ENSIGN Directional Services

Wells Ranch AA11-646

MD
2":100’

Company: Noble Energy
Well Name: Wells Ranch AA11-646
API:
Rig Id: H&P 326
State: Colorado
County/Parish: Weld
Country: USA
Survey Company: ENSIGN Directional
Job number: HP326-207-12
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:	1830 ft	05-22-2015
End:	13806 ft	05-28-2015

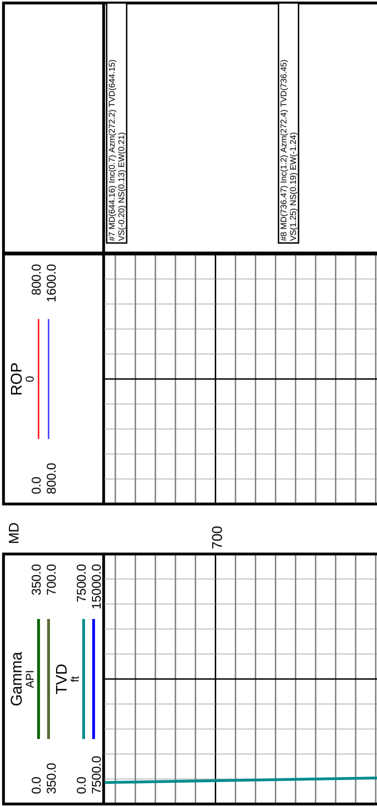
Casing	Depth	Size
Surface:	1830	9 5/8
Intermediate:		

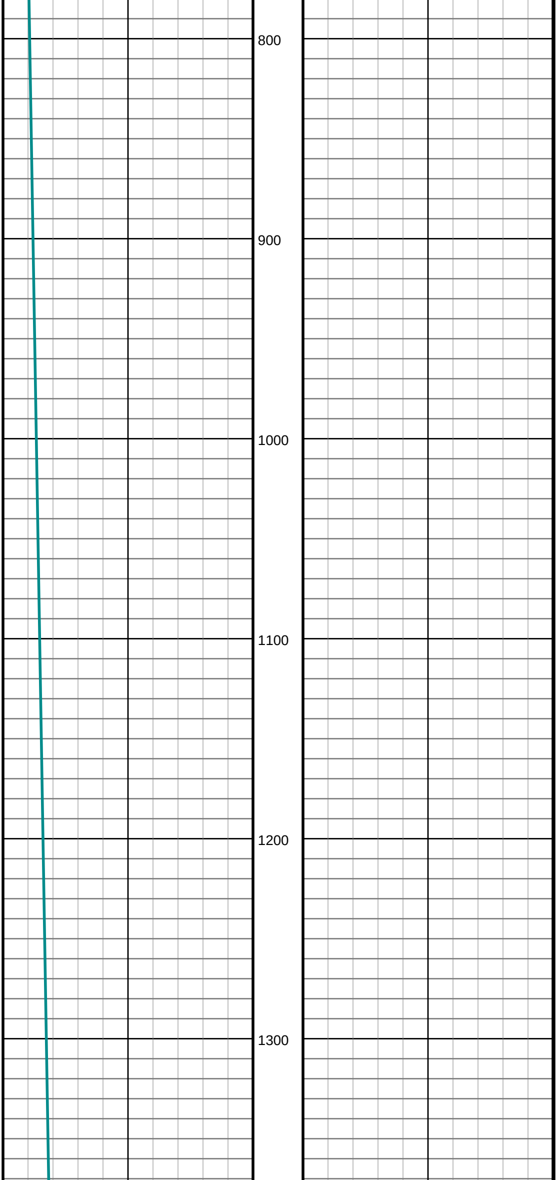
Mud Type:
Density:
Viscosity:
Rm: **Rmf:** **Rmc:**

Elevations
KB: 30
GL: 4855
DF: 4885

		Offsets		Depths		Dates	
Run	Bit Size	Gamma	Survey	Start	End	Start	End
1	8.75	52.50	49.59	1830	7279	05-22-2015	05-24-2015
2	8.75	55.61	60.61	7279	13806	05-24-2015	05-28-2015
3							
4							
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.





#9 MD(828.78) Inc(1.5) Azm(263.7) TVD(828.74)
VS(3.40) NS(0.10) EW(-3.40)

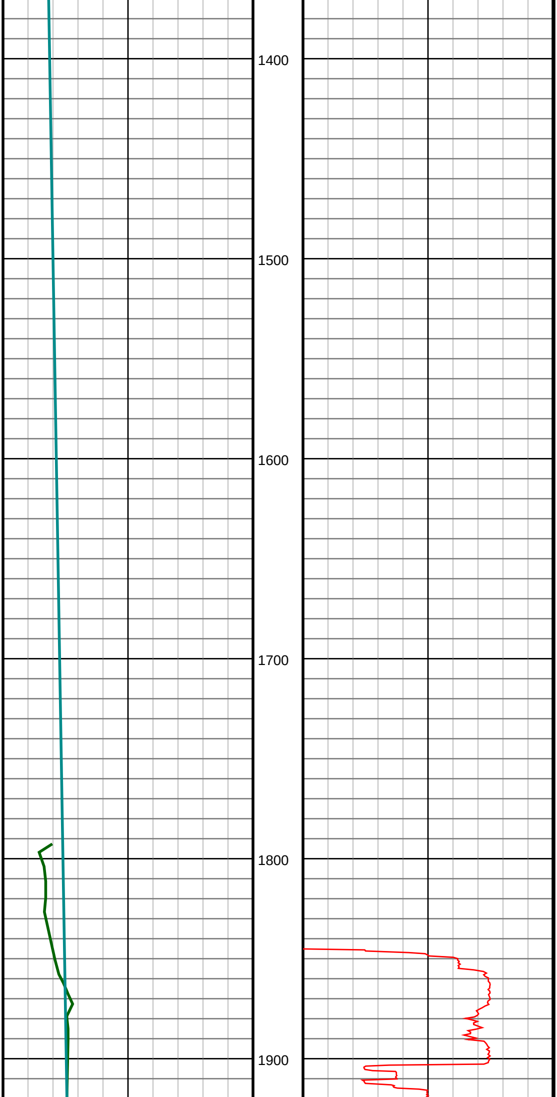
#10 MD(921.09) Inc(1.7) Azm(275.2) TVD(921.01)
VS(5.95) NS(0.09) EW(-5.96)

#11 MD(1013.40) Inc(1.6) Azm(266.1) TVD(1013.28)
VS(8.55) NS(0.12) EW(-8.56)

#12 MD(1105.71) Inc(1.6) Azm(263.1) TVD(1105.56)
VS(11.11) NS(-0.13) EW(-11.15)

#13 MD(1198.02) Inc(1.6) Azm(269.5) TVD(1197.83)
VS(13.71) NS(-0.30) EW(-13.76)

#14 MD(1290.33) Inc(2.5) Azm(276.1) TVD(1290.08)
VS(17.01) NS(-0.10) EW(-17.06)



#15 MD(1382.64) Inc(2.7) Azm(280.6) TVD(1382.30)
VS(21.13) NS(0.51) EW(-21.15)

#16 MD(1474.95) Inc(3.5) Azm(284.6) TVD(1474.47)
VS(26.02) NS(1.62) EW(-25.97)

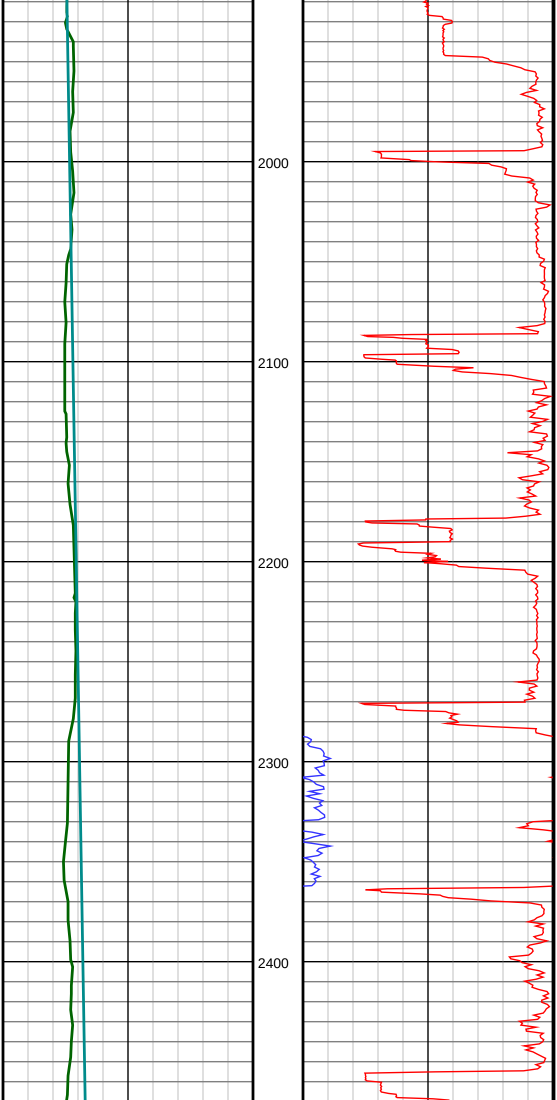
#17 MD(1567.26) Inc(4.3) Azm(290.7) TVD(1566.57)
VS(32.11) NS(3.56) EW(-31.94)

#18 MD(1659.57) Inc(4.8) Azm(287.3) TVD(1658.59)
VS(39.19) NS(5.93) EW(-38.87)

#19 MD(1751.88) Inc(5.2) Azm(293.1) TVD(1750.55)
VS(46.94) NS(8.72) EW(-46.43)

#20 MD(1819.00) Inc(5.4) Azm(294.4) TVD(1817.37)
VS(52.81) NS(11.23) EW(-52.14)

#21 MD(1853.00) Inc(5.3) Azm(296.6) TVD(1851.23)
VS(55.77) NS(12.60) EW(-55.01)



#22 MD(1945.00) Inc(5.8) Azm(319.4) TVD(1942.80)
VS(62.98) NS(18.04) EW(-61.85)

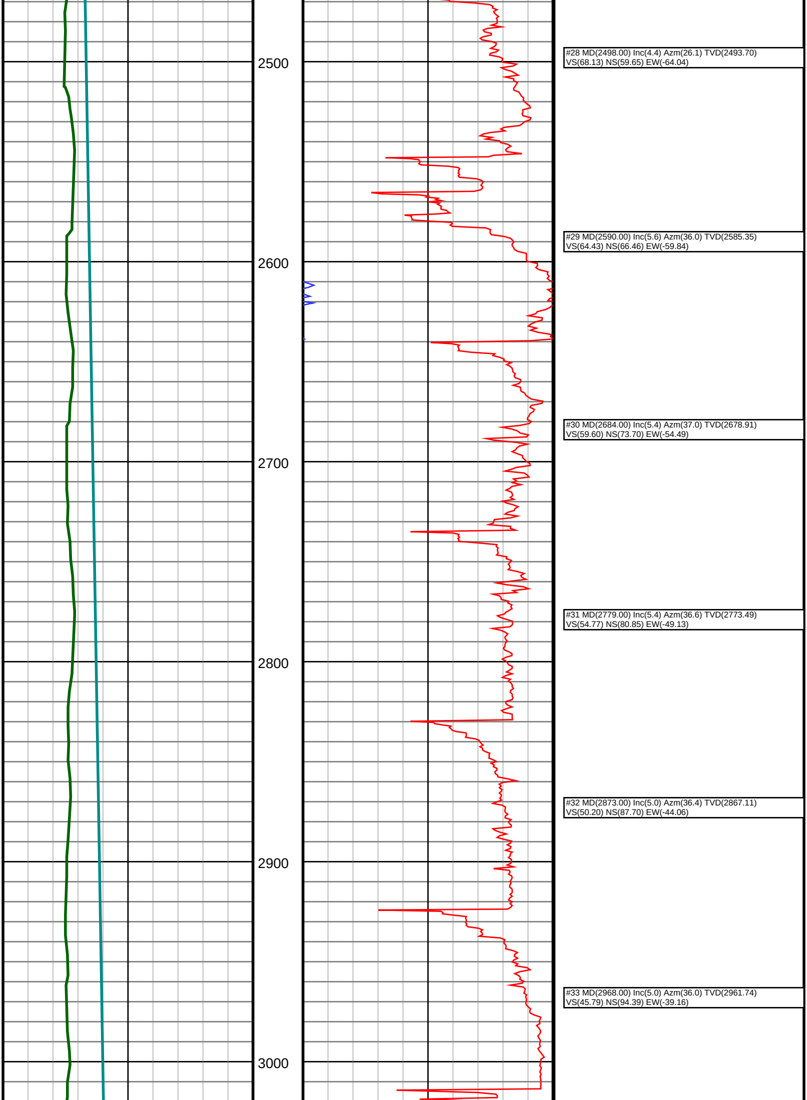
#23 MD(2037.00) Inc(5.9) Azm(319.7) TVD(2034.32)
VS(69.58) NS(25.19) EW(-67.95)

#24 MD(2130.00) Inc(5.1) Azm(339.0) TVD(2126.90)
VS(74.70) NS(32.74) EW(-72.55)

#25 MD(2221.00) Inc(4.2) Azm(1.3) TVD(2217.60)
VS(76.59) NS(39.87) EW(-73.94)

#26 MD(2313.00) Inc(4.8) Azm(32.6) TVD(2309.33)
VS(74.92) NS(46.46) EW(-71.79)

#27 MD(2406.00) Inc(4.9) Azm(31.3) TVD(2402.00)
VS(71.26) NS(53.11) EW(-67.65)



#28 MD(2498.00) Inc(4.4) Azm(26.1) TVD(2493.70)
VS(68.13) NS(59.65) EW(-64.04)

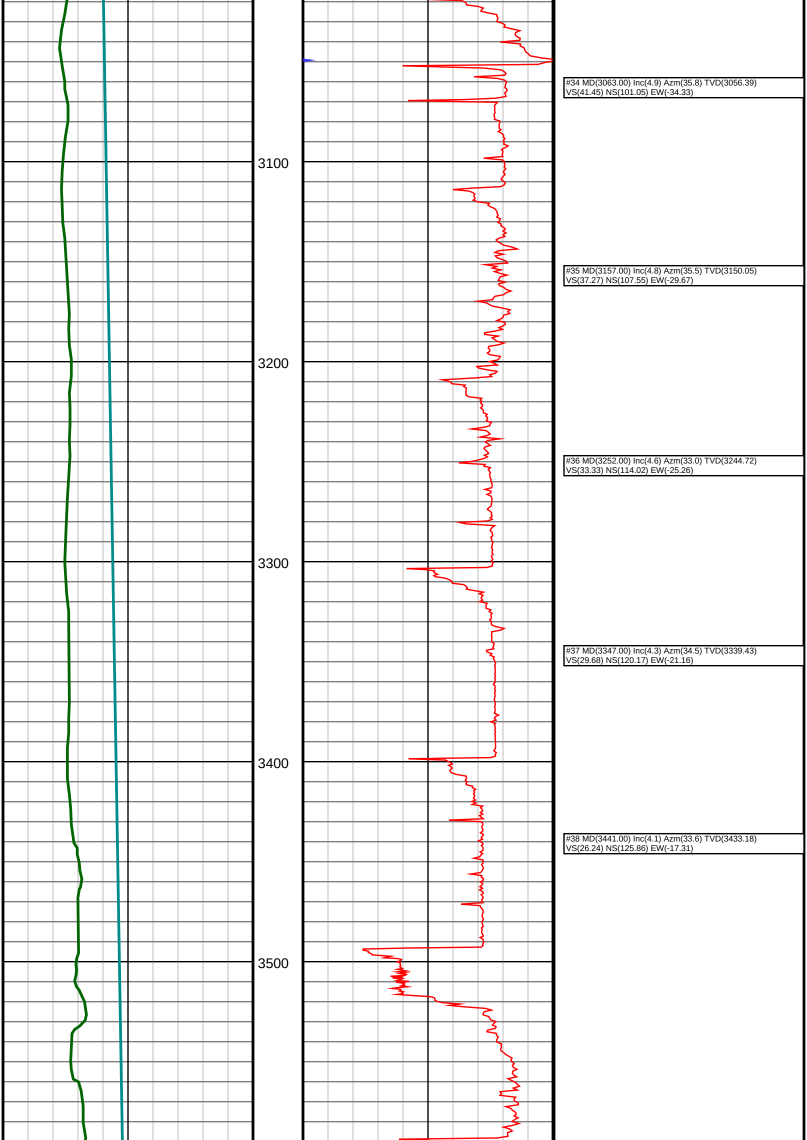
#29 MD(2590.00) Inc(5.6) Azm(36.0) TVD(2585.35)
VS(64.43) NS(66.46) EW(-59.84)

#30 MD(2684.00) Inc(5.4) Azm(37.0) TVD(2678.91)
VS(59.60) NS(73.70) EW(-54.49)

#31 MD(2779.00) Inc(5.4) Azm(36.6) TVD(2773.49)
VS(54.77) NS(80.85) EW(-49.13)

#32 MD(2873.00) Inc(5.0) Azm(36.4) TVD(2867.11)
VS(50.20) NS(87.70) EW(-44.06)

#33 MD(2968.00) Inc(5.0) Azm(36.0) TVD(2961.74)
VS(45.79) NS(94.39) EW(-39.16)



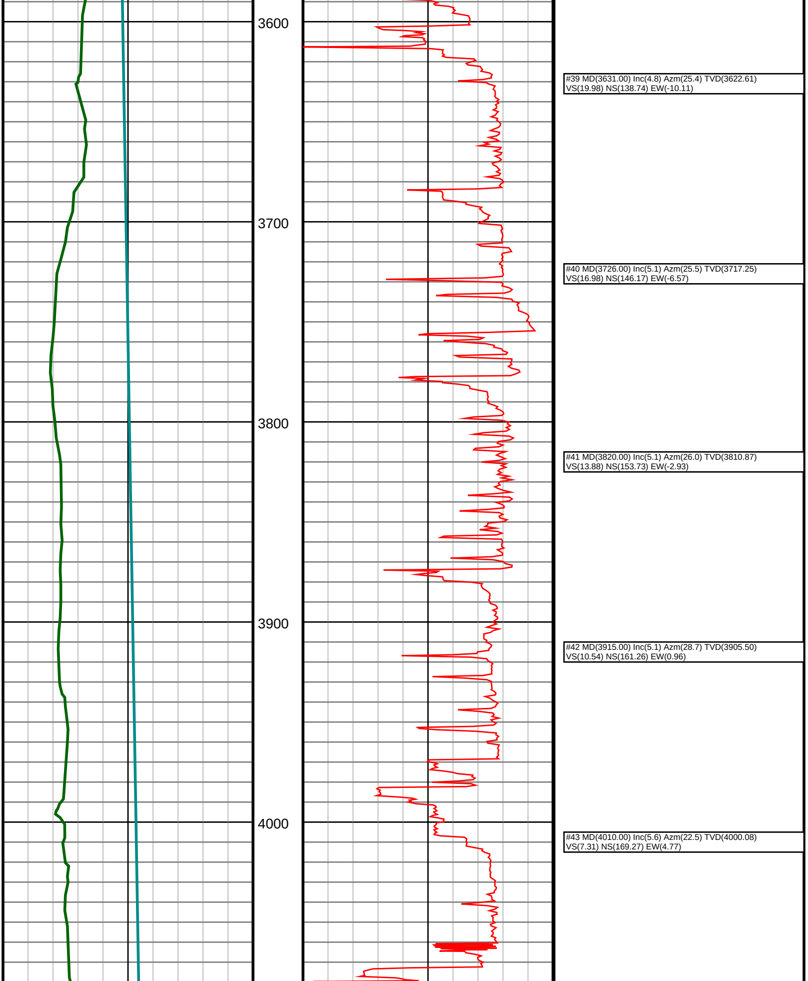
#34 MD(3063.00) Inc(4.9) Azm(35.8) TVD(3056.39)
VS(41.45) NS(101.05) EW(-34.33)

#35 MD(3157.00) Inc(4.8) Azm(35.5) TVD(3150.05)
VS(37.27) NS(107.55) EW(-29.67)

#36 MD(3252.00) Inc(4.6) Azm(33.0) TVD(3244.72)
VS(33.33) NS(114.02) EW(-25.26)

#37 MD(3347.00) Inc(4.3) Azm(34.5) TVD(3339.43)
VS(29.68) NS(120.17) EW(-21.16)

#38 MD(3441.00) Inc(4.1) Azm(33.6) TVD(3433.18)
VS(26.24) NS(125.86) EW(-17.31)



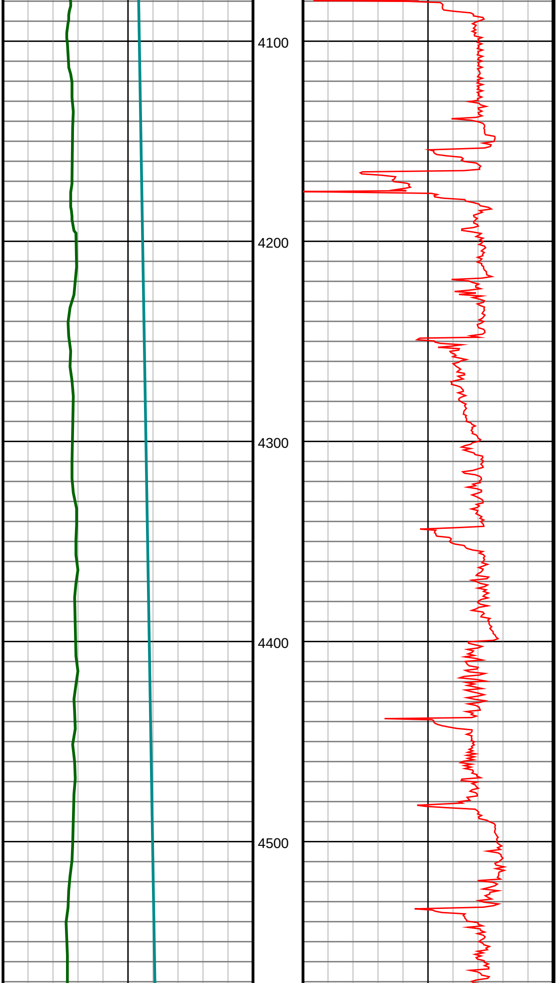
#39 MD(3631.00) Inc(4.8) Azm(25.4) TVD(3622.61)
VS(19.98) NS(138.74) EW(-10.11)

#40 MD(3726.00) Inc(5.1) Azm(25.5) TVD(3717.25)
VS(16.98) NS(146.17) EW(-6.57)

#41 MD(3820.00) Inc(5.1) Azm(26.0) TVD(3810.87)
VS(13.88) NS(153.73) EW(-2.93)

#42 MD(3915.00) Inc(5.1) Azm(28.7) TVD(3905.50)
VS(10.54) NS(161.26) EW(0.96)

#43 MD(4010.00) Inc(5.6) Azm(22.5) TVD(4000.08)
VS(7.31) NS(169.27) EW(4.77)



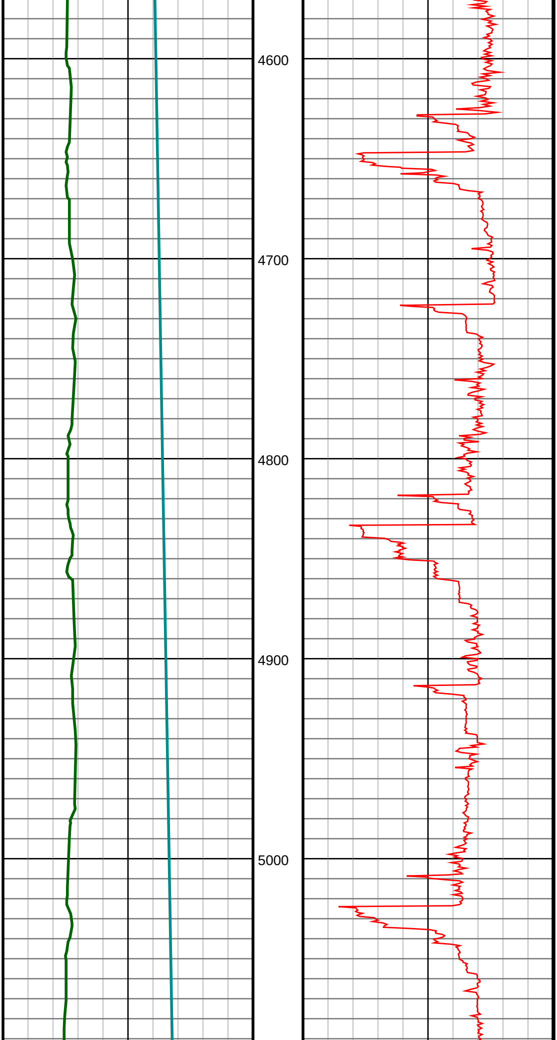
#44 MD(4104.00) Inc(5.8) Azm(24.6) TVD(4093.62)
VS(4.21) NS(177.82) EW(8.50)

#45 MD(4199.00) Inc(6.9) Azm(26.0) TVD(4188.04)
VS(0.43) NS(187.25) EW(12.96)

#46 MD(4294.00) Inc(6.6) Azm(25.2) TVD(4282.39)
VS(-3.65) NS(197.29) EW(17.77)

#47 MD(4388.00) Inc(6.4) Azm(23.6) TVD(4375.78)
VS(-7.35) NS(206.99) EW(22.17)

#48 MD(4483.00) Inc(6.3) Azm(23.3) TVD(4470.20)
VS(-10.84) NS(216.63) EW(26.36)



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VS(-14.23) NS(225.66) EW(30.40)

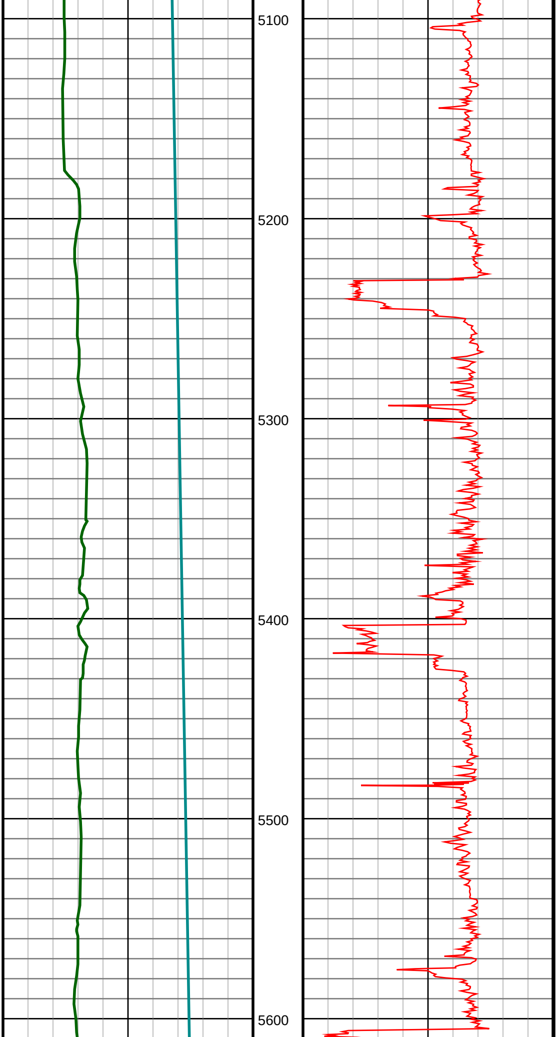
#50 MD(4673.00) Inc(6.3) Azm(25.9) TVD(4659.16)
VS(-17.84) NS(234.60) EW(34.66)

#51 MD(4767.00) Inc(5.3) Azm(26.5) TVD(4752.68)
VS(-21.41) NS(243.13) EW(38.85)

#52 MD(4862.00) Inc(6.4) Azm(19.0) TVD(4847.18)
VS(-24.46) NS(252.09) EW(42.55)

#53 MD(4957.00) Inc(5.6) Azm(23.2) TVD(4941.66)
VS(-27.34) NS(261.36) EW(46.10)

#54 MD(5052.00) Inc(6.8) Azm(21.7) TVD(5036.11)
VS(-30.54) NS(270.81) EW(49.98)



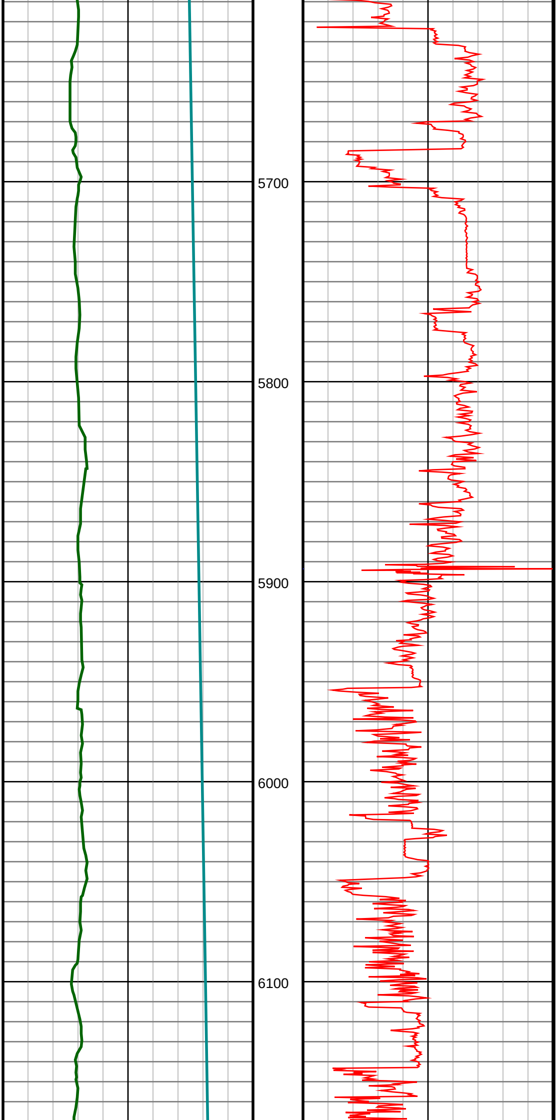
#55 MD(5147.00) Inc(6.2) Azm(21.2) TVD(5130.49)
VS(-33.75) NS(280.83) EW(53.92)

#56 MD(5241.00) Inc(6.0) Azm(24.1) TVD(5223.96)
VS(-36.93) NS(290.06) EW(57.77)

#57 MD(5336.00) Inc(5.6) Azm(25.3) TVD(5318.48)
VS(-40.30) NS(298.75) EW(61.76)

#58 MD(5431.00) Inc(6.3) Azm(34.5) TVD(5412.97)
VS(-44.60) NS(307.22) EW(66.68)

#59 MD(5525.00) Inc(5.3) Azm(36.3) TVD(5506.49)
VS(-49.53) NS(314.97) EW(72.18)



#60 MD(5620.00) Inc(5.9) Azm(39.6) TVD(5601.03)
VS(-54.71) NS(322.28) EW(77.89)

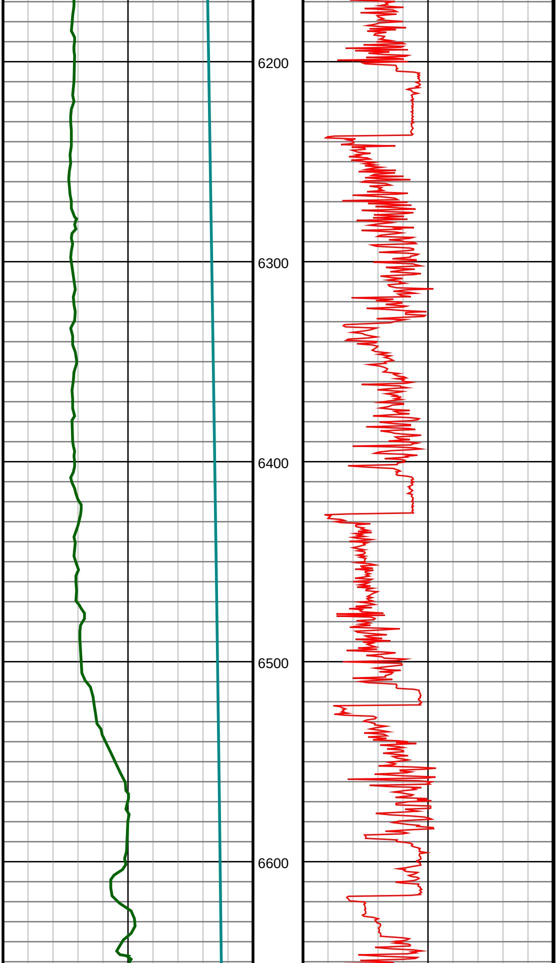
#61 MD(5715.00) Inc(8.0) Azm(34.1) TVD(5695.34)
VS(-60.83) NS(331.48) EW(84.69)

#62 MD(5810.00) Inc(7.1) Azm(32.6) TVD(5789.51)
VS(-66.93) NS(341.89) EW(91.55)

#63 MD(5904.00) Inc(6.0) Azm(28.8) TVD(5882.90)
VS(-71.76) NS(351.09) EW(97.05)

#64 MD(5999.00) Inc(10.1) Azm(11.4) TVD(5976.96)
VS(-74.89) NS(363.61) EW(101.08)

#65 MD(6094.00) Inc(18.0) Azm(6.4) TVD(6069.05)
VS(-76.54) NS(386.40) EW(104.36)



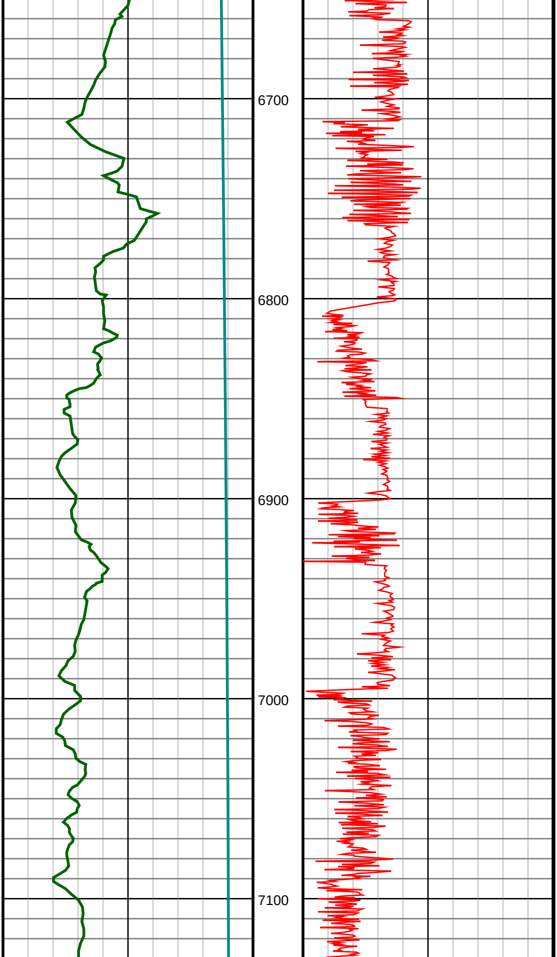
#66 MD(6188.00) Inc(19.7) Azm(354.7) TVD(6158.02)
VS(-74.52) NS(416.64) EW(104.50)

#67 MD(6283.00) Inc(22.1) Azm(336.3) TVD(6246.85)
VS(-63.56) NS(449.03) EW(95.83)

#68 MD(6378.00) Inc(28.9) Azm(314.3) TVD(6332.73)
VS(-37.59) NS(481.54) EW(72.12)

#69 MD(6473.00) Inc(32.8) Azm(295.9) TVD(6414.46)
VS(3.93) NS(508.87) EW(32.45)

#70 MD(6567.00) Inc(41.1) Azm(280.9) TVD(6489.68)
VS(58.45) NS(525.86) EW(-21.00)



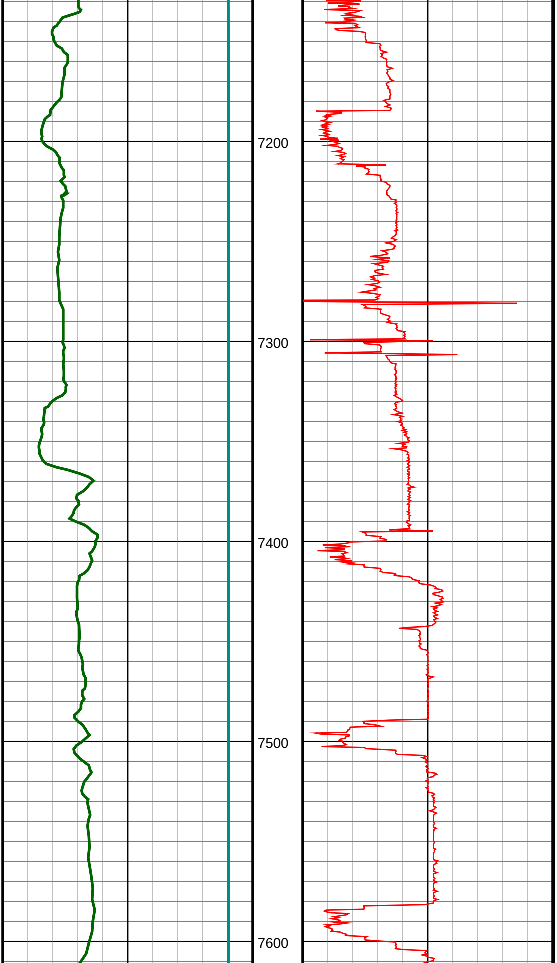
#71 MD(6662.00) Inc(47.3) Azm(276.1) TVD(6557.72)
VS(124.48) NS(535.48) EW(-86.51)

#72 MD(6757.00) Inc(53.3) Azm(276.6) TVD(6618.34)
VS(197.51) NS(543.61) EW(-159.14)

#73 MD(6851.00) Inc(61.5) Azm(276.7) TVD(6668.90)
VS(276.58) NS(552.82) EW(-237.75)

#74 MD(6946.00) Inc(64.7) Azm(277.4) TVD(6711.85)
VS(361.19) NS(563.27) EW(-321.83)

#75 MD(7041.00) Inc(71.3) Azm(273.9) TVD(6747.42)
VS(449.17) NS(571.91) EW(-409.42)



#76 MD(7135.00) Inc(84.0) Azm(271.1) TVD(6767.46)
VS(540.77) NS(575.86) EW(-500.97)

#77 MD(7230.00) Inc(90.3) Azm(271.6) TVD(6772.16)
VS(635.50) NS(578.12) EW(-595.78)

#78 MD(7243.00) Inc(90.4) Azm(271.5) TVD(6772.08)
VS(648.48) NS(578.48) EW(-608.77)

#79 MD(7337.00) Inc(89.0) Azm(270.1) TVD(6772.56)
VS(742.32) NS(579.78) EW(-702.76)

#80 MD(7432.00) Inc(89.4) Azm(271.4) TVD(6773.83)
VS(837.15) NS(580.96) EW(-797.74)

#81 MD(7524.00) Inc(89.7) Azm(271.9) TVD(6774.54)
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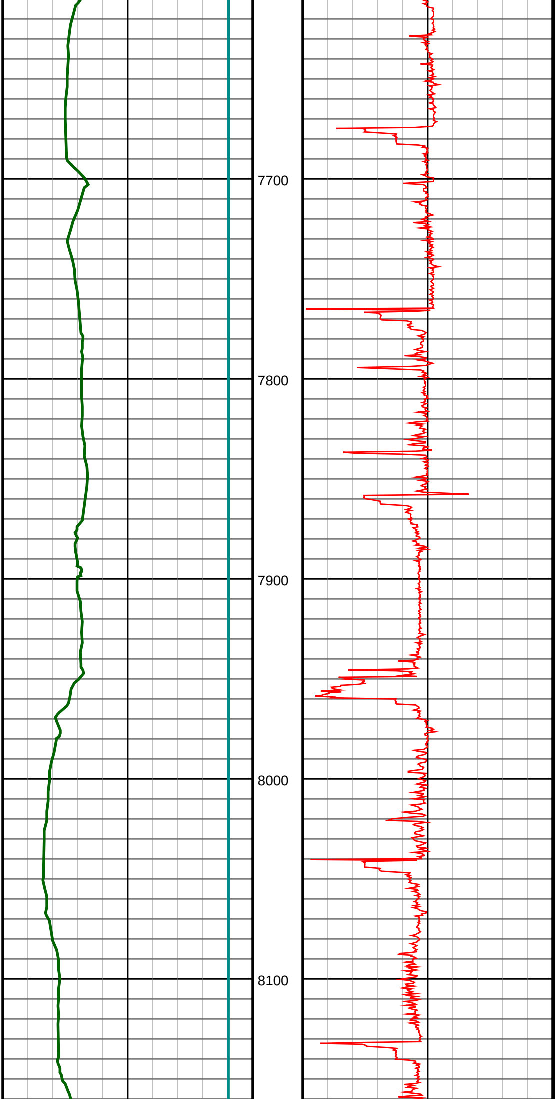

#82 MD(7617.00) Inc(91.0) Azm(271.4) TVD(6773.97)
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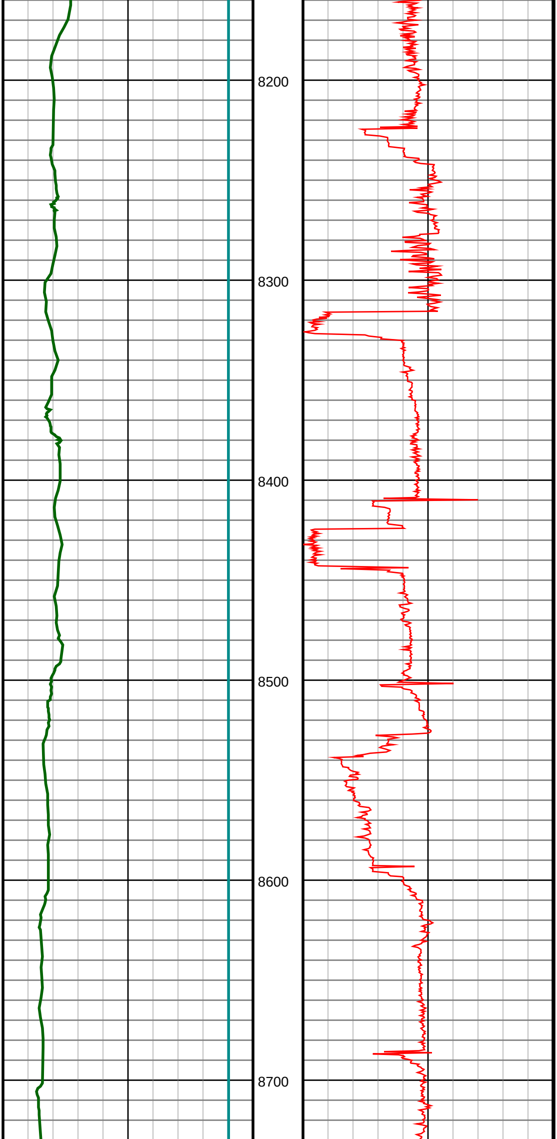
#83 MD(7709.00) Inc(91.0) Azm(271.4) TVD(6772.35)
VS(1113.86) NS(588.55) EW(-1074.62)

#84 MD(7800.00) Inc(90.7) Azm(271.1) TVD(6770.99)
VS(1204.73) NS(590.51) EW(-1165.58)

#85 MD(7891.00) Inc(90.6) Azm(271.1) TVD(6769.94)
VS(1295.60) NS(592.26) EW(-1256.56)

#86 MD(7983.00) Inc(90.6) Azm(269.7) TVD(6768.92)
VS(1387.40) NS(592.90) EW(-1348.55)

#87 MD(8075.00) Inc(90.8) Azm(270.3) TVD(6767.75)
VS(1479.16) NS(592.91) EW(-1440.54)



#88 MD(8259.00) Inc(91.4) Azm(270.1) TVD(6764.16)
VS(1662.70) NS(593.49) EW(-1624.51)

#89 MD(8351.00) Inc(91.2) Azm(268.9) TVD(6762.07)
VS(1754.38) NS(592.65) EW(-1716.48)

#90 MD(8443.00) Inc(88.8) Azm(268.6) TVD(6762.10)
VS(1845.97) NS(590.68) EW(-1808.45)

#91 MD(8535.00) Inc(88.3) Azm(267.9) TVD(6764.47)
VS(1937.46) NS(587.87) EW(-1900.37)

#92 MD(8628.00) Inc(88.8) Azm(268.7) TVD(6766.82)
VS(2029.96) NS(585.09) EW(-1993.30)

#93 MD(8720.00) Inc(89.8) Azm(271.0) TVD(6767.91)
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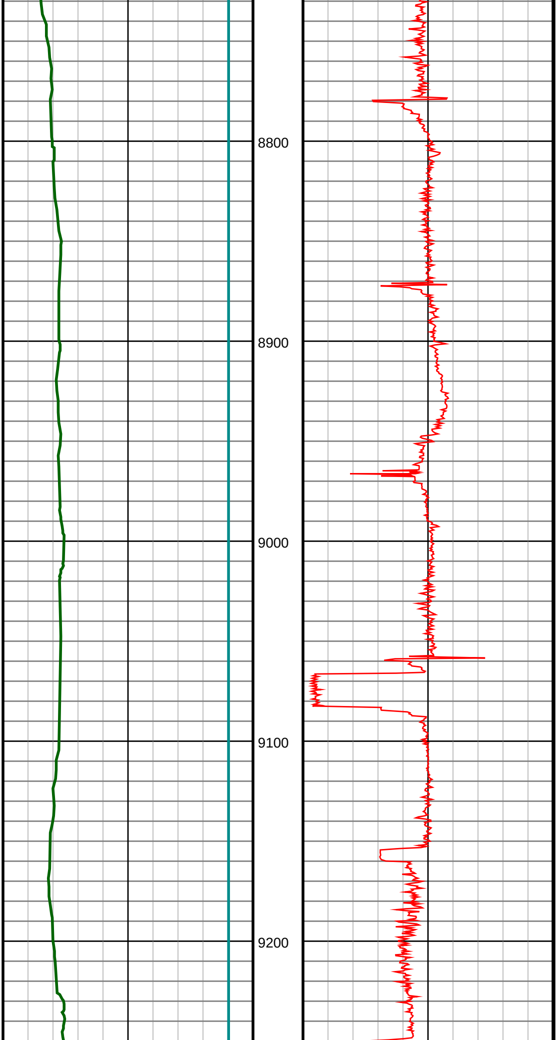

#94 MD(8811.00) Inc(90.2) Azm(271.0) TVD(6767.88)
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#95 MD(8906.00) Inc(90.7) Azm(271.1) TVD(6767.08)
VS(2307.43) NS(588.24) EW(-2271.25)

#96 MD(9001.00) Inc(90.9) Azm(270.8) TVD(6765.73)
VS(2402.27) NS(589.85) EW(-2366.23)

#97 MD(9096.00) Inc(89.0) Azm(269.6) TVD(6765.81)
VS(2497.05) NS(590.22) EW(-2461.22)

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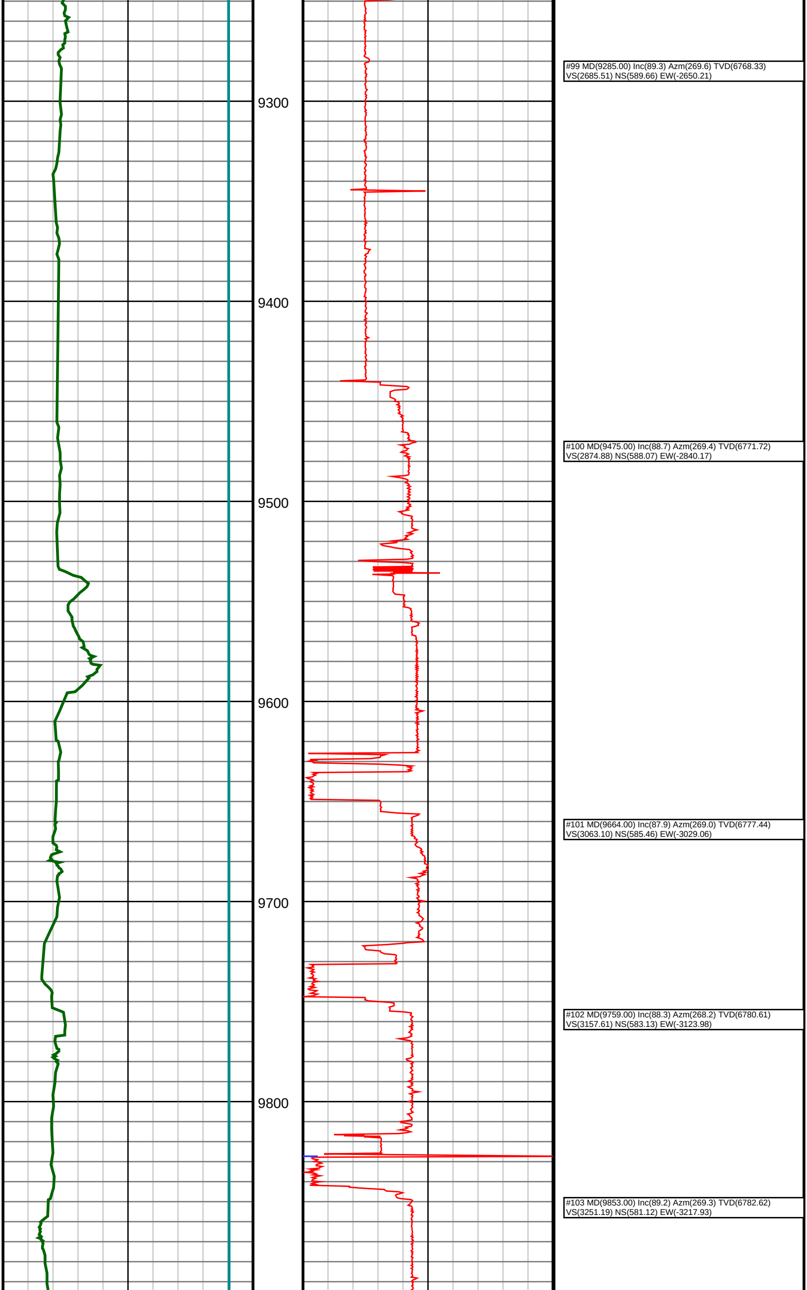

#99 MD(9285.00) Inc(89.3) Azm(269.6) TVD(6768.33)
VS(2685.51) NS(589.66) EW(-2650.21)

#100 MD(9475.00) Inc(88.7) Azm(269.4) TVD(6771.72)
VS(2874.88) NS(588.07) EW(-2840.17)

#101 MD(9664.00) Inc(87.9) Azm(269.0) TVD(6777.44)
VS(3063.10) NS(585.46) EW(-3029.06)

#102 MD(9759.00) Inc(88.3) Azm(268.2) TVD(6780.61)
VS(3157.61) NS(583.13) EW(-3123.98)

#103 MD(9853.00) Inc(89.2) Azm(269.3) TVD(6782.62)
VS(3251.19) NS(581.12) EW(-3217.93)

#104 MD(9948.00) Inc(90.9) Azm(269.9) TVD(6782.55)
VS(3345.89) NS(580.46) EW(-3312.93)

#105 MD(10043.00) Inc(92.5) Azm(270.3) TVD(6779.78)
VS(3440.62) NS(580.61) EW(-3407.88)

#106 MD(10138.00) Inc(92.0) Azm(268.2) TVD(6776.03)
VS(3535.20) NS(579.38) EW(-3502.80)

#107 MD(10327.00) Inc(91.1) Azm(266.9) TVD(6770.82)
VS(3722.89) NS(571.27) EW(-3691.54)

#108 MD(10422.00) Inc(89.0) Azm(266.3) TVD(6770.68)
VS(3817.07) NS(565.59) EW(-3786.37)

#109 MD(10516.00) Inc(89.0) Azm(266.8) TVD(6772.24)
VS(3910.24) NS(559.91) EW(-3880.18)

#110 MD(10611.00) Inc(89.0) Azm(266.6) TVD(6773.85)
VS(4004.44) NS(554.46) EW(-3975.01)

#111 MD(10705.00) Inc(89.2) Azm(266.8) TVD(6775.29)
VS(4097.65) NS(549.07) EW(-4068.85)

#112 MD(10800.00) Inc(89.7) Azm(267.3) TVD(6776.20)
VS(4191.93) NS(544.19) EW(-4163.72)

#113 MD(10989.00) Inc(89.7) Azm(267.2) TVD(6777.29)
VS(4379.59) NS(535.21) EW(-4352.50)

#114 MD(11179.00) Inc(91.0) Azm(266.8) TVD(6776.13)
VS(4568.13) NS(525.32) EW(-4542.23)

#115 MD(11273.00) Inc(89.5) Azm(266.5) TVD(6775.70)
VS(4661.34) NS(519.85) EW(-4636.07)

#116 MD(11368.00) Inc(89.5) Azm(265.3) TVD(6776.57)
VS(4755.37) NS(513.08) EW(-4730.82)

#117 MD(11463.00) Inc(88.3) Azm(266.3) TVD(6778.42)
VS(4849.35) NS(506.10) EW(-4825.55)

#118 MD(11557.00) Inc(88.9) Azm(268.6) TVD(6780.73)
VS(4942.69) NS(501.93) EW(-4919.42)

#119 MD(11652.00) Inc(88.9) Azm(269.0) TVD(6782.59)
VS(5037.27) NS(499.96) EW(-5014.38)

#120 MD(11747.00) Inc(89.4) Azm(269.9) TVD(6784.05)
VS(5131.94) NS(499.02) EW(-5109.36)

#121 MD(11842.00) Inc(88.4) Azm(268.9) TVD(6785.87)
VS(5226.60) NS(498.00) EW(-5204.34)

#122 MD(11936.00) Inc(88.6) Azm(270.0) TVD(6788.28)
VS(5320.26) NS(497.06) EW(-5298.30)

#123 MD(12125.00) Inc(89.4) Azm(271.4) TVD(6791.53)
VS(5508.89) NS(499.39) EW(-5487.25)

#124 MD(12220.00) Inc(90.5) Azm(271.4) TVD(6791.56)
VS(5603.79) NS(501.79) EW(-5582.22)

#125 MD(12315.00) Inc(90.8) Azm(271.1) TVD(6790.44)
VS(5698.67) NS(503.91) EW(-5677.19)

#126 MD(12504.00) Inc(90.2) Azm(270.8) TVD(6788.79)
VS(5887.38) NS(507.04) EW(-5866.15)

#127 MD(12599.00) Inc(90.4) Azm(270.5) TVD(6788.30)
VS(5982.21) NS(508.12) EW(-5961.15)

#128 MD(12693.00) Inc(89.5) Azm(268.6) TVD(6788.38)
VS(6075.91) NS(507.38) EW(-6055.14)

#129 MD(12787.00) Inc(90.9) Azm(270.2) TVD(6788.05)
VS(6169.59) NS(506.41) EW(-6149.13)

#130 MD(12882.00) Inc(90.2) Azm(268.9) TVD(6787.14)
VS(6264.28) NS(505.68) EW(-6244.12)

#131 MD(12977.00) Inc(89.0) Azm(268.3) TVD(6787.80)
VS(6358.84) NS(503.36) EW(-6339.08)

#132 MD(13071.00) Inc(89.2) Azm(269.2) TVD(6789.25)
VS(6452.42) NS(501.29) EW(-6433.05)

#133 MD(13165.00) Inc(89.6) Azm(270.1) TVD(6790.19)
VS(6546.13) NS(500.72) EW(-6527.04)

#134 MD(13260.00) Inc(90.4) Azm(270.5) TVD(6790.16)
VS(6640.93) NS(501.25) EW(-6622.04)

#135 MD(13354.00) Inc(90.5) Azm(269.9) TVD(6789.43)
VS(6734.71) NS(501.58) EW(-6716.04)

#136 MD(13449.00) Inc(91.0) Azm(270.4) TVD(6788.18)
VS(6829.47) NS(501.83) EW(-6811.03)

#137 MD(13543.00) Inc(90.7) Azm(271.6) TVD(6786.79)
VS(6923.32) NS(503.47) EW(-6905.00)

#138 MD(13638.00) Inc(89.3) Azm(268.5) TVD(6786.79)
VS(7018.07) NS(503.55) EW(-6999.99)

#139 MD(13749.00) Inc(89.1) Azm(268.1) TVD(6788.34)
VS(7128.50) NS(500.26) EW(-7110.93)