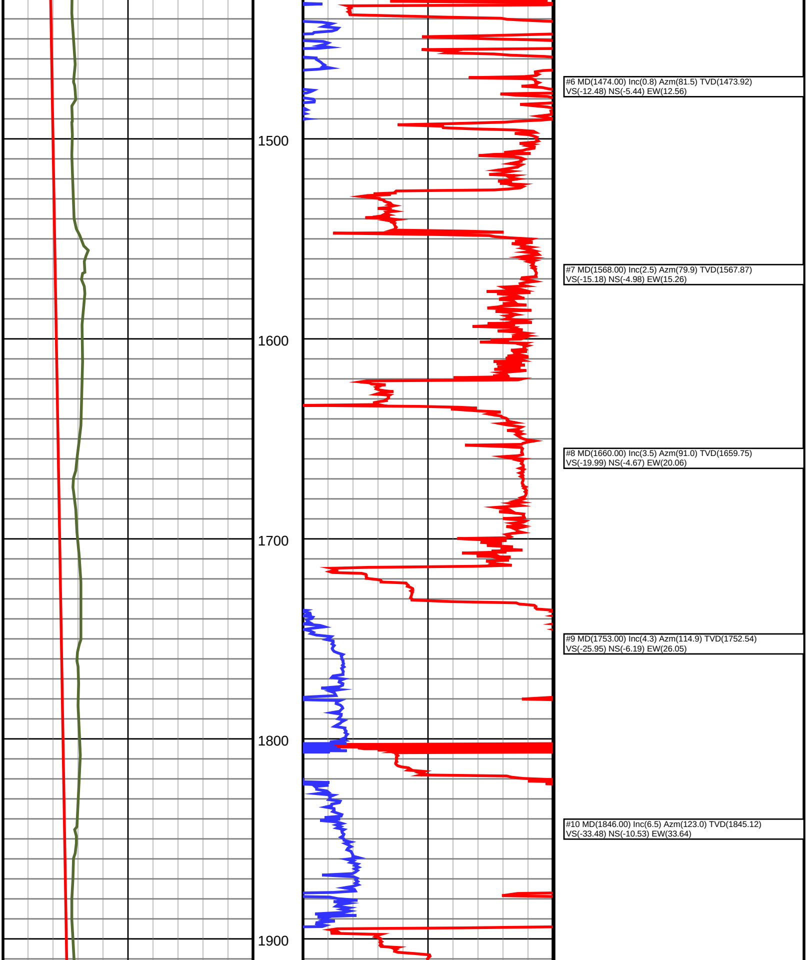


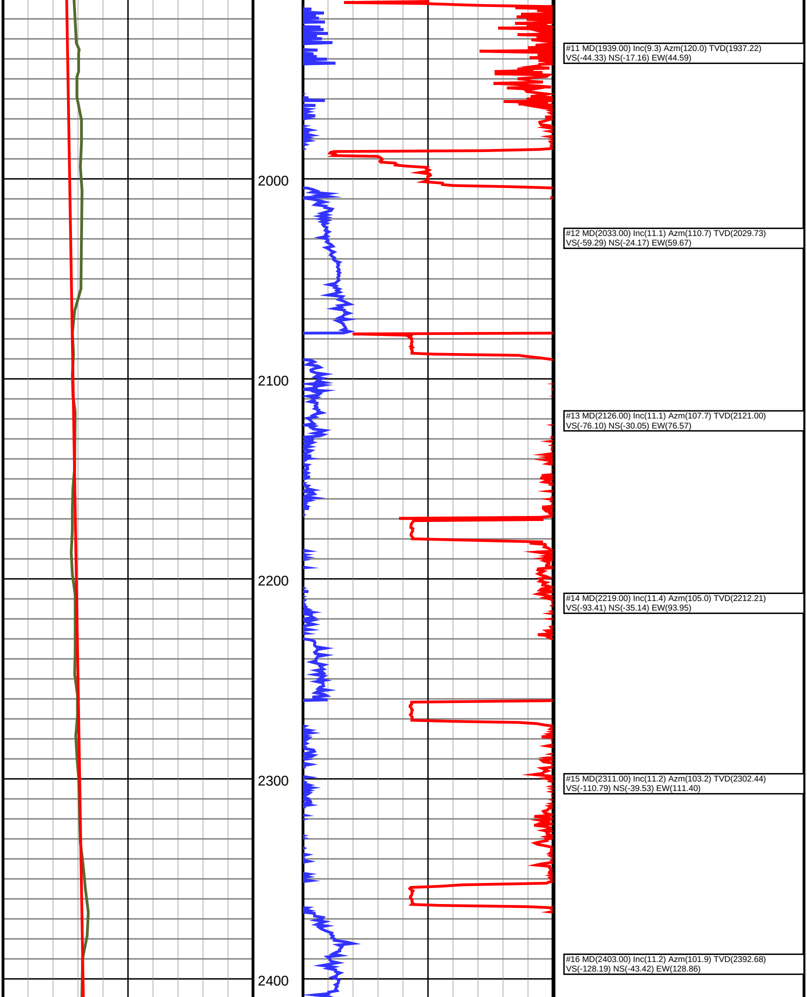
#2 MD(1009.00) Inc(0.8) Azm(117.0) TVD(1008.96)
VS(-6.86) NS(-3.25) EW(6.91)

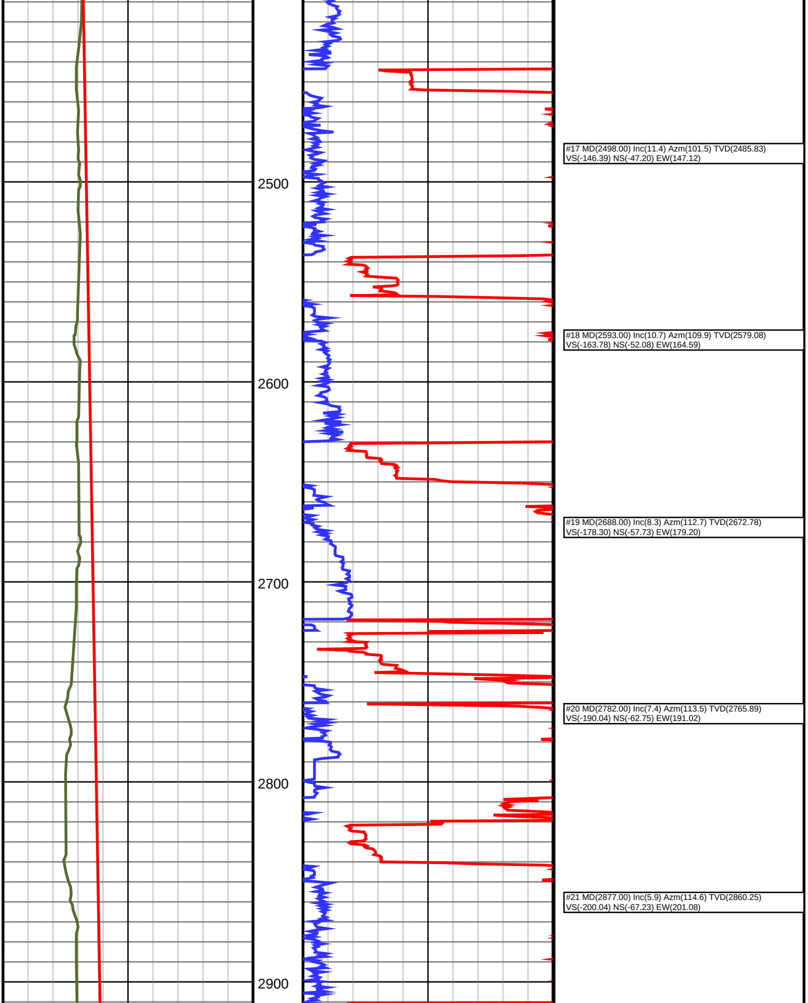
#3 MD(1103.00) Inc(0.7) Azm(134.0) TVD(1102.95)
VS(-7.86) NS(-3.94) EW(7.92)

#4 MD(1197.00) Inc(0.8) Azm(135.2) TVD(1196.95)
VS(-8.67) NS(-4.75) EW(8.74)

#5 MD(1382.00) Inc(1.0) Azm(88.1) TVD(1381.93)
VS(-11.07) NS(-5.56) EW(11.16)







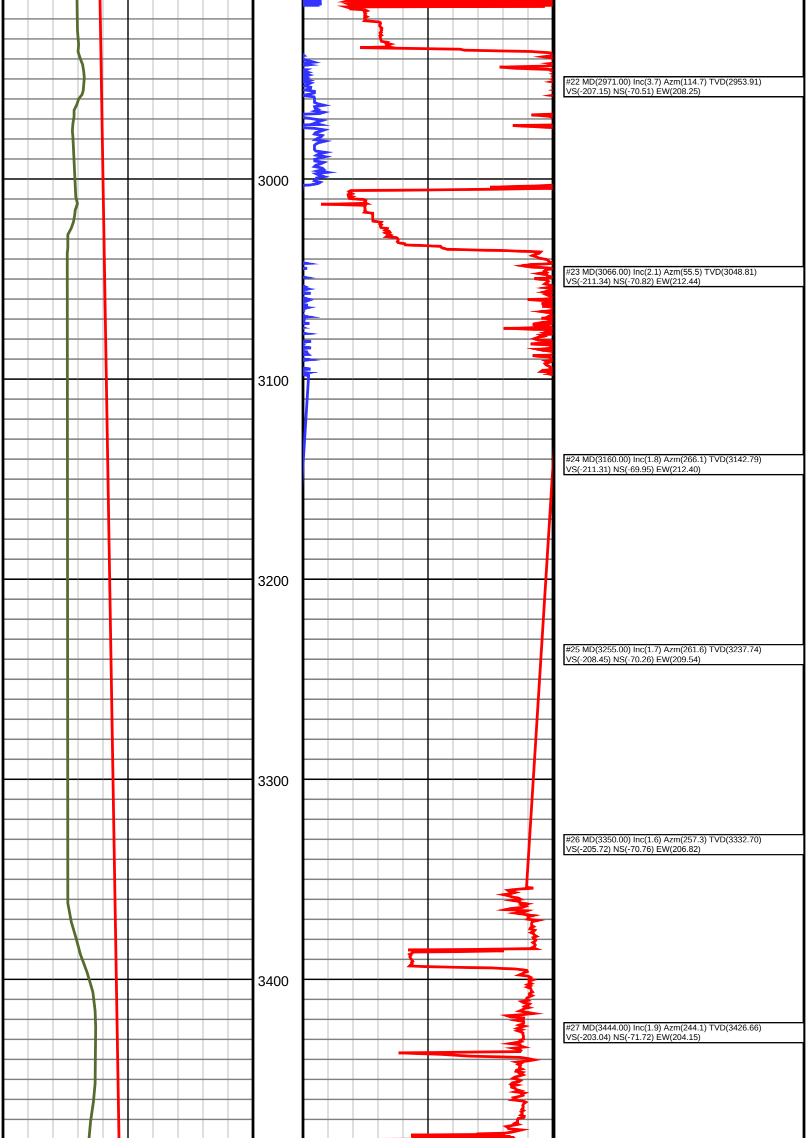
#17 MD(2498.00) Inc(11.4) Azm(101.5) TVD(2485.83)
VS(-146.39) NS(-47.20) EW(147.12)

#18 MD(2593.00) Inc(10.7) Azm(109.9) TVD(2579.08)
VS(-163.78) NS(-52.08) EW(164.59)

#19 MD(2688.00) Inc(8.3) Azm(112.7) TVD(2672.78)
VS(-178.30) NS(-57.73) EW(179.20)

#20 MD(2782.00) Inc(7.4) Azm(113.5) TVD(2765.89)
VS(-190.04) NS(-62.75) EW(191.02)

#21 MD(2877.00) Inc(5.9) Azm(114.6) TVD(2860.25)
VS(-200.04) NS(-67.23) EW(201.08)



#22 MD(2971.00) Inc(3.7) Azm(114.7) TVD(2953.91)
VS(-207.15) NS(-70.51) EW(208.25)

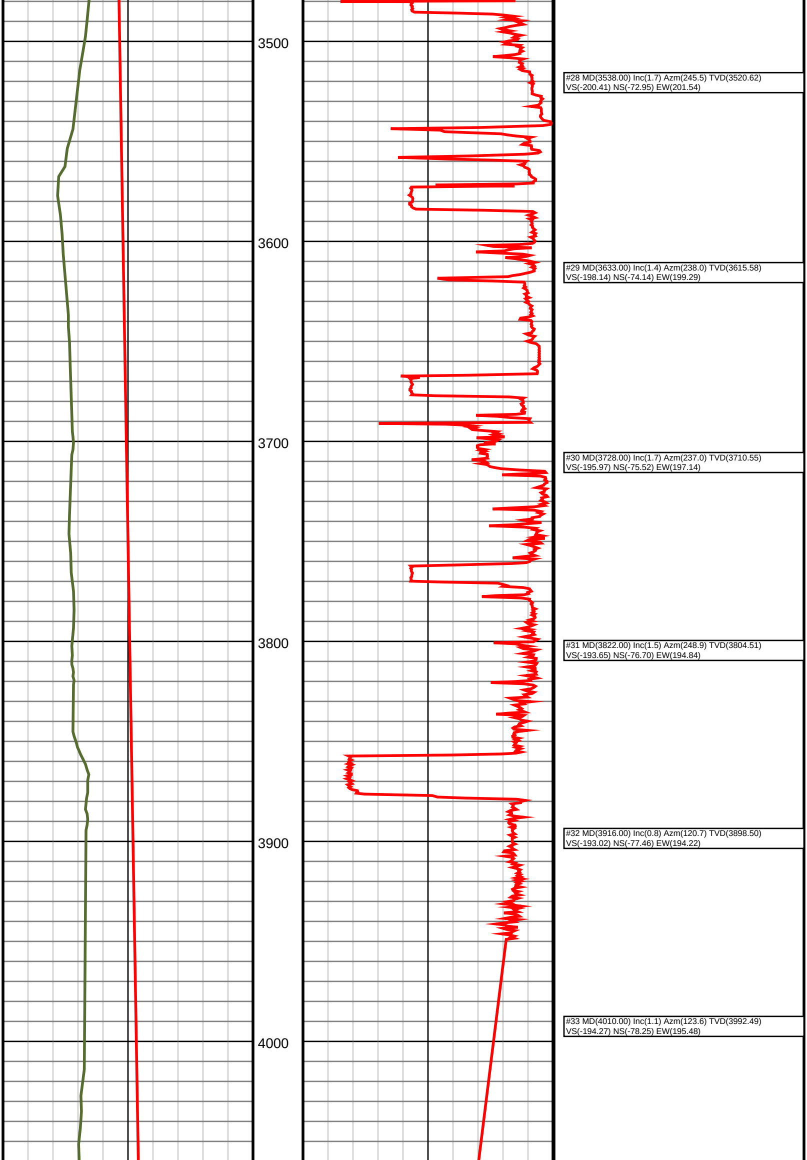
#23 MD(3066.00) Inc(2.1) Azm(55.5) TVD(3048.81)
VS(-211.34) NS(-70.82) EW(212.44)

#24 MD(3160.00) Inc(1.8) Azm(266.1) TVD(3142.79)
VS(-211.31) NS(-69.95) EW(212.40)

#25 MD(3255.00) Inc(1.7) Azm(261.6) TVD(3237.74)
VS(-208.45) NS(-70.26) EW(209.54)

#26 MD(3350.00) Inc(1.6) Azm(257.3) TVD(3332.70)
VS(-205.72) NS(-70.76) EW(206.82)

#27 MD(3444.00) Inc(1.9) Azm(244.1) TVD(3426.66)
VS(-203.04) NS(-71.72) EW(204.15)



#28 MD(3538.00) Inc(1.7) Azm(245.5) TVD(3520.62)
VS(-200.41) NS(-72.95) EW(201.54)

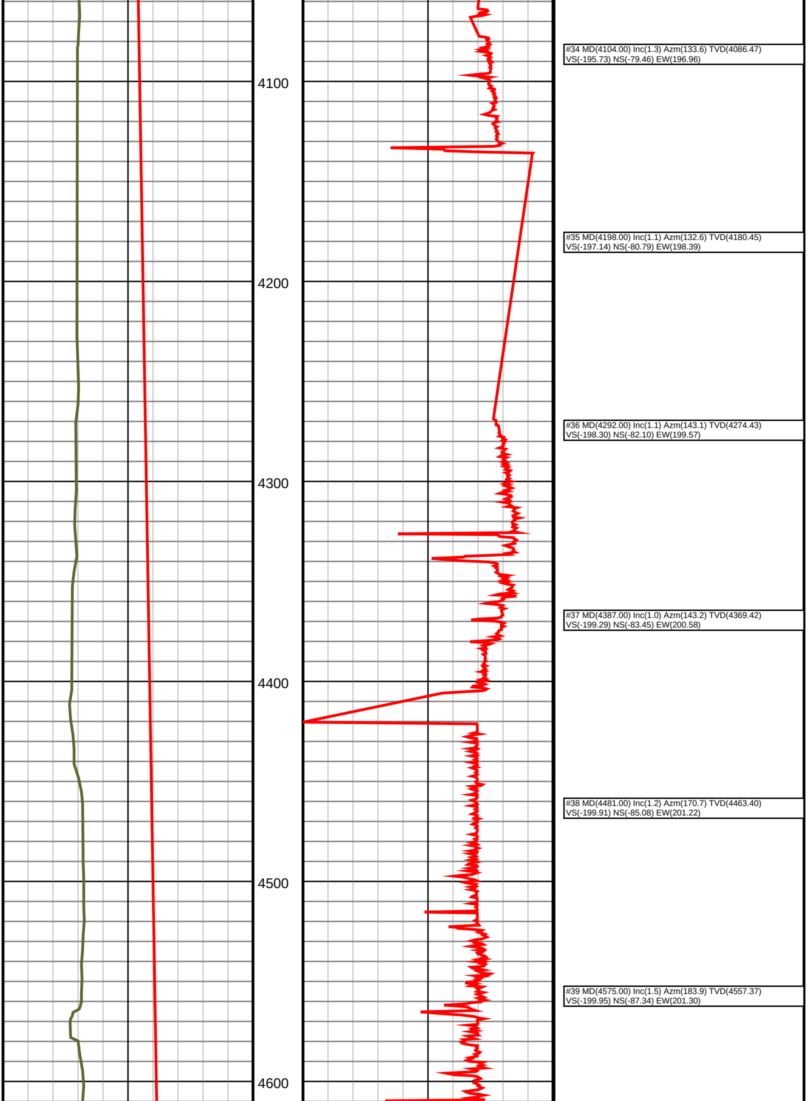
#29 MD(3633.00) Inc(1.4) Azm(238.0) TVD(3615.58)
VS(-198.14) NS(-74.14) EW(199.29)

#30 MD(3728.00) Inc(1.7) Azm(237.0) TVD(3710.55)
VS(-195.97) NS(-75.52) EW(197.14)

#31 MD(3822.00) Inc(1.5) Azm(248.9) TVD(3804.51)
VS(-193.65) NS(-76.70) EW(194.84)

#32 MD(3916.00) Inc(0.8) Azm(120.7) TVD(3898.50)
VS(-193.02) NS(-77.46) EW(194.22)

#33 MD(4010.00) Inc(1.1) Azm(123.6) TVD(3992.49)
VS(-194.27) NS(-78.25) EW(195.48)



#34 MD(4104.00) Inc(1.3) Azm(133.6) TVD(4086.47)
VS(-195.73) NS(-79.46) EW(196.96)

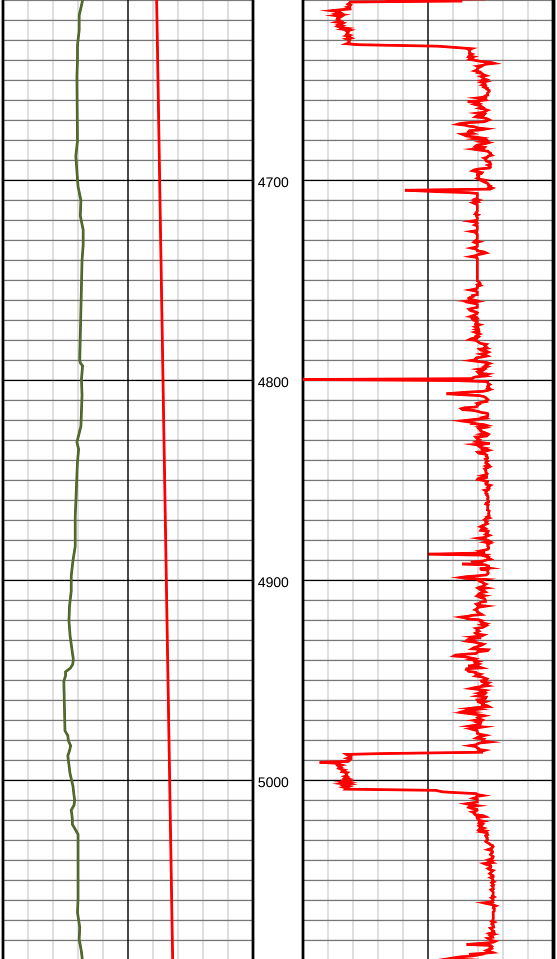
#35 MD(4198.00) Inc(1.1) Azm(132.6) TVD(4180.45)
VS(-197.14) NS(-80.79) EW(198.39)

#36 MD(4292.00) Inc(1.1) Azm(143.1) TVD(4274.43)
VS(-198.30) NS(-82.10) EW(199.57)

#37 MD(4387.00) Inc(1.0) Azm(143.2) TVD(4369.42)
VS(-199.29) NS(-83.45) EW(200.58)

#38 MD(4481.00) Inc(1.2) Azm(170.7) TVD(4463.40)
VS(-199.91) NS(-85.08) EW(201.22)

#39 MD(4575.00) Inc(1.5) Azm(183.9) TVD(4557.37)
VS(-199.95) NS(-87.34) EW(201.30)



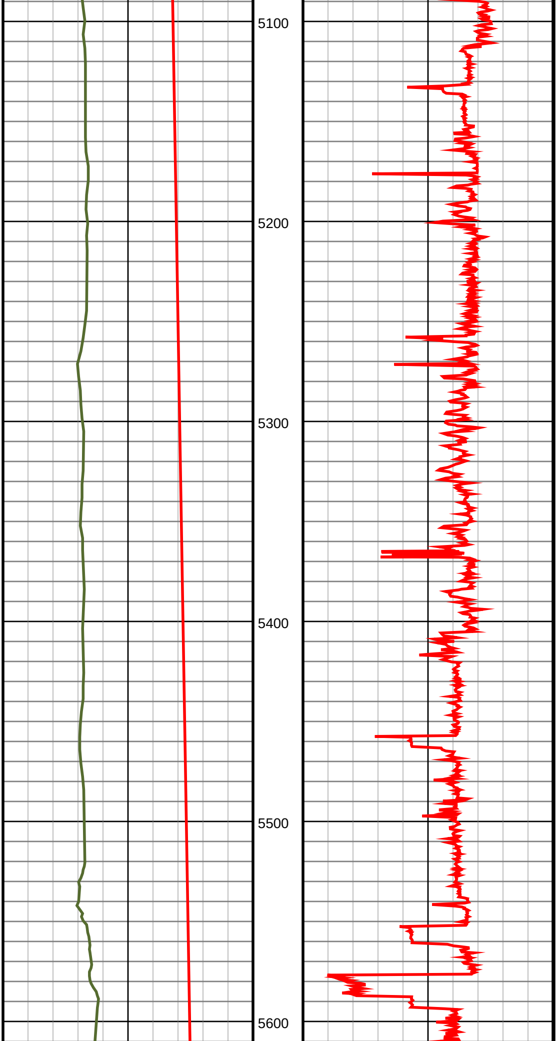
#40 MD(4670.00) Inc(1.9) Azm(88.1) TVD(4652.35)
VS(-201.44) NS(-88.56) EW(202.81)

#41 MD(4765.00) Inc(1.5) Azm(78.7) TVD(4747.30)
VS(-204.26) NS(-88.26) EW(205.63)

#42 MD(4859.00) Inc(1.5) Azm(87.3) TVD(4841.27)
VS(-206.70) NS(-87.96) EW(208.06)

#43 MD(4954.00) Inc(1.6) Azm(89.5) TVD(4936.24)
VS(-209.30) NS(-87.89) EW(210.66)

#44 MD(5049.00) Inc(1.9) Azm(24.2) TVD(5031.20)
VS(-211.31) NS(-86.45) EW(212.65)



#45 MD(5143.00) Inc(1.6) Azm(1.9) TVD(5125.16)
VS(-212.03) NS(-83.70) EW(213.33)

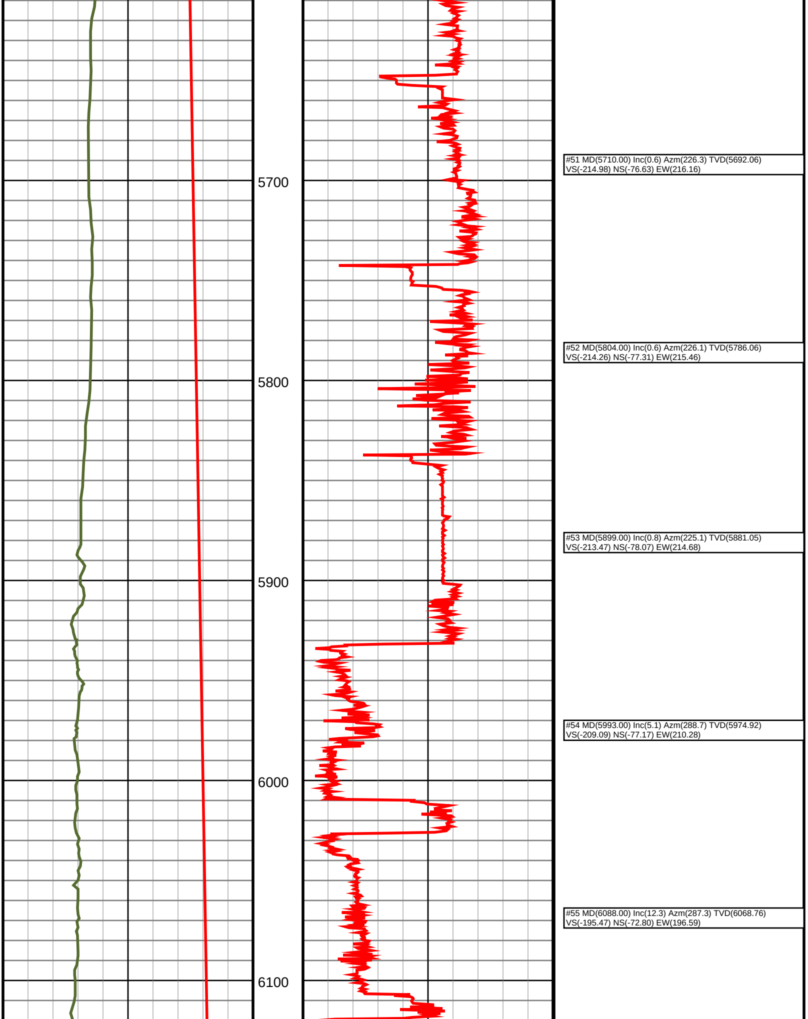
#46 MD(5237.00) Inc(1.4) Azm(11.9) TVD(5219.12)
VS(-212.34) NS(-81.28) EW(213.60)

#47 MD(5332.00) Inc(1.1) Azm(22.4) TVD(5314.10)
VS(-212.96) NS(-79.33) EW(214.18)

#48 MD(5427.00) Inc(1.2) Azm(39.3) TVD(5409.08)
VS(-213.97) NS(-77.70) EW(215.18)

#49 MD(5521.00) Inc(0.8) Azm(50.0) TVD(5503.07)
VS(-215.16) NS(-76.47) EW(216.34)

#50 MD(5616.00) Inc(0.3) Azm(233.7) TVD(5598.07)
VS(-215.52) NS(-76.15) EW(216.70)



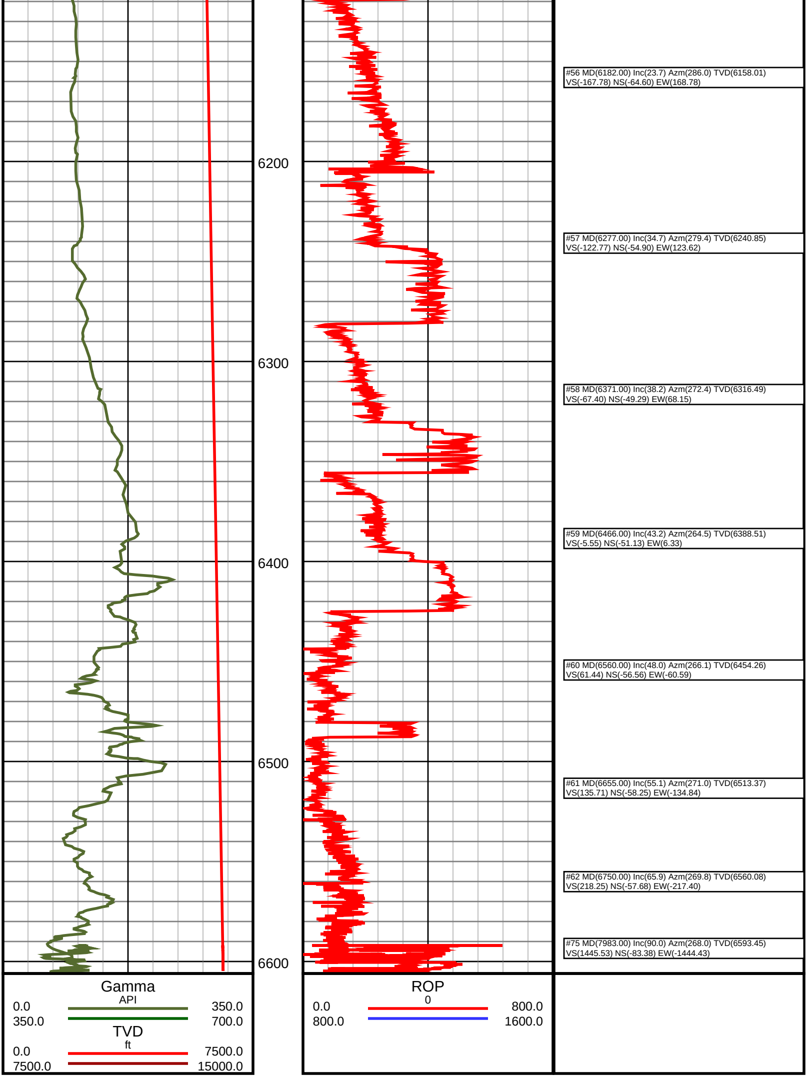
#51 MD(5710.00) Inc(0.6) Azm(226.3) TVD(5692.06)
VS(-214.98) NS(-76.63) EW(216.16)

#52 MD(5804.00) Inc(0.6) Azm(226.1) TVD(5786.06)
VS(-214.26) NS(-77.31) EW(215.46)

#53 MD(5899.00) Inc(0.8) Azm(225.1) TVD(5881.05)
VS(-213.47) NS(-78.07) EW(214.68)

#54 MD(5993.00) Inc(5.1) Azm(288.7) TVD(5974.92)
VS(-209.09) NS(-77.17) EW(210.28)

#55 MD(6088.00) Inc(12.3) Azm(287.3) TVD(6068.76)
VS(-195.47) NS(-72.80) EW(196.59)



#56 MD(6182.00) Inc(23.7) Azm(286.0) TVD(6158.01)
VS(-167.78) NS(-64.60) EW(168.78)

#57 MD(6277.00) Inc(34.7) Azm(279.4) TVD(6240.85)
VS(-122.77) NS(-54.90) EW(123.62)

#58 MD(6371.00) Inc(38.2) Azm(272.4) TVD(6316.49)
VS(-67.40) NS(-49.29) EW(68.15)

#59 MD(6466.00) Inc(43.2) Azm(264.5) TVD(6388.51)
VS(-5.55) NS(-51.13) EW(6.33)

#60 MD(6560.00) Inc(48.0) Azm(266.1) TVD(6454.26)
VS(61.44) NS(-56.56) EW(-60.59)

#61 MD(6655.00) Inc(55.1) Azm(271.0) TVD(6513.37)
VS(135.71) NS(-58.25) EW(-134.84)

#62 MD(6750.00) Inc(65.9) Azm(269.8) TVD(6560.08)
VS(218.25) NS(-57.68) EW(-217.40)

#75 MD(7983.00) Inc(90.0) Azm(268.0) TVD(6593.45)
VS(1445.53) NS(-83.38) EW(-1444.43)