ENSIGN Directional Services

Heartland State G36-75-1HN

TVD
5":100’

Company:	Noble Energy
Well Name:	Heartland State G36-75-1HN
API:	05-123-39549
Rig Id:	Precision 829
State:	Colorado
County/Parish:	Weld
Country:	USA
Survey Company:	Ensign Directional
Job number:	PD829-207-22
DD1	Zach Gentry
DD2	Colby Hansen
DD3	Tony Callow
MWD1	Andrew Demrow
MWD2	Johnnie Kibel

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

	Depth	**Date**
Start:	744 ft	07-28-2014
End:	ft	

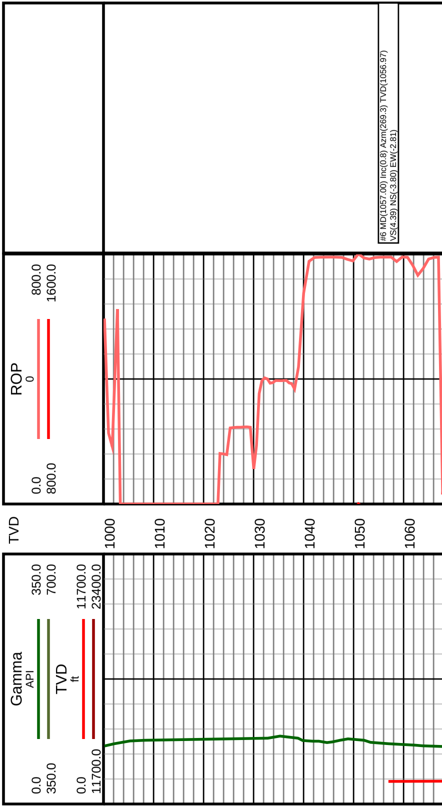
Casing	**Depth**	**Size**
Surface:	734	9 5/8
Intermediate:		7

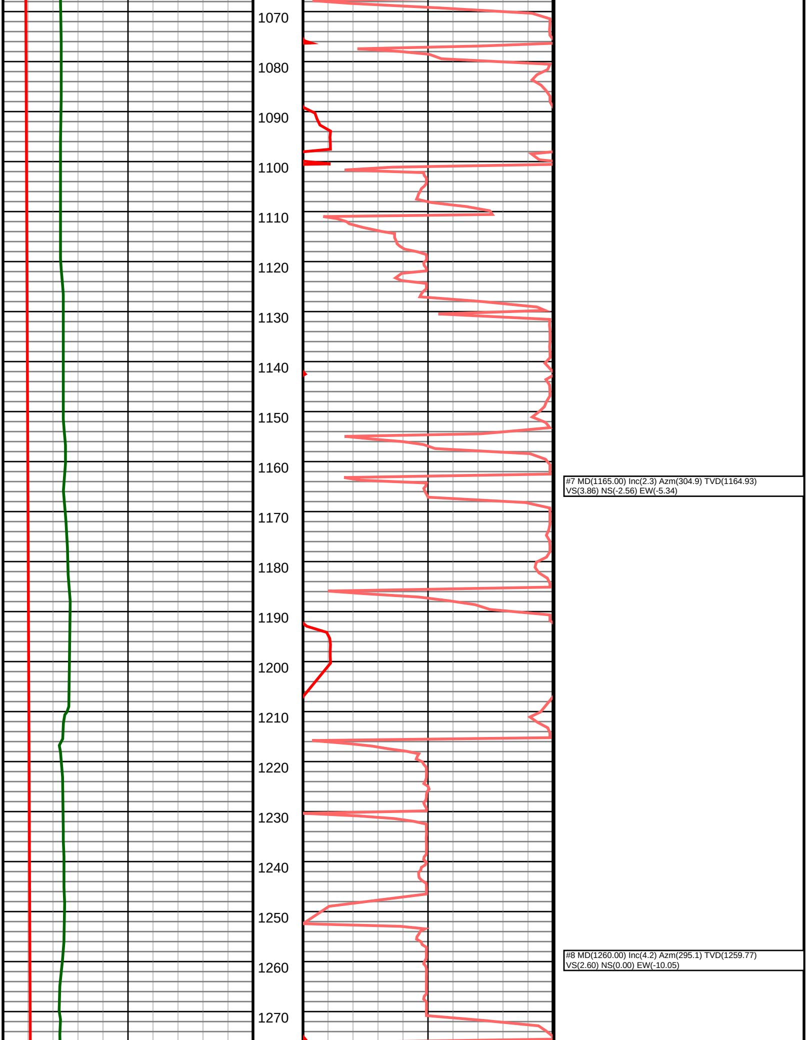
Mud Type:
Density:
Viscosity:
Rm: **Rmf:** **Rmc:**

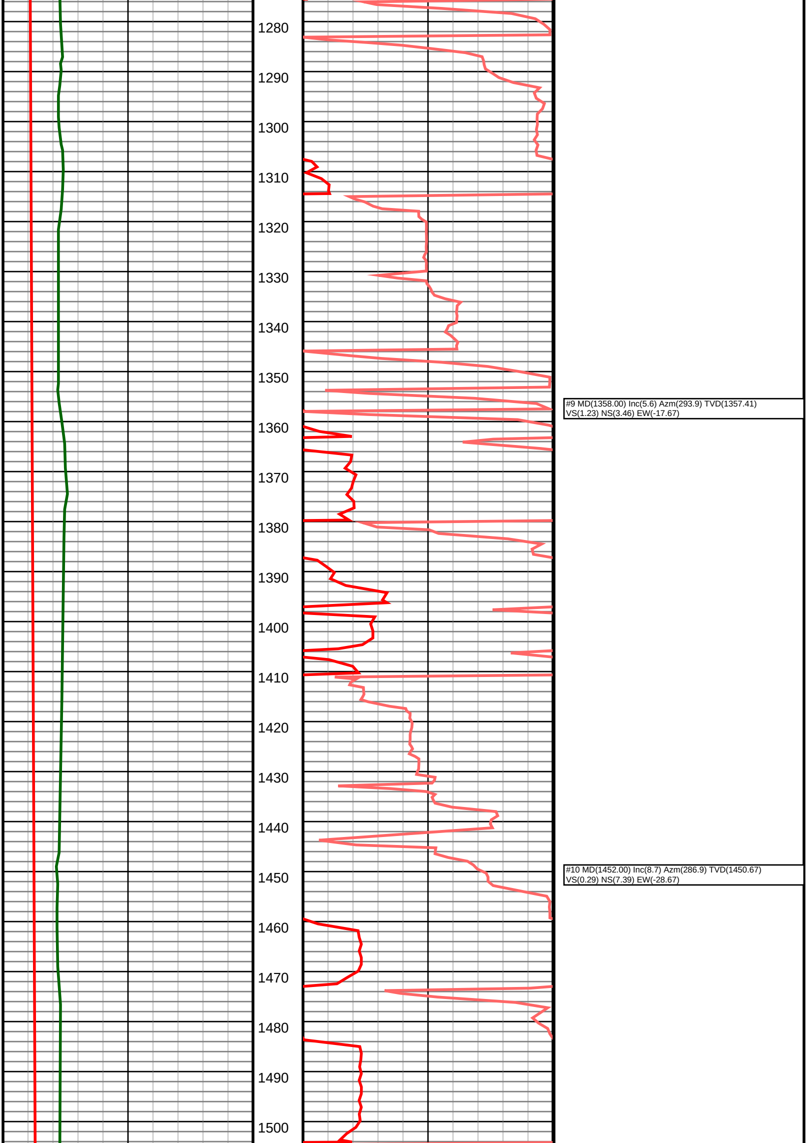
Elevations
KB: 16
GL: 4834
DF: 4850

		Offsets		Depths		Dates	
Run	**Bit Size**	**Gamma**	**Survey**	**Start**	**End**	**Start**	**End**
1	13.5			0	744	07-27-2014	07-27-2014
2	8.75	58.91	53.91	744	7593	07-28-2014	07-30-2014
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.

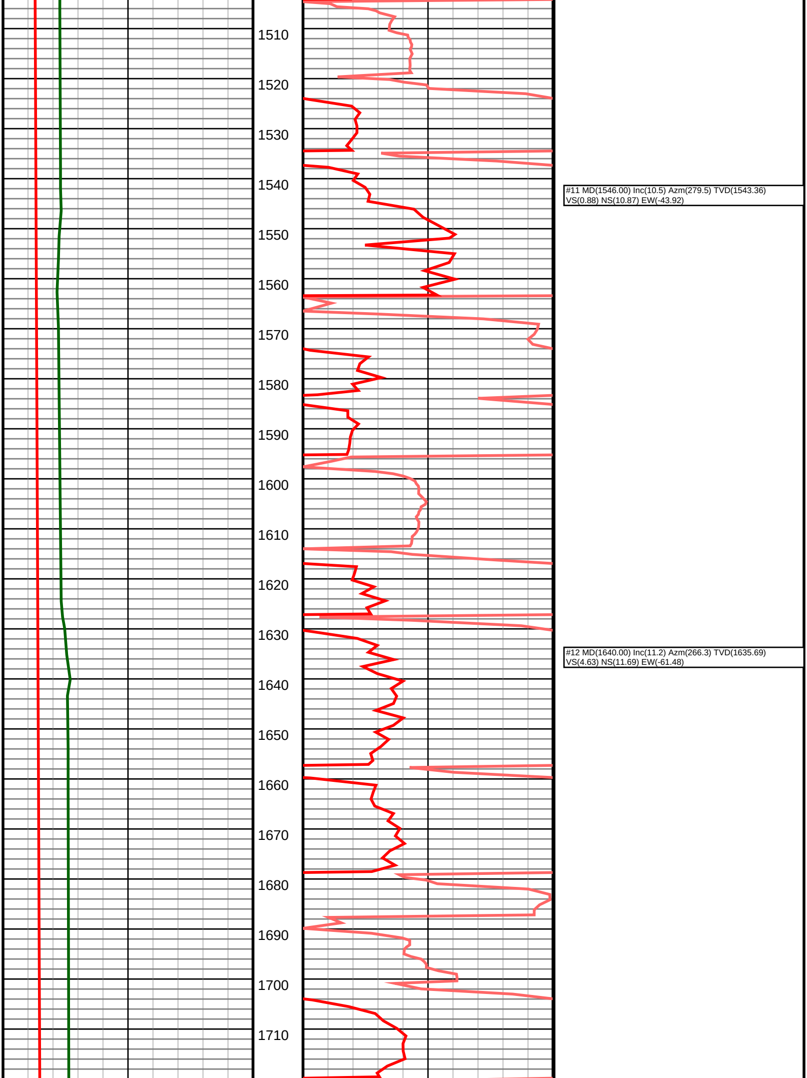






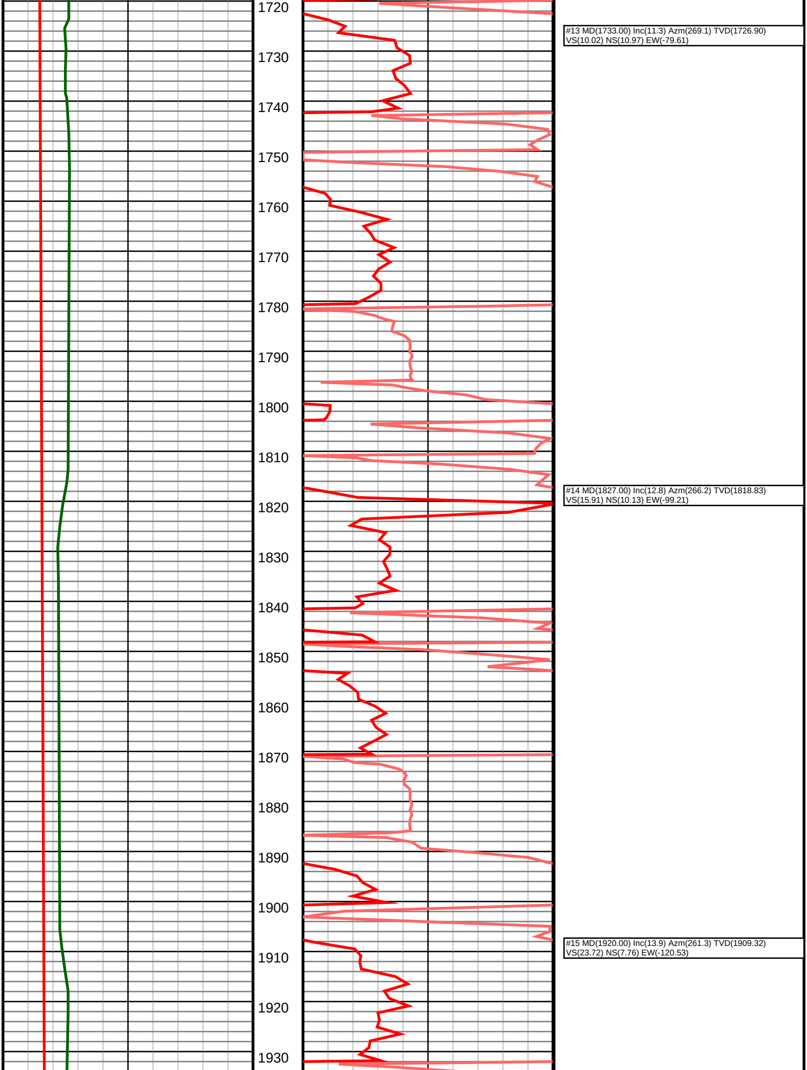
#9 MD(1358.00) Inc(5.6) Azm(293.9) TVD(1357.41)
VS(1.23) NS(3.46) EW(-17.67)

#10 MD(1452.00) Inc(8.7) Azm(286.9) TVD(1450.67)
VS(0.29) NS(7.39) EW(-28.67)



#11 MD(1546.00) Inc(10.5) Azm(279.5) TVD(1543.36)
VS(0.88) NS(10.87) EW(-43.92)

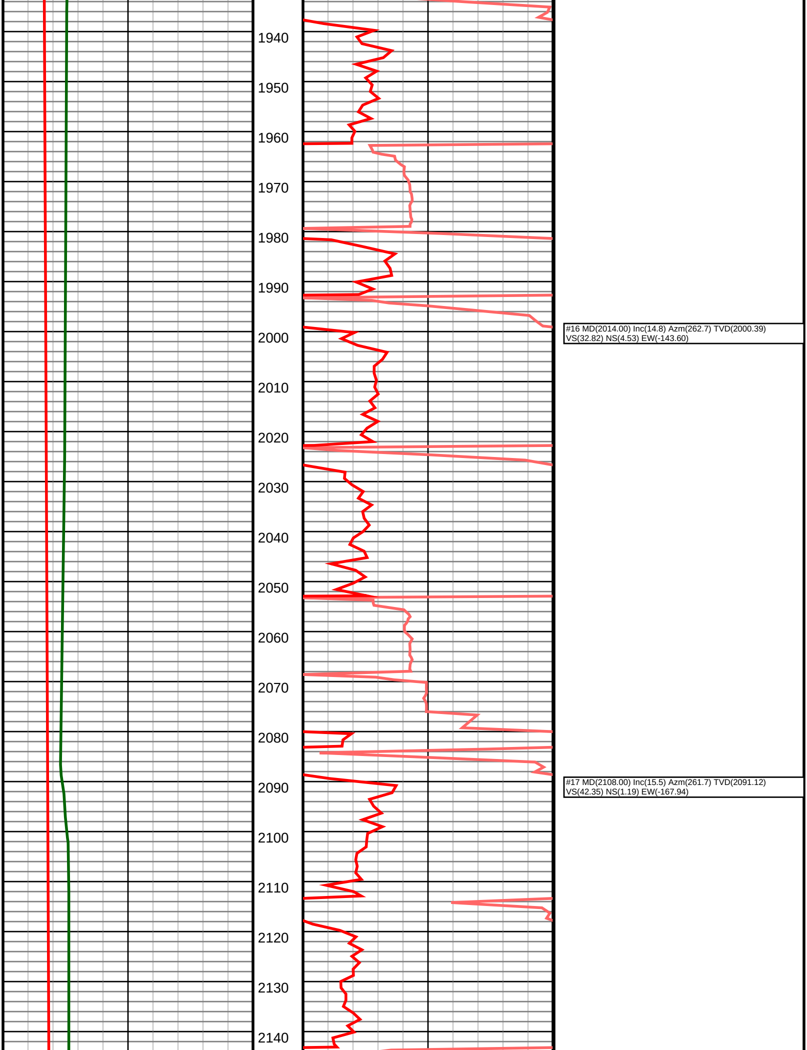
#12 MD(1640.00) Inc(11.2) Azm(266.3) TVD(1635.69)
VS(4.63) NS(11.69) EW(-61.48)



#13 MD(1733.00) Inc(11.3) Azm(269.1) TVD(1726.90)
VS(10.02) NS(10.97) EW(-79.61)

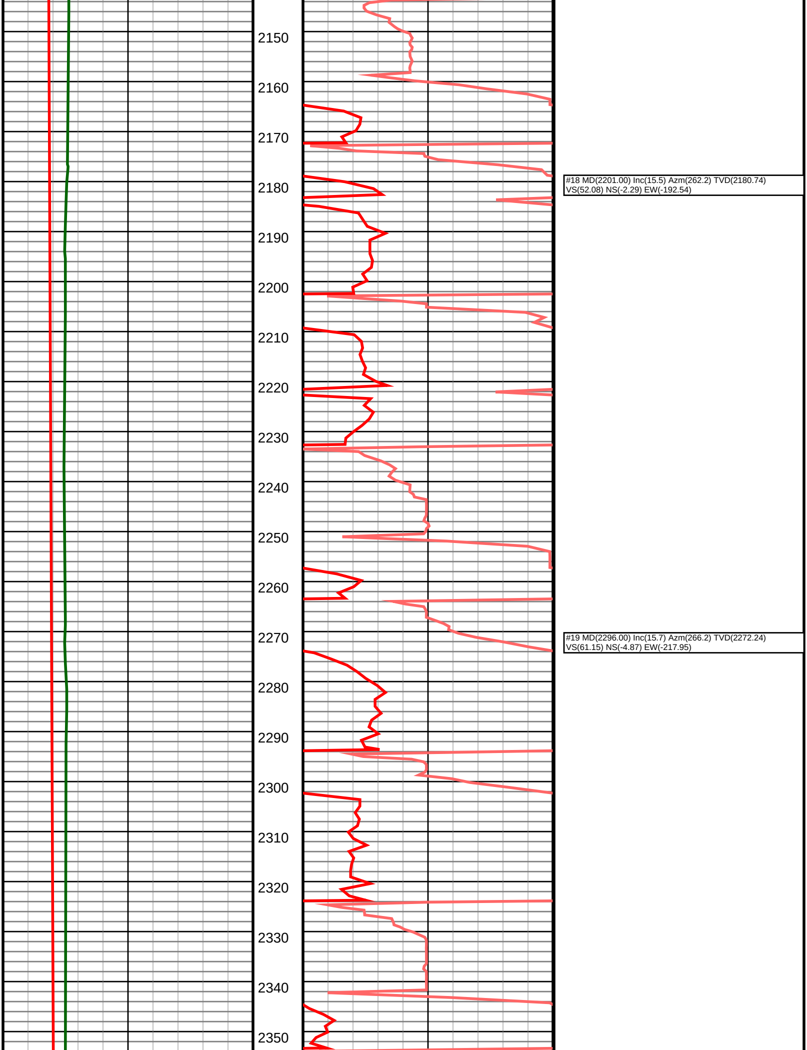
#14 MD(1827.00) Inc(12.8) Azm(266.2) TVD(1818.83)
VS(15.91) NS(10.13) EW(-99.21)

#15 MD(1920.00) Inc(13.9) Azm(261.3) TVD(1909.32)
VS(23.72) NS(7.76) EW(-120.53)



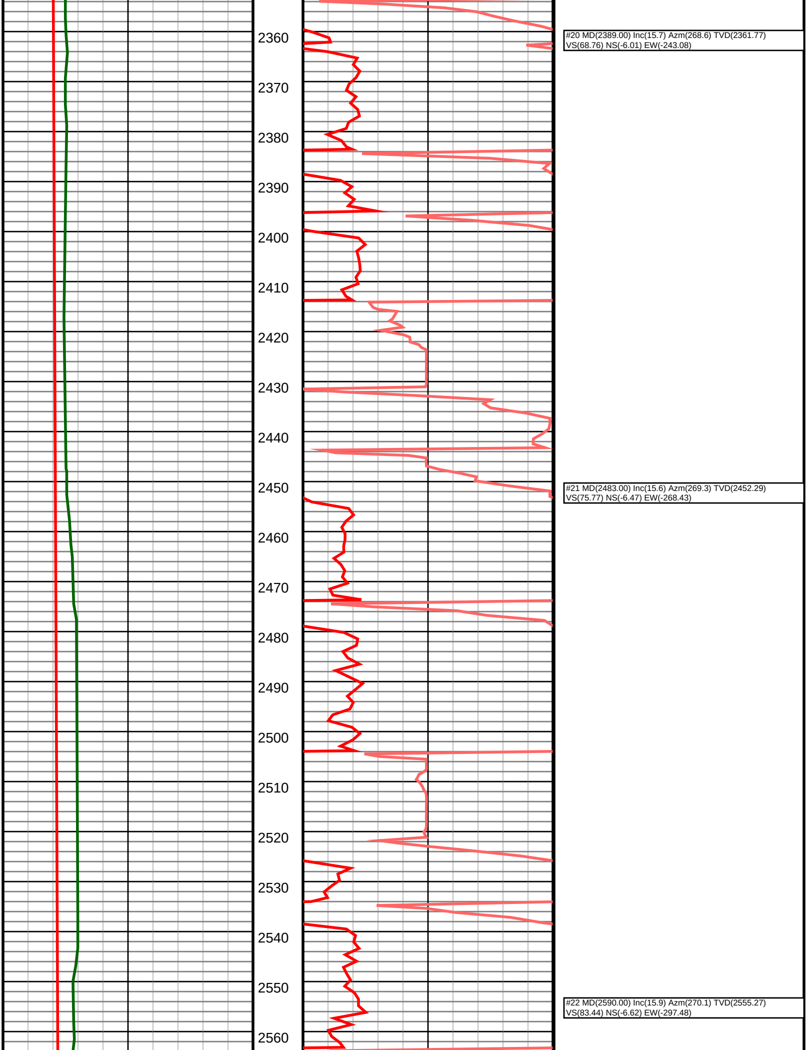
#16 MD(2014.00) Inc(14.8) Azm(262.7) TVD(2000.39)
VS(32.82) NS(4.53) EW(-143.60)

#17 MD(2108.00) Inc(15.5) Azm(261.7) TVD(2091.12)
VS(42.35) NS(1.19) EW(-167.94)



#18 MD(2201.00) Inc(15.5) Azm(262.2) TVD(2180.74)
VS(52.08) NS(-2.29) EW(-192.54)

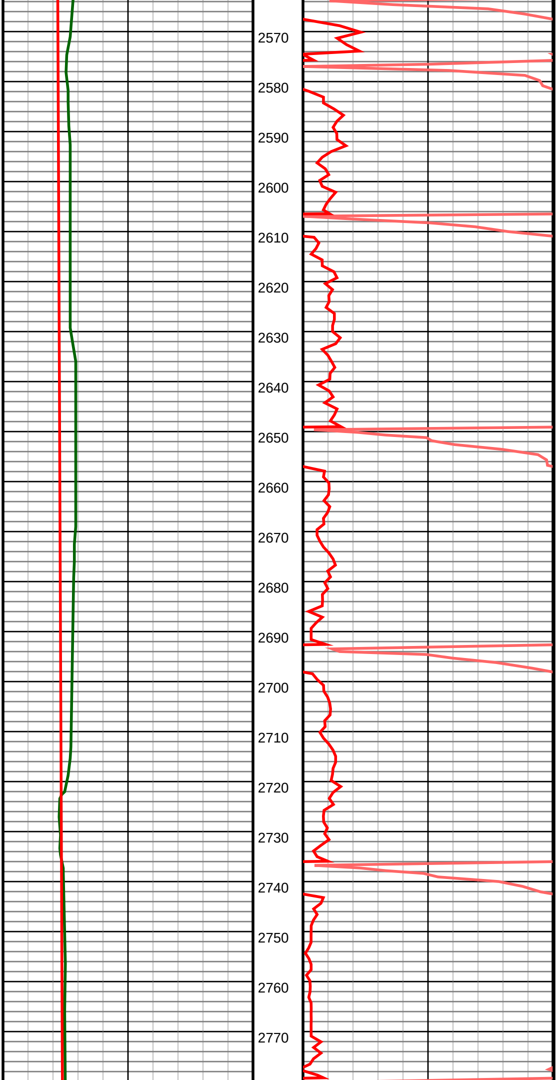
#19 MD(2296.00) Inc(15.7) Azm(266.2) TVD(2272.24)
VS(61.15) NS(-4.87) EW(-217.95)



#20 MD(2389.00) Inc(15.7) Azm(268.6) TVD(2361.77)
VS(68.76) NS(-6.01) EW(-243.08)

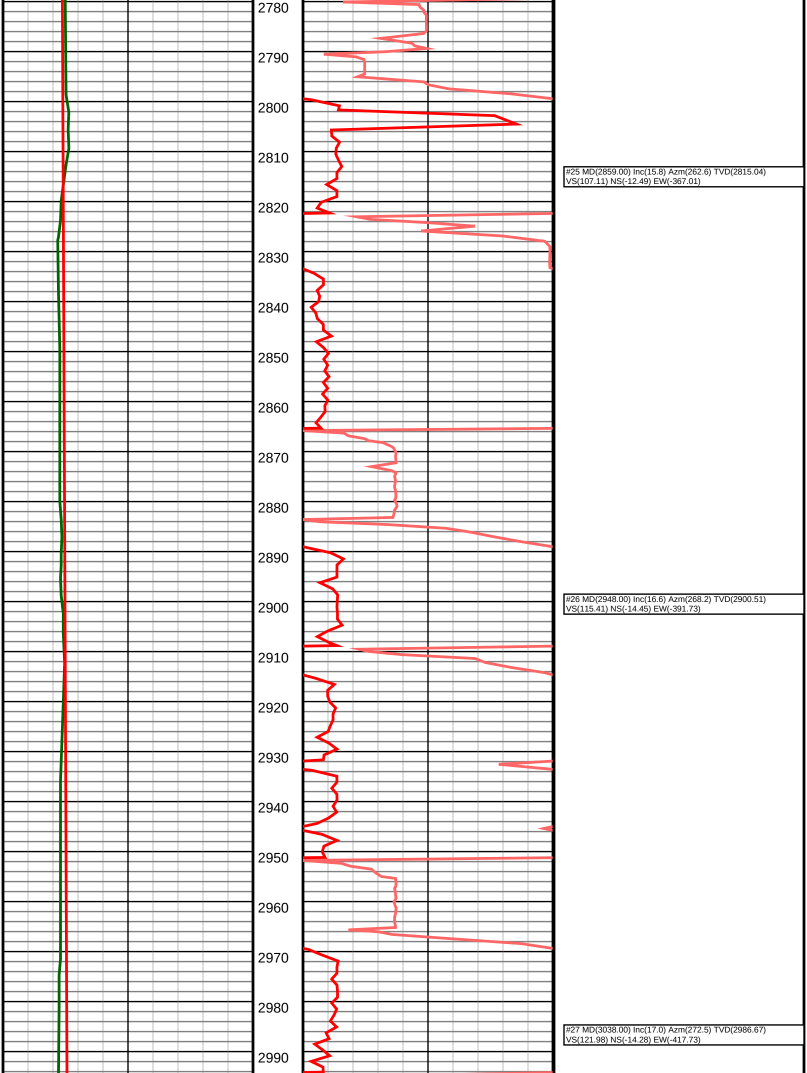
#21 MD(2483.00) Inc(15.6) Azm(269.3) TVD(2452.29)
VS(75.77) NS(-6.47) EW(-268.43)

#22 MD(2590.00) Inc(15.9) Azm(270.1) TVD(2555.27)
VS(83.44) NS(-6.62) EW(-297.48)



#23 MD(2679.00) Inc(14.8) Azm(265.5) TVD(2641.09)
VS(90.37) NS(-7.49) EW(-321.00)

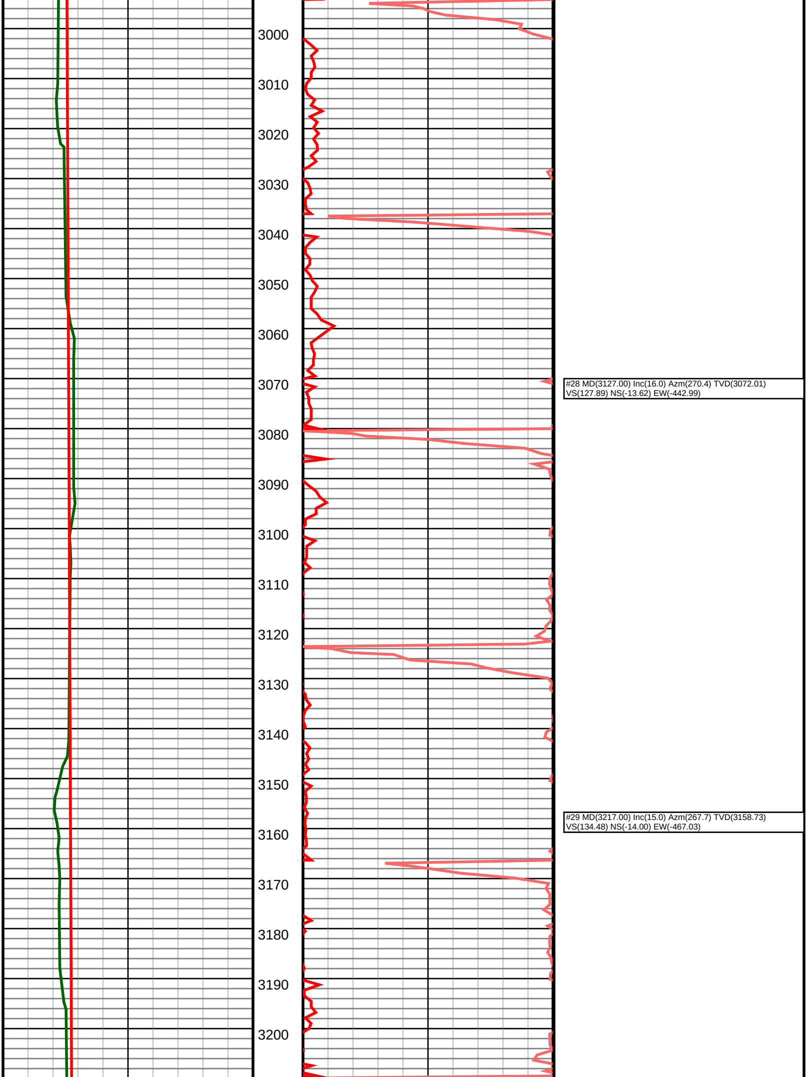
#24 MD(2769.00) Inc(14.5) Azm(263.6) TVD(2728.17)
VS(98.33) NS(-9.65) EW(-343.66)



#25 MD(2859.00) Inc(15.8) Azm(262.6) TVD(2815.04)
VS(107.11) NS(-12.49) EW(-367.01)

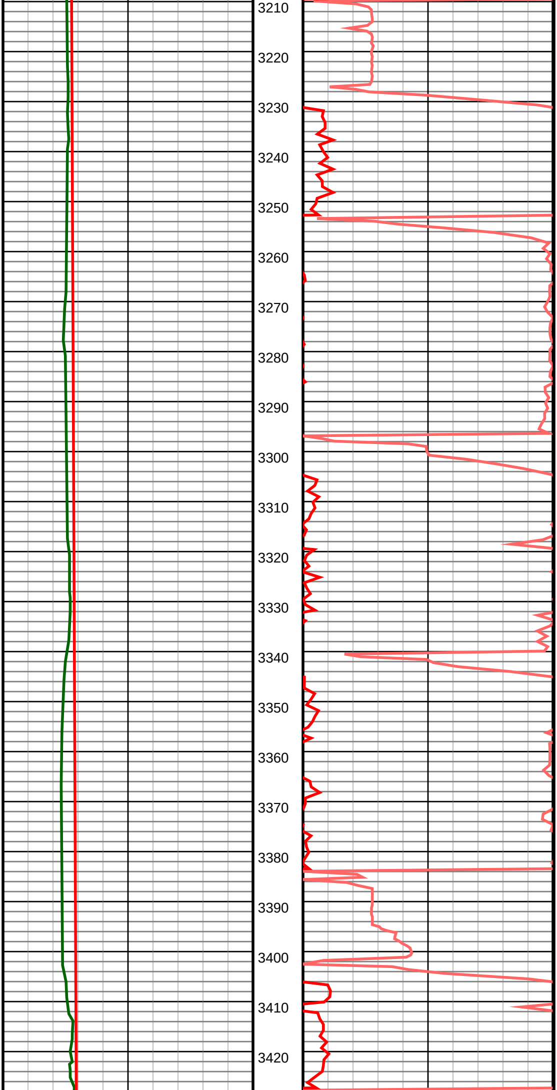
#26 MD(2948.00) Inc(16.6) Azm(268.2) TVD(2900.51)
VS(115.41) NS(-14.45) EW(-391.73)

#27 MD(3038.00) Inc(17.0) Azm(272.5) TVD(2986.67)
VS(121.98) NS(-14.28) EW(-417.73)



#28 MD(3127.00) Inc(16.0) Azm(270.4) TVD(3072.01)
VS(127.89) NS(-13.62) EW(-442.99)

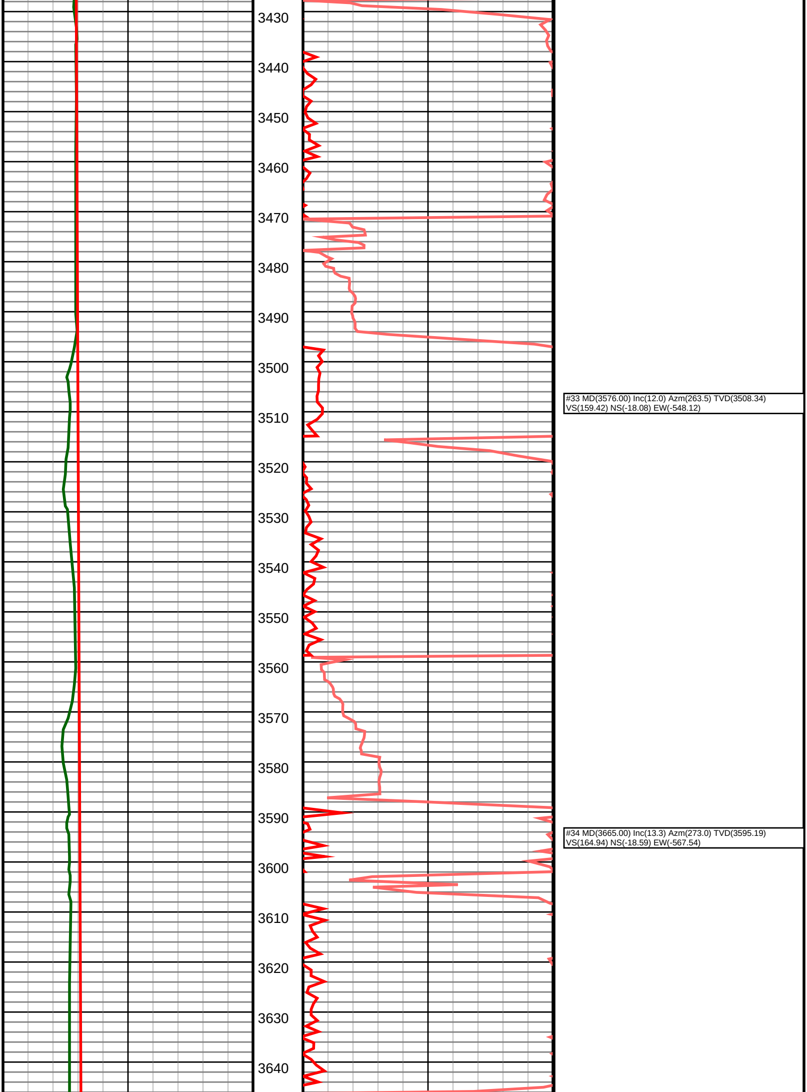
#29 MD(3217.00) Inc(15.0) Azm(267.7) TVD(3158.73)
VS(134.48) NS(-14.00) EW(-467.03)



#30 MD(3307.00) Inc(14.2) Azm(271.9) TVD(3245.83)
VS(140.45) NS(-14.11) EW(-489.71)

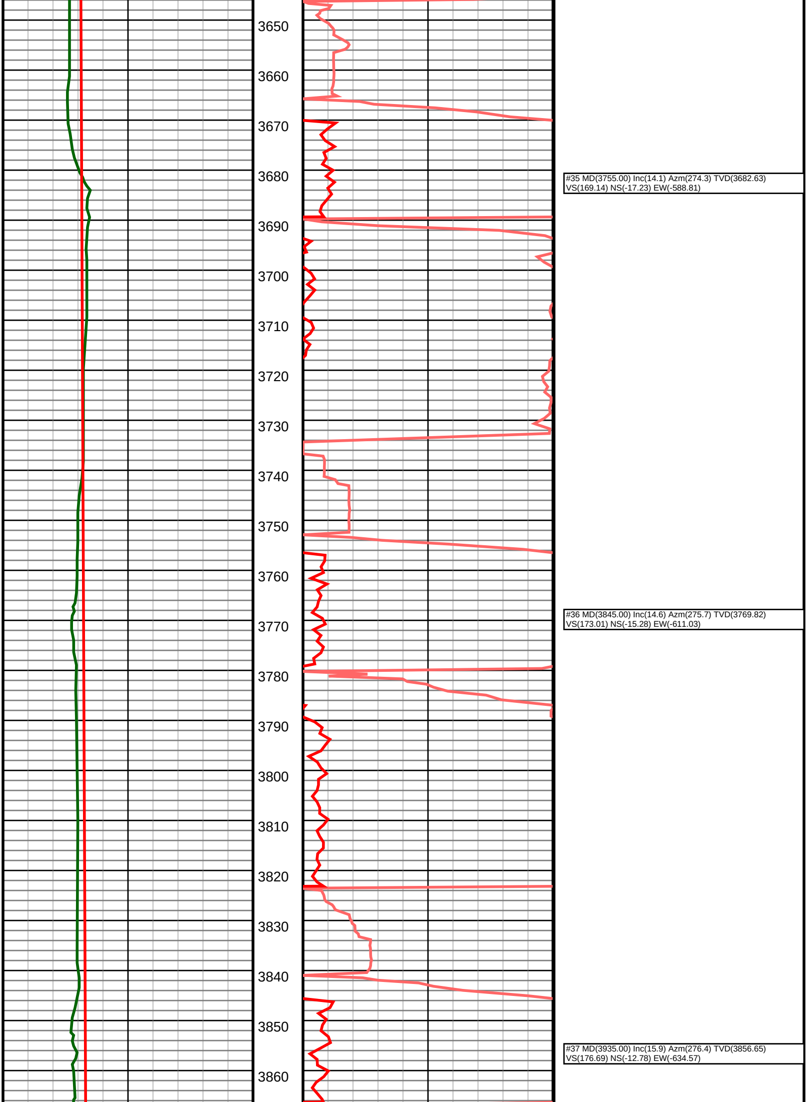
#31 MD(3396.00) Inc(12.6) Azm(267.7) TVD(3332.41)
VS(145.82) NS(-14.13) EW(-510.32)

#32 MD(3486.00) Inc(12.1) Azm(262.4) TVD(3420.33)
VS(152.36) NS(-15.77) EW(-529.48)



#33 MD(3576.00) Inc(12.0) Azm(263.5) TVD(3508.34)
VS(159.42) NS(-18.08) EW(-548.12)

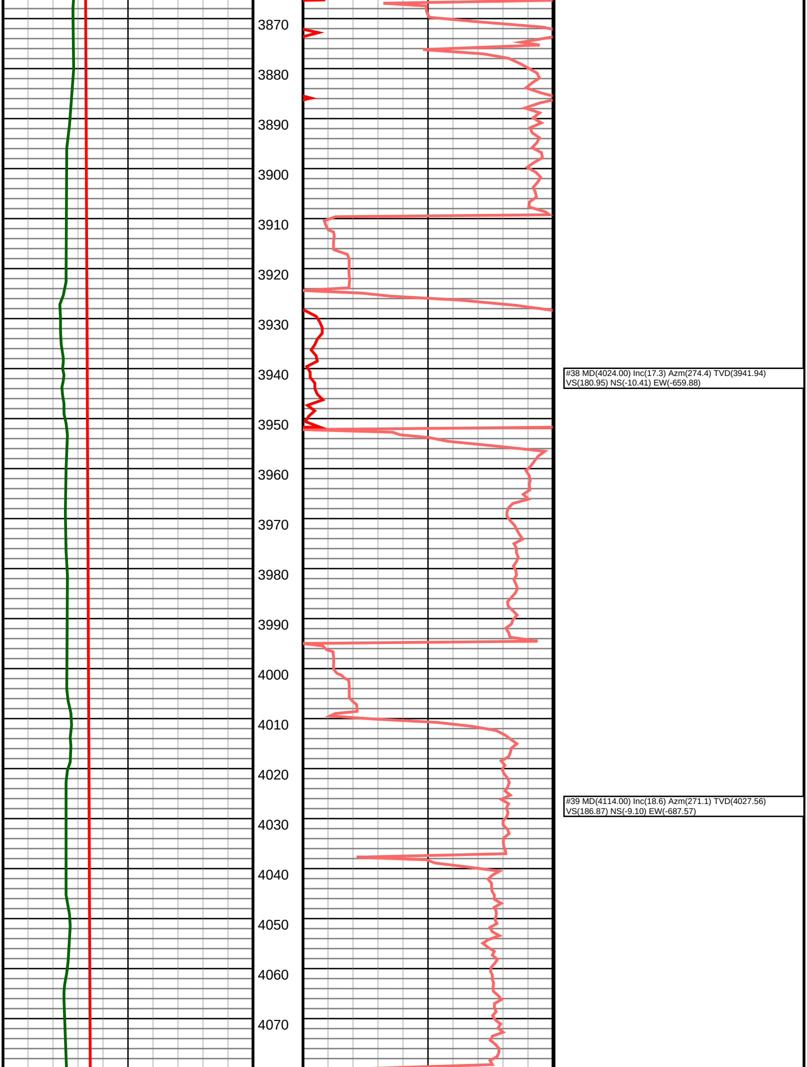
#34 MD(3665.00) Inc(13.3) Azm(273.0) TVD(3595.19)
VS(164.94) NS(-18.59) EW(-567.54)



#35 MD(3755.00) Inc(14.1) Azm(274.3) TVD(3682.63)
VS(169.14) NS(-17.23) EW(-588.81)

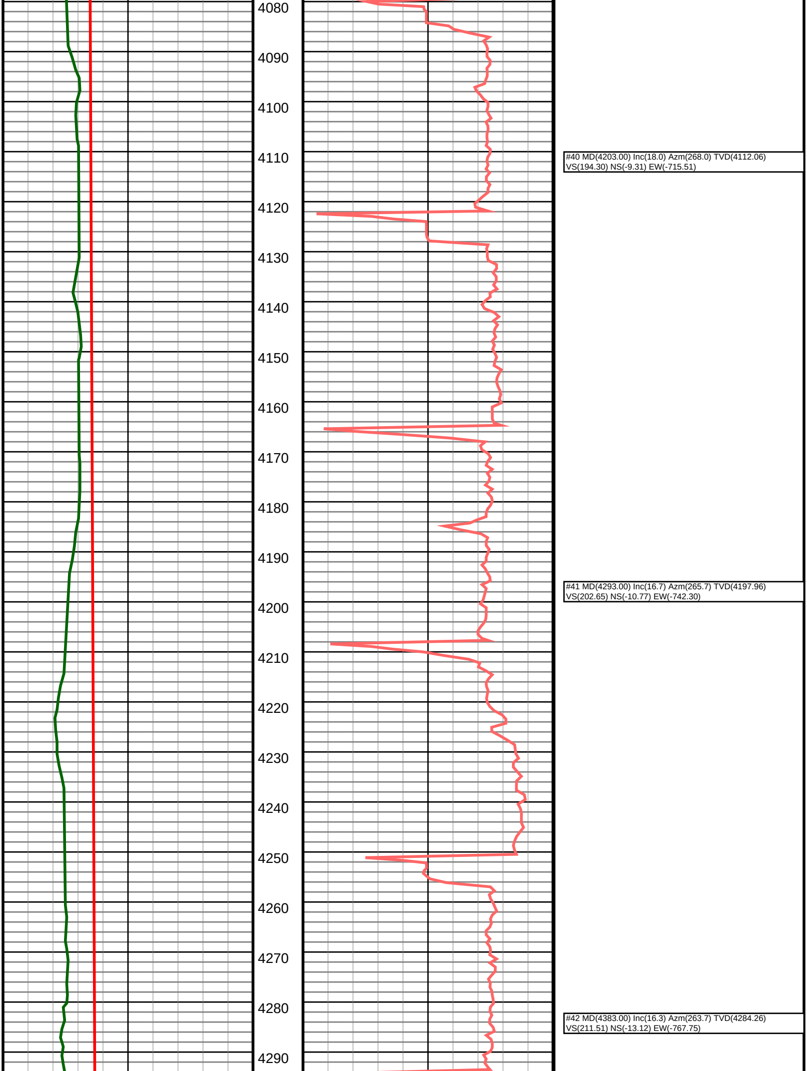
#36 MD(3845.00) Inc(14.6) Azm(275.7) TVD(3769.82)
VS(173.01) NS(-15.28) EW(-611.03)

#37 MD(3935.00) Inc(15.9) Azm(276.4) TVD(3856.65)
VS(176.69) NS(-12.78) EW(-634.57)



#38 MD(4024.00) Inc(17.3) Azm(274.4) TVD(3941.94)
VS(180.95) NS(-10.41) EW(-659.88)

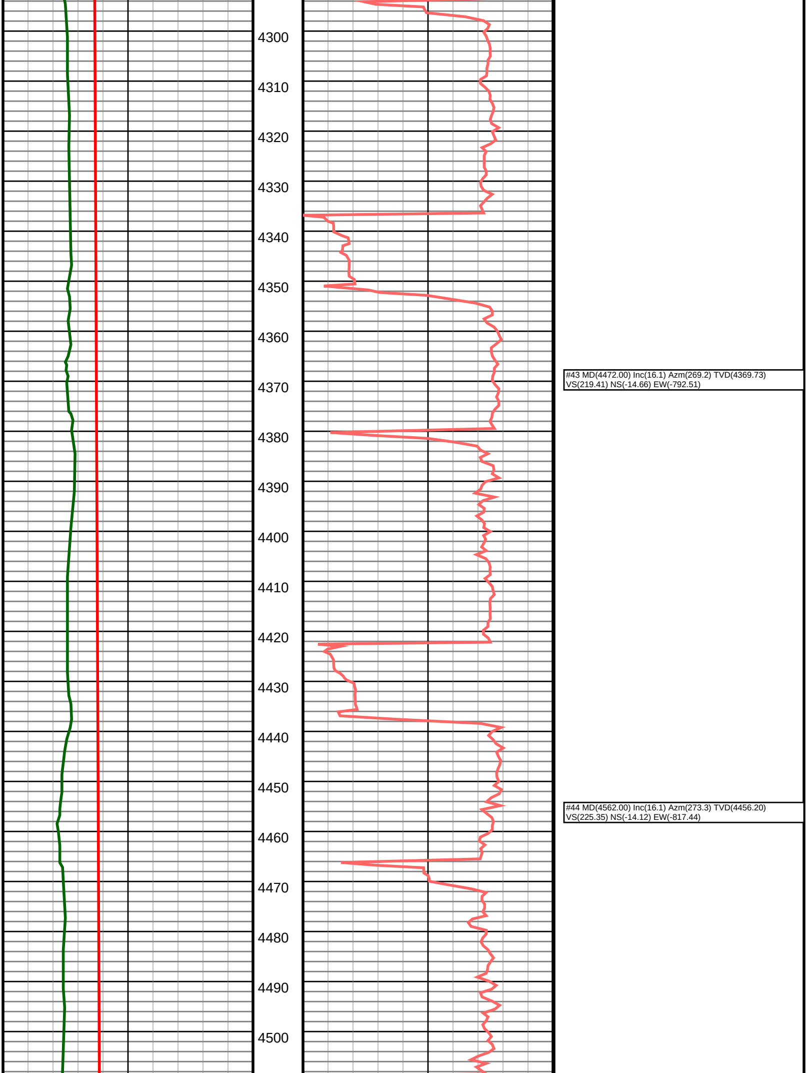
#39 MD(4114.00) Inc(18.6) Azm(271.1) TVD(4027.56)
VS(186.87) NS(-9.10) EW(-687.57)



#40 MD(4203.00) Inc(18.0) Azm(268.0) TVD(4112.06)
VS(194.30) NS(-9.31) EW(-715.51)

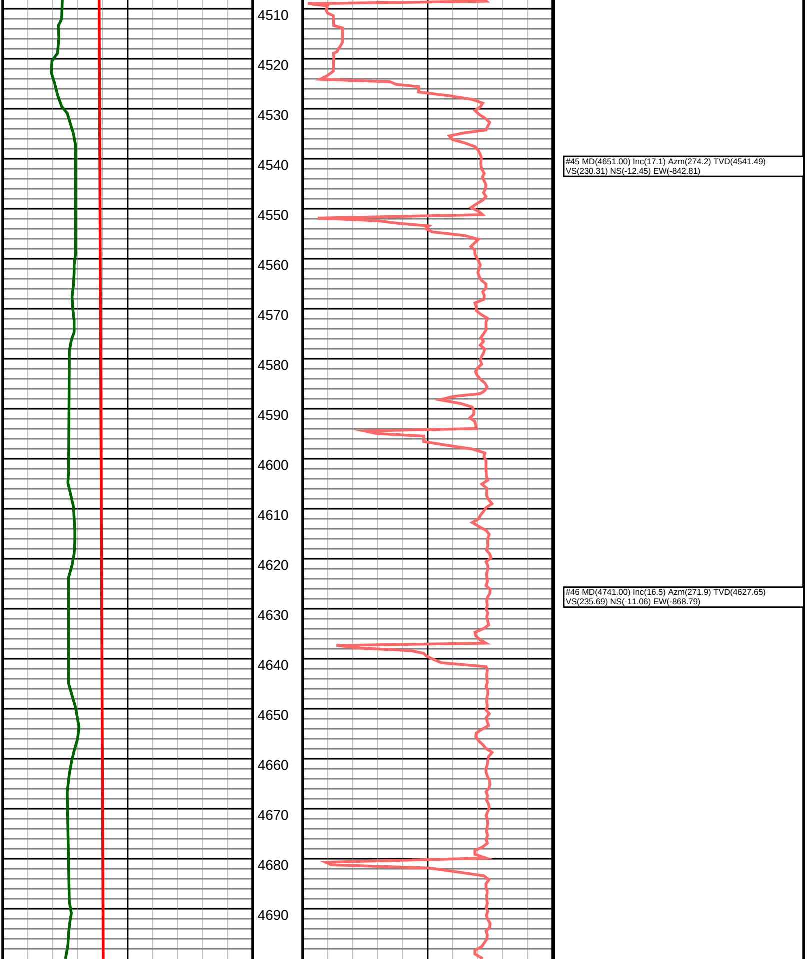
#41 MD(4293.00) Inc(16.7) Azm(265.7) TVD(4197.96)
VS(202.65) NS(-10.77) EW(-742.30)

#42 MD(4383.00) Inc(16.3) Azm(263.7) TVD(4284.26)
VS(211.51) NS(-13.12) EW(-767.75)



#43 MD(4472.00) Inc(16.1) Azm(269.2) TVD(4369.73)
VS(219.41) NS(-14.66) EW(-792.51)

#44 MD(4562.00) Inc(16.1) Azm(273.3) TVD(4456.20)
VS(225.35) NS(-14.12) EW(-817.44)



#45 MD(4651.00) Inc(17.1) Azm(274.2) TVD(4541.49)
VS(230.31) NS(-12.45) EW(-842.81)

#46 MD(4741.00) Inc(16.5) Azm(271.9) TVD(4627.65)
VS(235.69) NS(-11.06) EW(-868.79)

#47 MD(4831.00) Inc(15.0) Azm(268.8) TVD(4714.27)
VS(241.84) NS(-10.88) EW(-893.21)

#48 MD(4920.00) Inc(15.6) Azm(270.8) TVD(4800.12)
VS(247.99) NS(-10.95) EW(-916.69)

#49 MD(5010.00) Inc(16.1) Azm(272.2) TVD(4886.70)
VS(253.73) NS(-10.30) EW(-941.26)

#50 MD(5100.00) Inc(16.2) Azm(272.3) TVD(4973.14)
VS(259.26) NS(-9.32) EW(-966.27)

#51 MD(5189.00) Inc(16.4) Azm(269.6) TVD(5058.57)
VS(265.33) NS(-8.91) EW(-991.24)

#52 MD(5279.00) Inc(17.8) Azm(265.9) TVD(5144.59)
VS(273.21) NS(-9.98) EW(-1017.67)

#53 MD(5369.00) Inc(15.9) Azm(263.8) TVD(5230.72)
VS(282.17) NS(-12.30) EW(-1043.65)

#54 MD(5458.00) Inc(15.2) Azm(262.0) TVD(5316.46)
VS(291.14) NS(-15.24) EW(-1067.32)

#55 MD(5548.00) Inc(13.1) Azm(261.1) TVD(5403.73)
VS(299.89) NS(-18.46) EW(-1089.09)

#56 MD(5637.00) Inc(13.9) Azm(268.7) TVD(5490.28)
VS(306.98) NS(-20.26) EW(-1109.74)

#57 MD(5727.00) Inc(14.8) Azm(264.0) TVD(5577.47)
VS(314.14) NS(-21.71) EW(-1131.98)

#58 MD(5817.00) Inc(14.7) Azm(266.0) TVD(5664.50)
VS(321.98) NS(-23.71) EW(-1154.80)

#59 MD(5906.00) Inc(15.7) Azm(266.6) TVD(5750.39)
VS(329.46) NS(-25.21) EW(-1178.09)

#60 MD(5996.00) Inc(13.6) Azm(270.3) TVD(5837.46)
VS(335.99) NS(-25.88) EW(-1200.83)

#61 MD(6086.00) Inc(14.0) Azm(264.2) TVD(5924.87)
VS(342.55) NS(-26.92) EW(-1222.24)

#62 MD(6175.00) Inc(14.2) Azm(265.3) TVD(6011.19)
VS(350.05) NS(-28.90) EW(-1243.83)

#63 MD(6265.00) Inc(14.8) Azm(266.4) TVD(6098.32)
VS(357.45) NS(-30.53) EW(-1266.31)

#64 MD(6355.00) Inc(15.3) Azm(263.5) TVD(6185.23)
VS(365.47) NS(-32.60) EW(-1289.58)

#65 MD(6444.00) Inc(15.6) Azm(259.9) TVD(6271.02)
VS(374.85) NS(-36.02) EW(-1313.03)

#66 MD(6489.00) Inc(17.5) Azm(252.6) TVD(6314.16)
VS(381.05) NS(-39.11) EW(-1325.44)

#67 MD(6534.00) Inc(20.8) Azm(244.1) TVD(6356.67)
VS(389.91) NS(-44.62) EW(-1339.09)

#68 MD(6579.00) Inc(22.3) Azm(236.3) TVD(6398.53)
VS(401.56) NS(-52.85) EW(-1353.39)

#69 MD(6623.00) Inc(23.2) Azm(229.3) TVD(6439.12)
VS(415.00) NS(-63.14) EW(-1366.91)

#70 MD(6668.00) Inc(24.4) Azm(221.1) TVD(6480.30)
VS(430.67) NS(-75.93) EW(-1379.74)

#71 MD(6713.00) Inc(27.7) Azm(213.3) TVD(6520.73)
VS(448.96) NS(-91.68) EW(-1391.60)

#72 MD(6757.00) Inc(30.5) Azm(209.0) TVD(6559.18)
VS(469.51) NS(-110.00) EW(-1402.63)

#73 MD(6802.00) Inc(30.6) Azm(205.4) TVD(6597.94)
VS(491.86) NS(-130.34) EW(-1413.08)

#74 MD(6847.00) Inc(30.4) Azm(204.8) TVD(6636.71)
VS(514.35) NS(-151.02) EW(-1422.77)

#75 MD(6891.00) Inc(33.1) Azm(202.8) TVD(6674.12)
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#76 MD(6936.00) Inc(37.1) Azm(200.4) TVD(6710.94)
VS(562.92) NS(-196.27) EW(-1441.59)

#77 MD(6981.00) Inc(42.1) Azm(197.5) TVD(6745.60)
VS(591.53) NS(-223.39) EW(-1450.87)

#78 MD(7026.00) Inc(48.0) Azm(195.1) TVD(6777.38)
VS(623.35) NS(-253.95) EW(-1459.77)

#79 MD(7071.00) Inc(53.5) Azm(191.0) TVD(6805.85)
VS(658.15) NS(-287.88) EW(-1467.58)

#80 MD(7115.00) Inc(56.0) Azm(187.3) TVD(6831.25)
VS(693.88) NS(-323.35) EW(-1473.28)

#81 MD(7160.00) Inc(58.9) Azm(182.9) TVD(6855.46)
VS(731.22) NS(-361.11) EW(-1476.62)

#82 MD(7205.00) Inc(59.8) Azm(182.1) TVD(6878.41)
VS(769.01) NS(-399.79) EW(-1478.31)

#83 MD(7250.00) Inc(62.9) Azm(183.0) TVD(6899.98)
VS(807.57) NS(-439.23) EW(-1480.07)

#84 MD(7295.00) Inc(65.4) Azm(183.8) TVD(6919.60)
VS(847.23) NS(-479.66) EW(-1482.48)

#85 MD(7339.00) Inc(68.9) Azm(184.9) TVD(6936.68)
VS(887.08) NS(-520.08) EW(-1485.56)

#86 MD(7384.00) Inc(71.3) Azm(186.1) TVD(6952.00)
VS(928.80) NS(-562.19) EW(-1489.61)

#87 MD(7429.00) Inc(76.8) Azm(185.7) TVD(6964.36)
VS(971.51) NS(-605.22) EW(-1494.06)

#89 MD(7538.00) Inc(91.6) Azm(181.1) TVD(6975.32)
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