ENSIGN
Directional Services

Rohn State LD10-64-1HN

MD
5":100'

Company: Noble Energy
Well Name: Rohn State LD10-64-1HN
API: 05-123-37622
Rig Id: Precision 829
State: Colorado
County/Parish: Weld
Country: USA
Survey Company: Ensign Directional
Job number: PD829-207-26
DD1 Zach Gentry
DD2 Colby Hansen
DD3 Tony Callow
MWD1 Andrew Demrow
MWD2 Buster Snider

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

	Depth	Date
Start:	1252 ft	10-09-2014
End:	10213 ft	10-17-2014

Casing	Depth	Size
Surface:	1239	9 5/8
Intermediate:	6111	7

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

Elevations
KB: 16
GL: 4716
DF: 4732

Run	Bit Size	Offsets Gamma	Offsets Survey	Depths Start	Depths End	Dates Start	Dates End
1	13.5			0	1252	10-08-2014	10-09-2014
2	8.75	57.79	52.79	1252	6120	10-09-2014	10-11-2014
3	6.125	65.95	60.95	6120	7731	10-12-2014	10-14-2014
4	6.125	65.80	60.80	7731	9997	10-14-2014	10-16-2014
5	6.125	65.80	60.80	9997	10213	10-16-2014	10-17-2014
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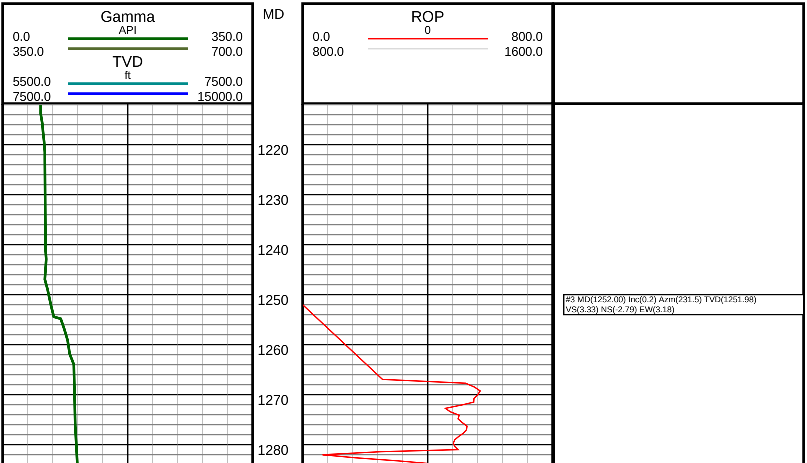
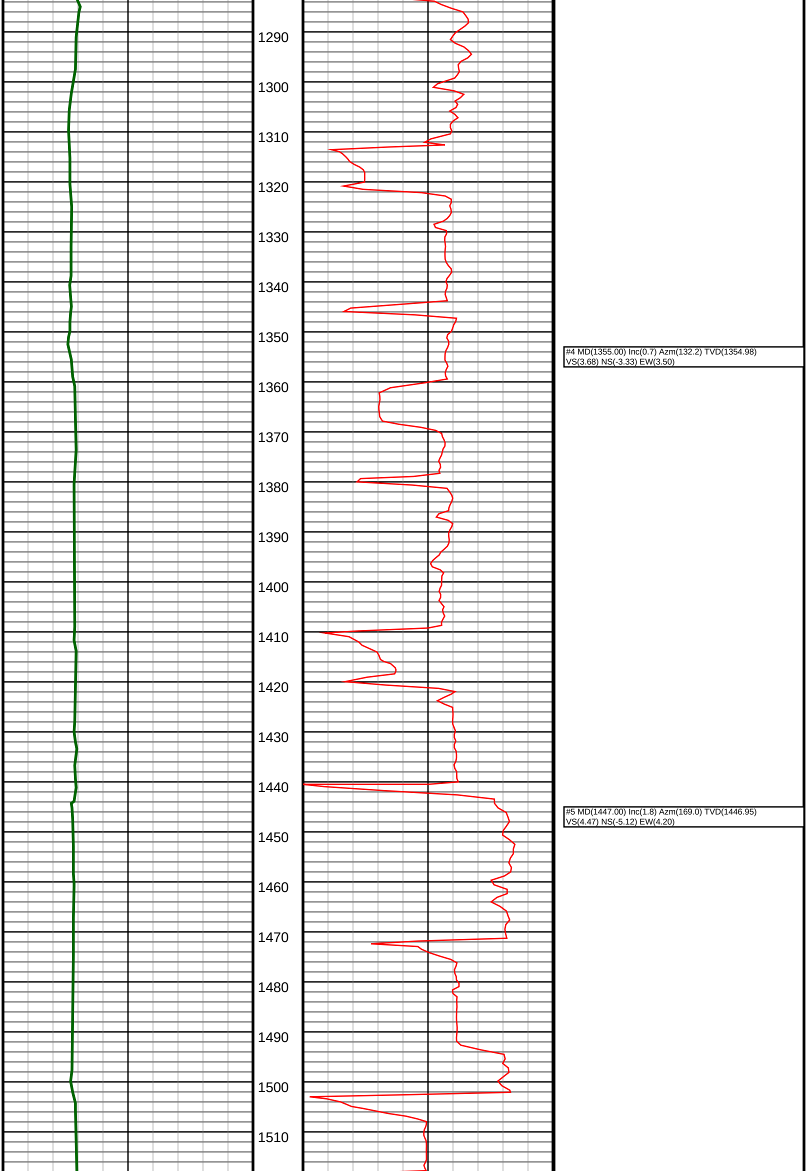
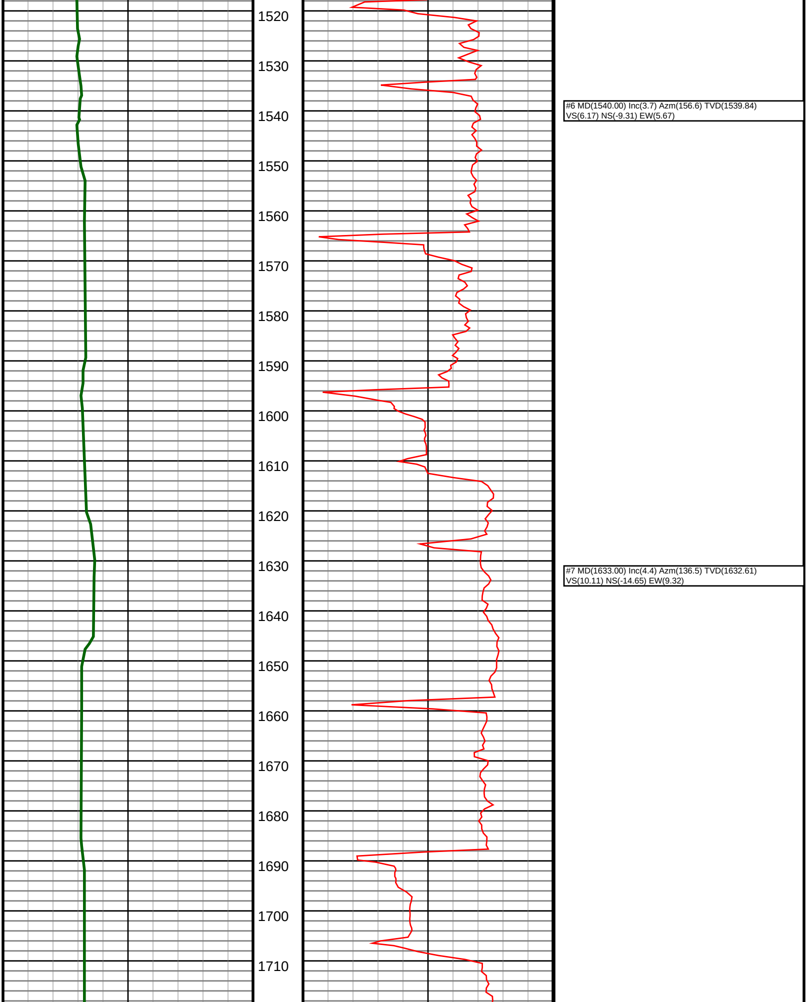
Ensign Directional uses its best efforts to provide its customers with accurate information and interpretations in conjunction with services performed but will not be held liable or responsible for the accuracy of such information or interpretation.





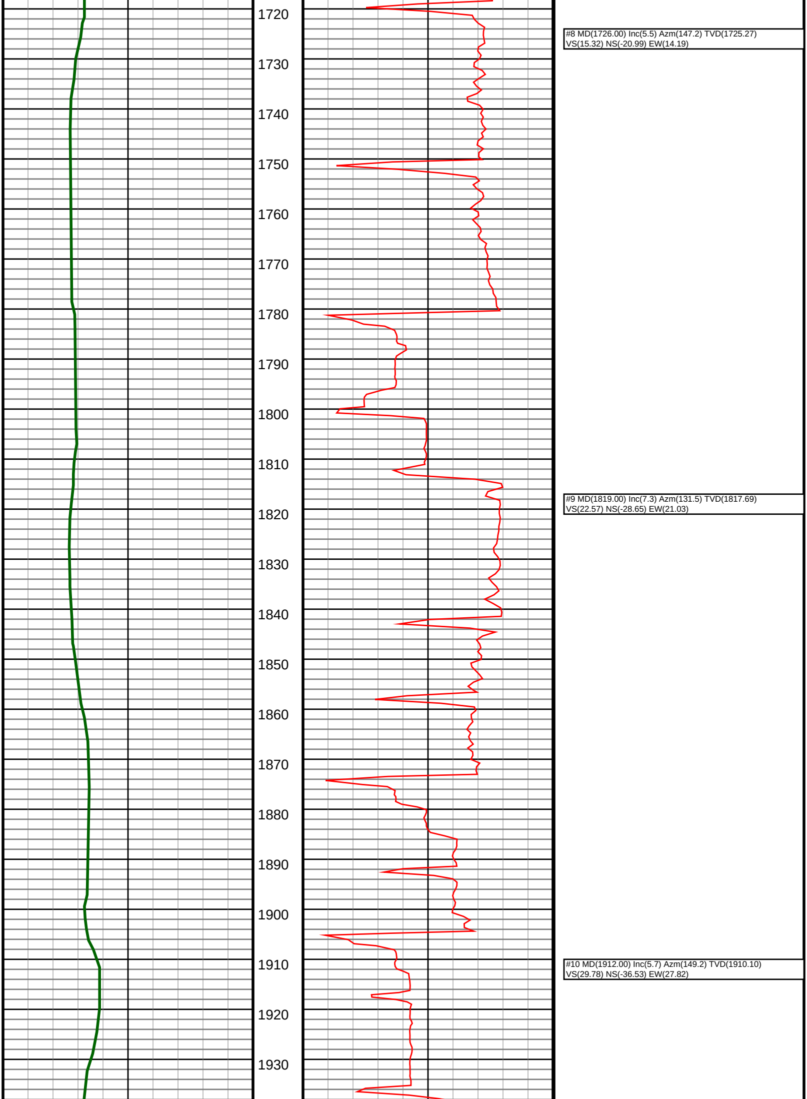
#4 MD(1355.00) Inc(0.7) Azm(132.2) TVD(1354.98)
VS(3.68) NS(-3.33) EW(3.50)

#5 MD(1447.00) Inc(1.8) Azm(169.0) TVD(1446.95)
VS(4.47) NS(-5.12) EW(4.20)



#6 MD(1540.00) Inc(3.7) Azm(156.6) TVD(1539.84)
VS(6.17) NS(-9.31) EW(5.67)

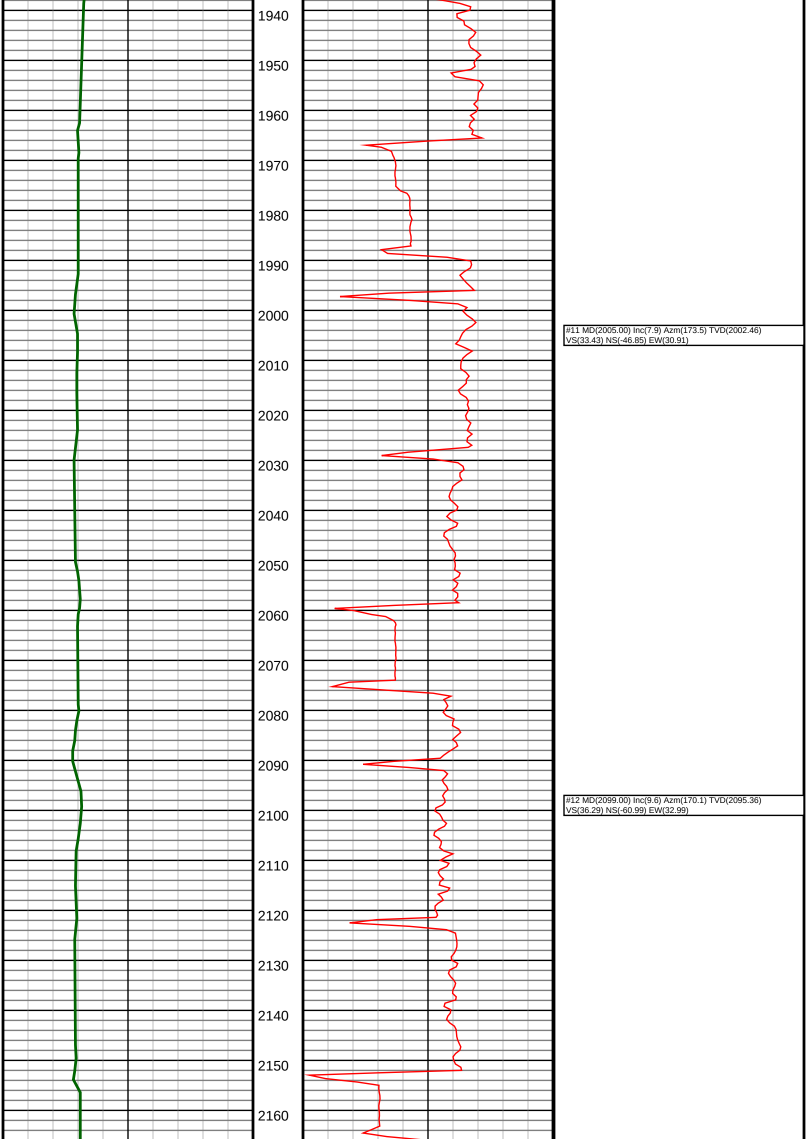
#7 MD(1633.00) Inc(4.4) Azm(136.5) TVD(1632.61)
VS(10.11) NS(-14.65) EW(9.32)



#8 MD(1726.00) Inc(5.5) Azm(147.2) TVD(1725.27)
VS(15.32) NS(-20.99) EW(14.19)

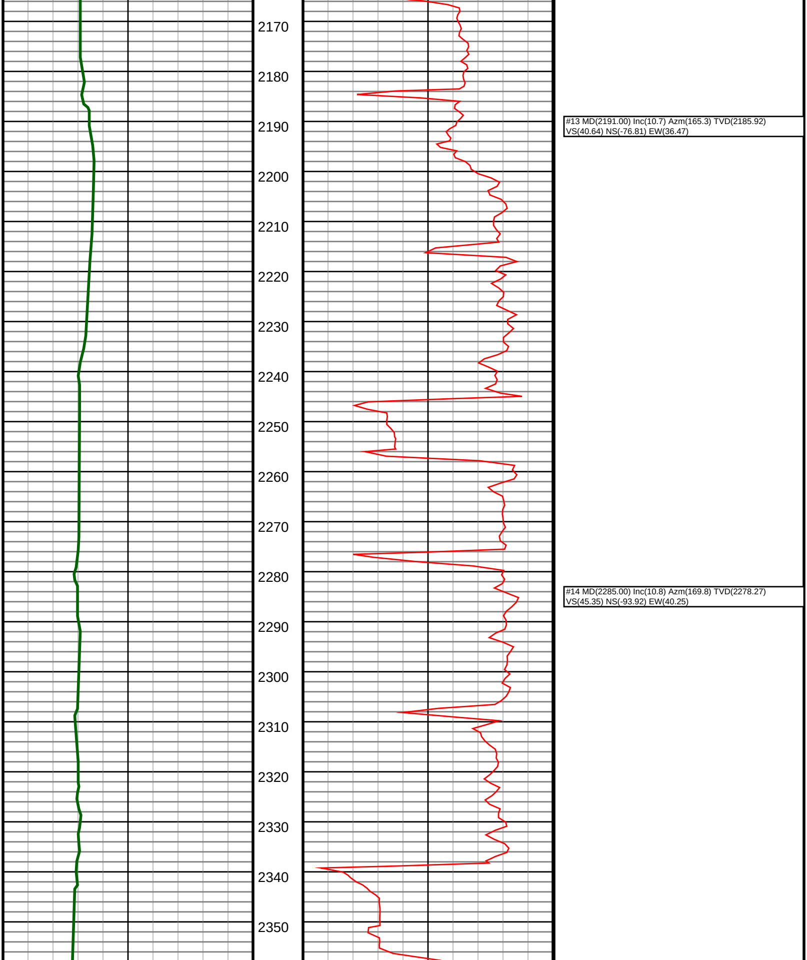
#9 MD(1819.00) Inc(7.3) Azm(131.5) TVD(1817.69)
VS(22.57) NS(-28.65) EW(21.03)

#10 MD(1912.00) Inc(5.7) Azm(149.2) TVD(1910.10)
VS(29.78) NS(-36.53) EW(27.82)



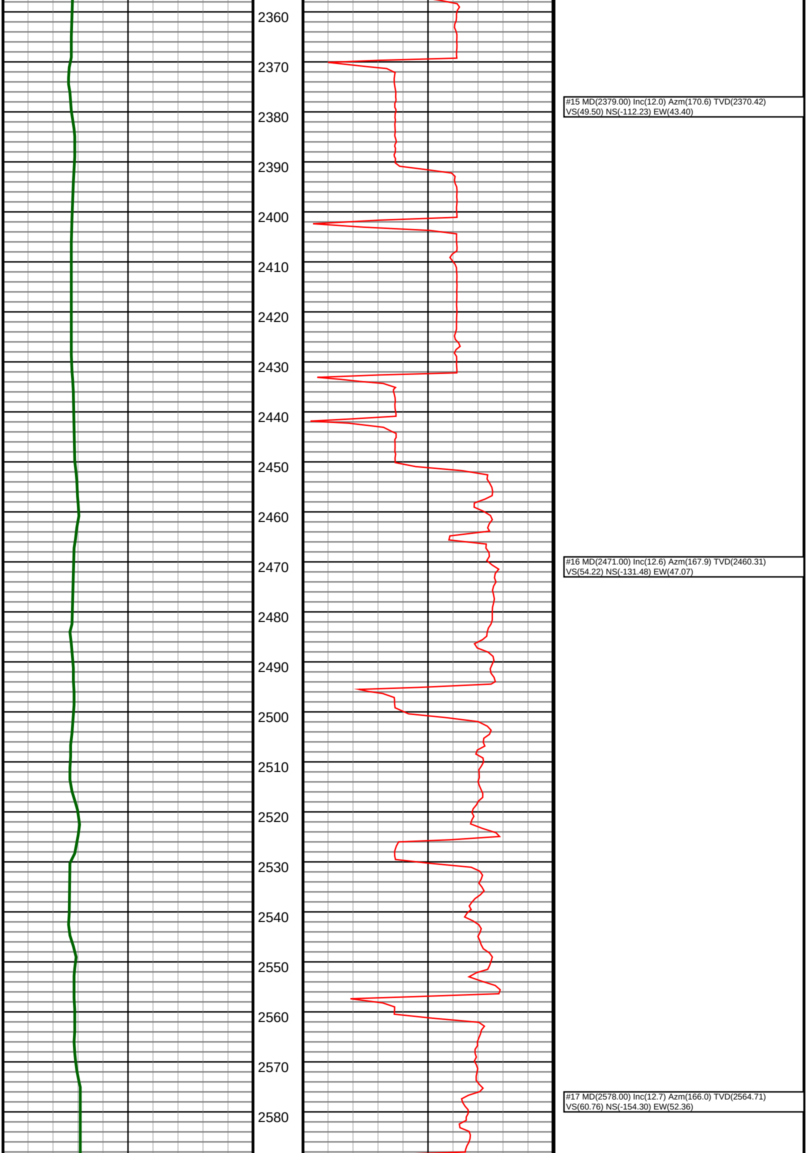
#11 MD(2005.00) Inc(7.9) Azm(173.5) TVD(2002.46)
VS(33.43) NS(-46.85) EW(30.91)

#12 MD(2099.00) Inc(9.6) Azm(170.1) TVD(2095.36)
VS(36.29) NS(-60.99) EW(32.99)



#13 MD(2191.00) Inc(10.7) Azm(165.3) TVD(2185.92)
VS(40.64) NS(-76.81) EW(36.47)

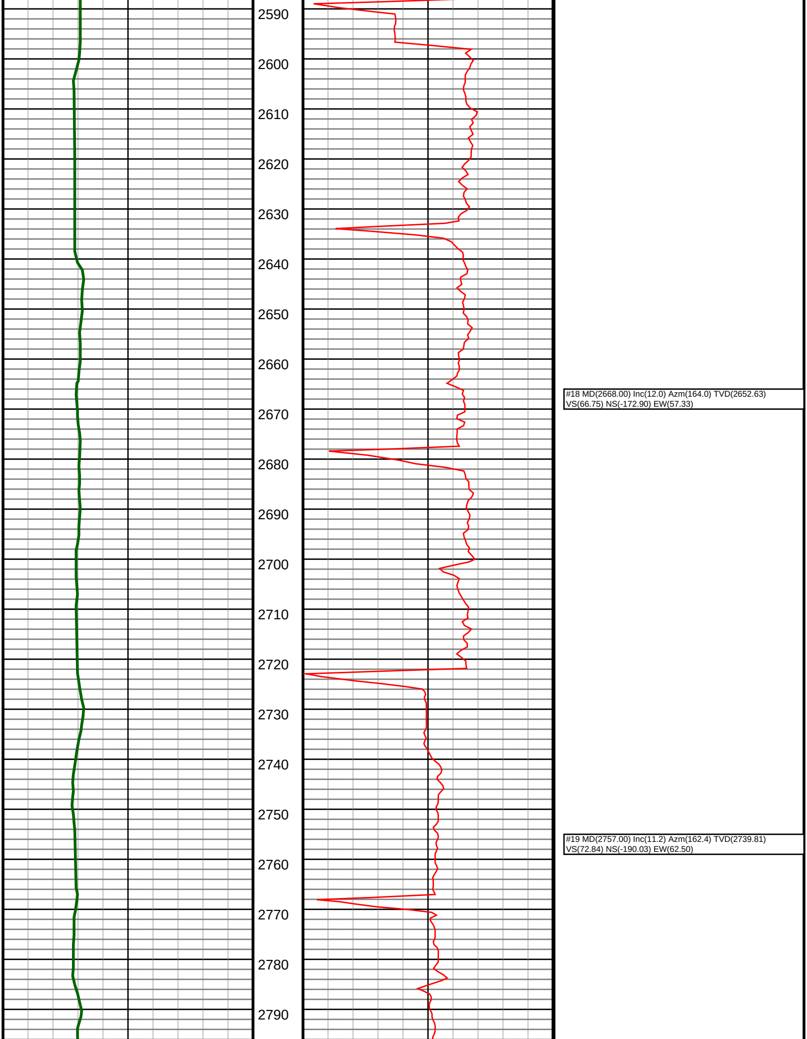
#14 MD(2285.00) Inc(10.8) Azm(169.8) TVD(2278.27)
VS(45.35) NS(-93.92) EW(40.25)



#15 MD(2379.00) Inc(12.0) Azm(170.6) TVD(2370.42)
VS(49.50) NS(-112.23) EW(43.40)

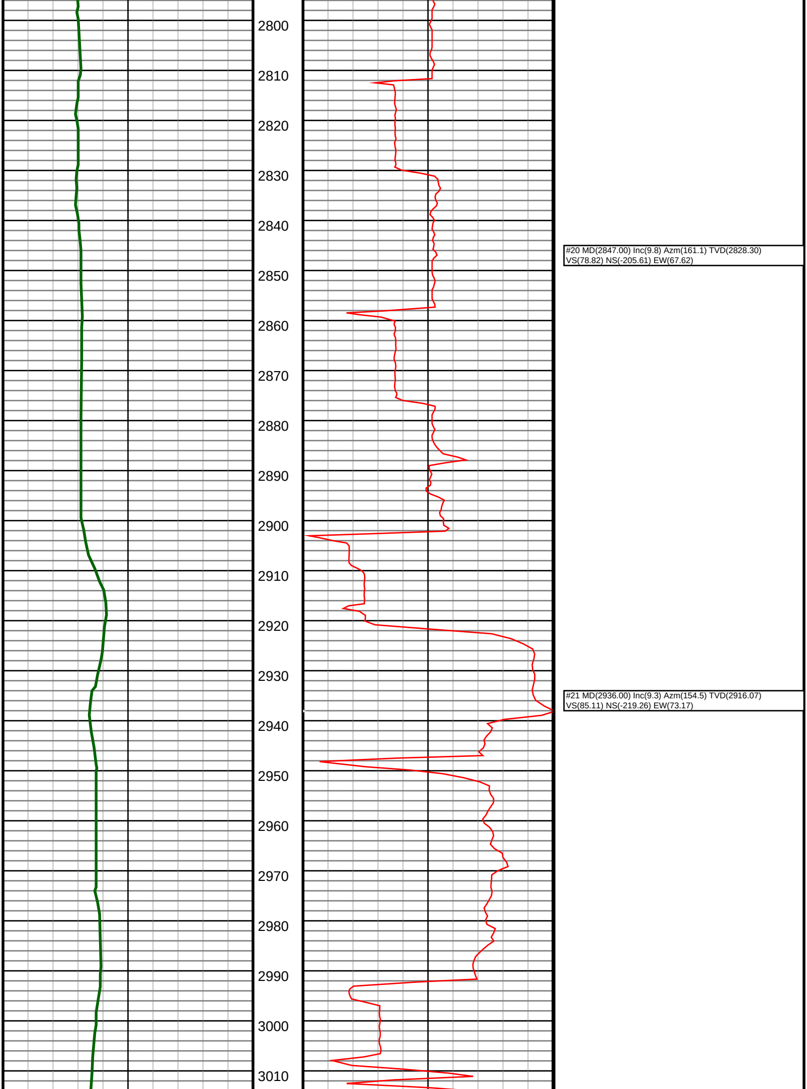
#16 MD(2471.00) Inc(12.6) Azm(167.9) TVD(2460.31)
VS(54.22) NS(-131.48) EW(47.07)

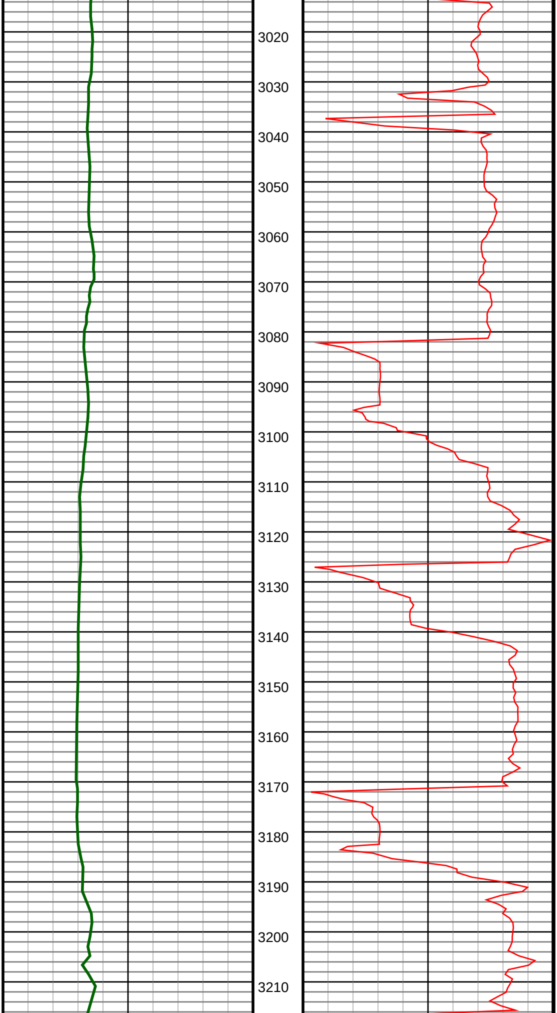
#17 MD(2578.00) Inc(12.7) Azm(166.0) TVD(2564.71)
VS(60.76) NS(-154.30) EW(52.36)



#18 MD(2668.00) Inc(12.0) Azm(164.0) TVD(2652.63)
VS(66.75) NS(-172.90) EW(57.33)

#19 MD(2757.00) Inc(11.2) Azm(162.4) TVD(2739.81)
VS(72.84) NS(-190.03) EW(62.50)

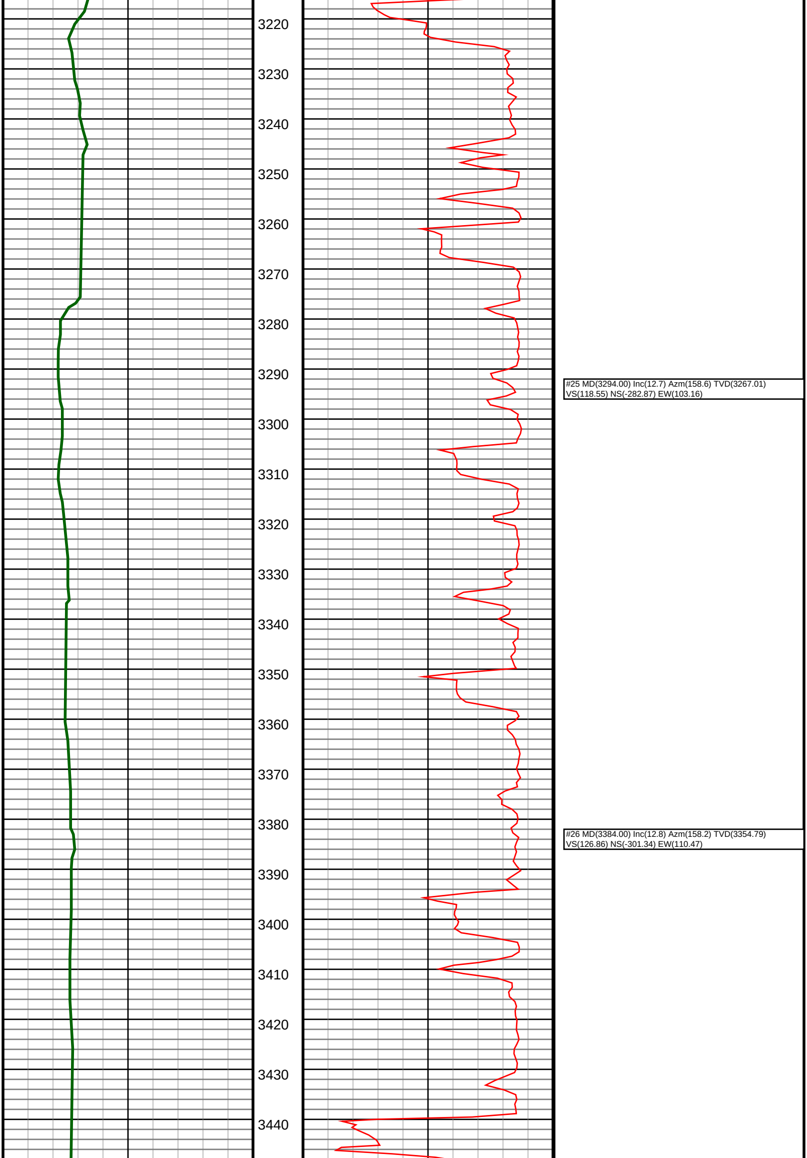




#22 MD(3026.00) Inc(10.3) Azm(150.3) TVD(3004.76)
VS(92.96) NS(-232.82) EW(80.29)

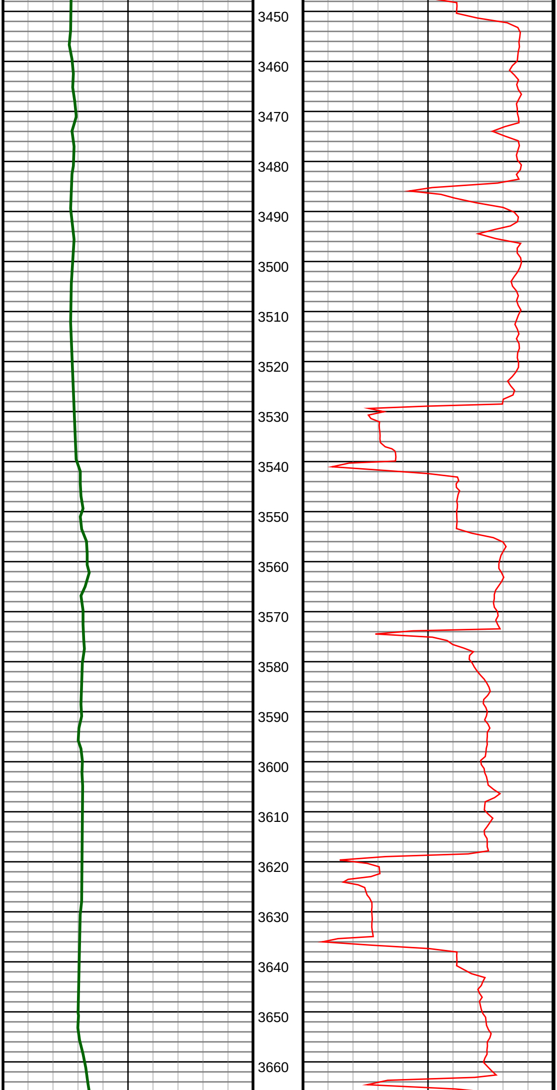
#23 MD(3115.00) Inc(11.5) Azm(153.2) TVD(3092.15)
VS(101.70) NS(-247.65) EW(88.23)

#24 MD(3205.00) Inc(12.6) Azm(158.0) TVD(3180.17)
VS(110.36) NS(-264.76) EW(95.95)



#25 MD(3294.00) Inc(12.7) Azm(158.6) TVD(3267.01)
VS(118.55) NS(-282.87) EW(103.16)

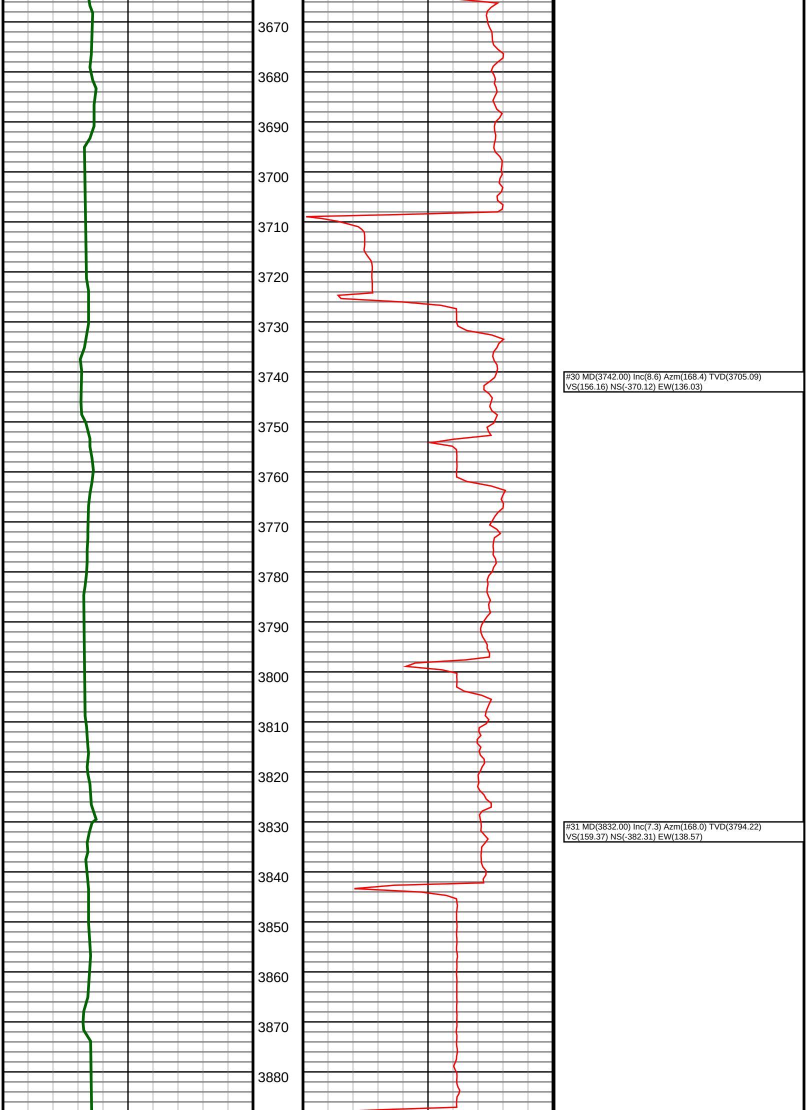
#26 MD(3384.00) Inc(12.8) Azm(158.2) TVD(3354.79)
VS(126.86) NS(-301.34) EW(110.47)



#27 MD(3474.00) Inc(12.9) Azm(156.9) TVD(3442.53)
VS(135.51) NS(-319.83) EW(118.11)

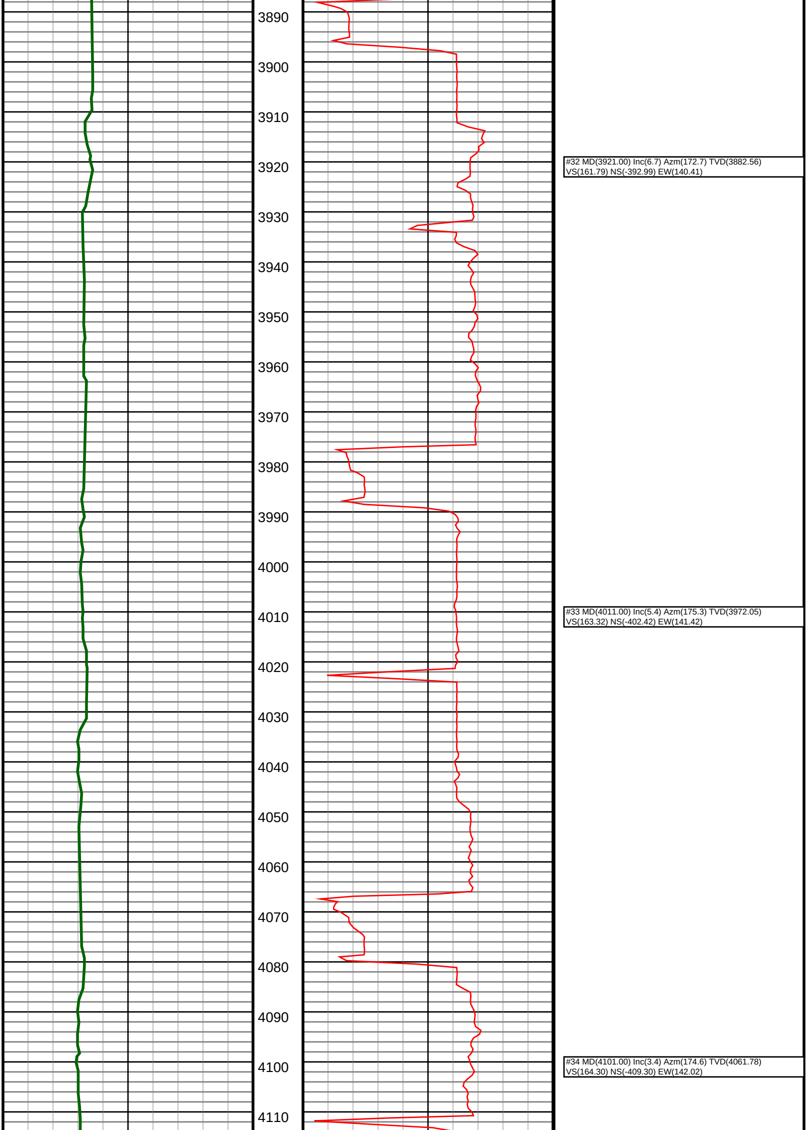
#28 MD(3563.00) Inc(12.2) Azm(157.5) TVD(3529.41)
VS(143.98) NS(-337.66) EW(125.61)

#29 MD(3653.00) Inc(11.6) Azm(162.4) TVD(3617.47)
VS(151.30) NS(-355.07) EW(131.99)



#30 MD(3742.00) Inc(8.6) Azm(168.4) TVD(3705.09)
VS(156.16) NS(-370.12) EW(136.03)

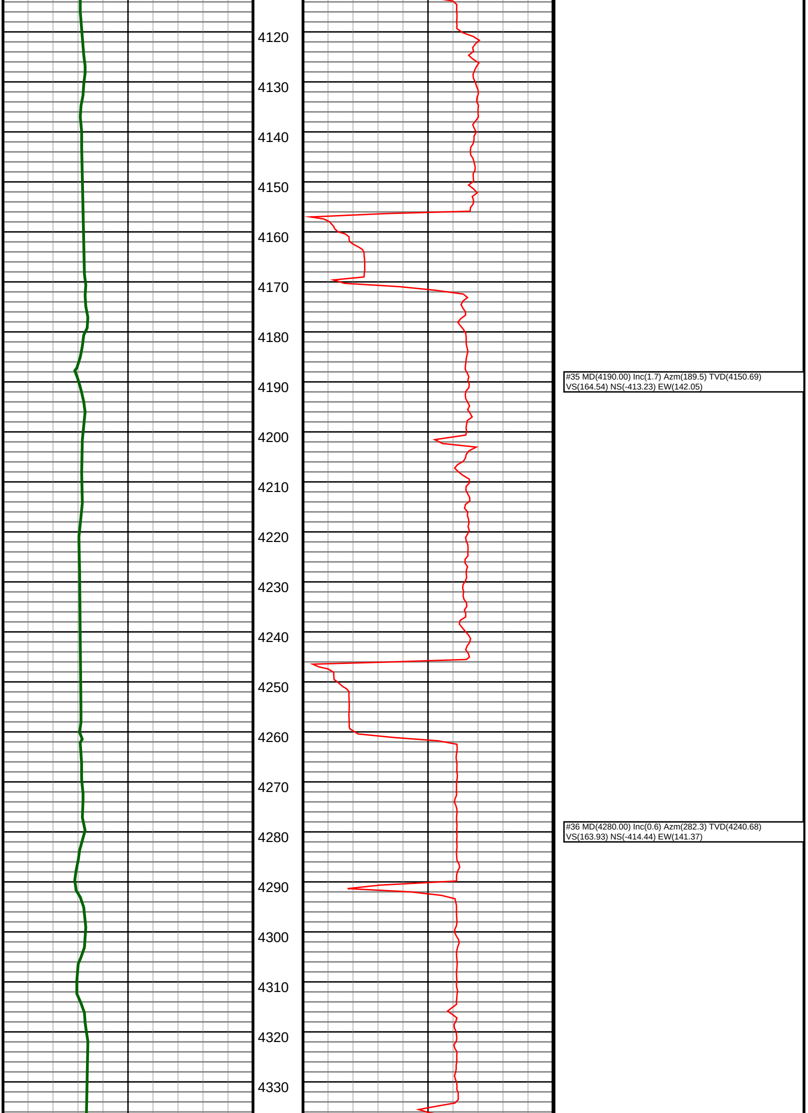
#31 MD(3832.00) Inc(7.3) Azm(168.0) TVD(3794.22)
VS(159.37) NS(-382.31) EW(138.57)



#32 MD(3921.00) Inc(6.7) Azm(172.7) TVD(3882.56)
VS(161.79) NS(-392.99) EW(140.41)

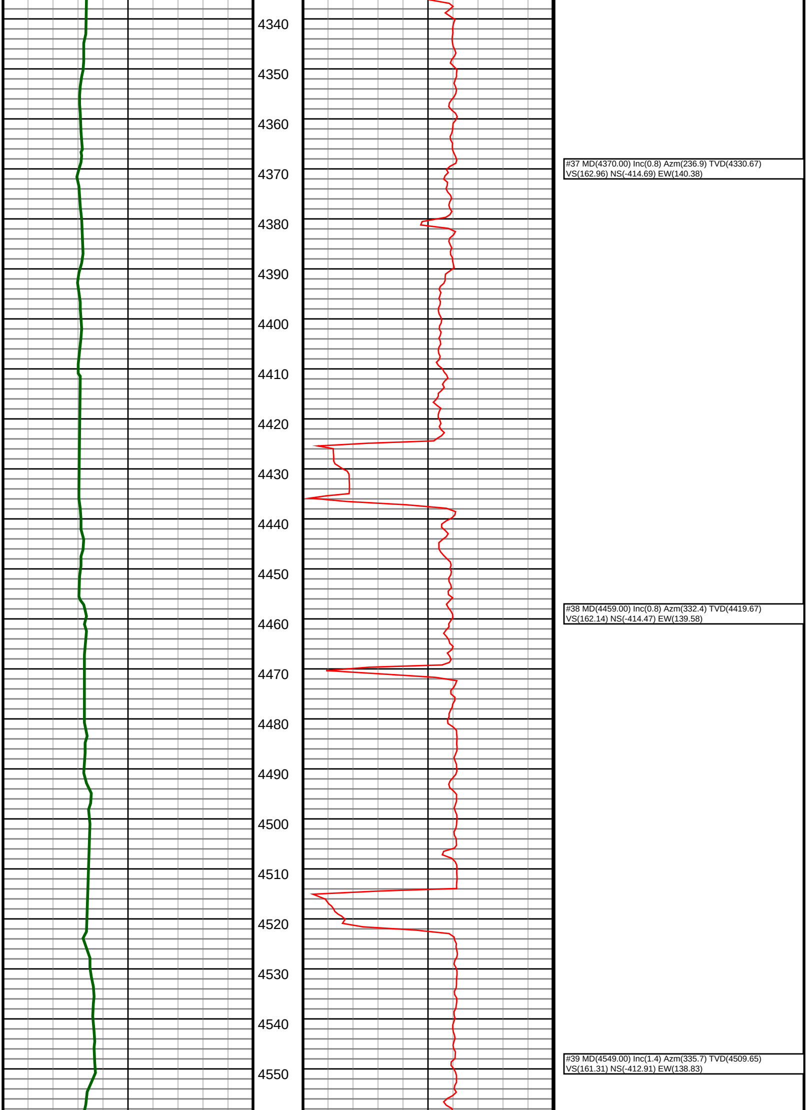
#33 MD(4011.00) Inc(5.4) Azm(175.3) TVD(3972.05)
VS(163.32) NS(-402.42) EW(141.42)

#34 MD(4101.00) Inc(3.4) Azm(174.6) TVD(4061.78)
VS(164.30) NS(-409.30) EW(142.02)



#35 MD(4190.00) Inc(1.7) Azm(189.5) TVD(4150.69)
VS(164.54) NS(-413.23) EW(142.05)

#36 MD(4280.00) Inc(0.6) Azm(282.3) TVD(4240.68)
VS(163.93) NS(-414.44) EW(141.37)



#37 MD(4370.00) Inc(0.8) Azm(236.9) TVD(4330.67)
VS(162.96) NS(-414.69) EW(140.38)

#38 MD(4459.00) Inc(0.8) Azm(332.4) TVD(4419.67)
VS(162.14) NS(-414.47) EW(139.58)

#39 MD(4549.00) Inc(1.4) Azm(335.7) TVD(4509.65)
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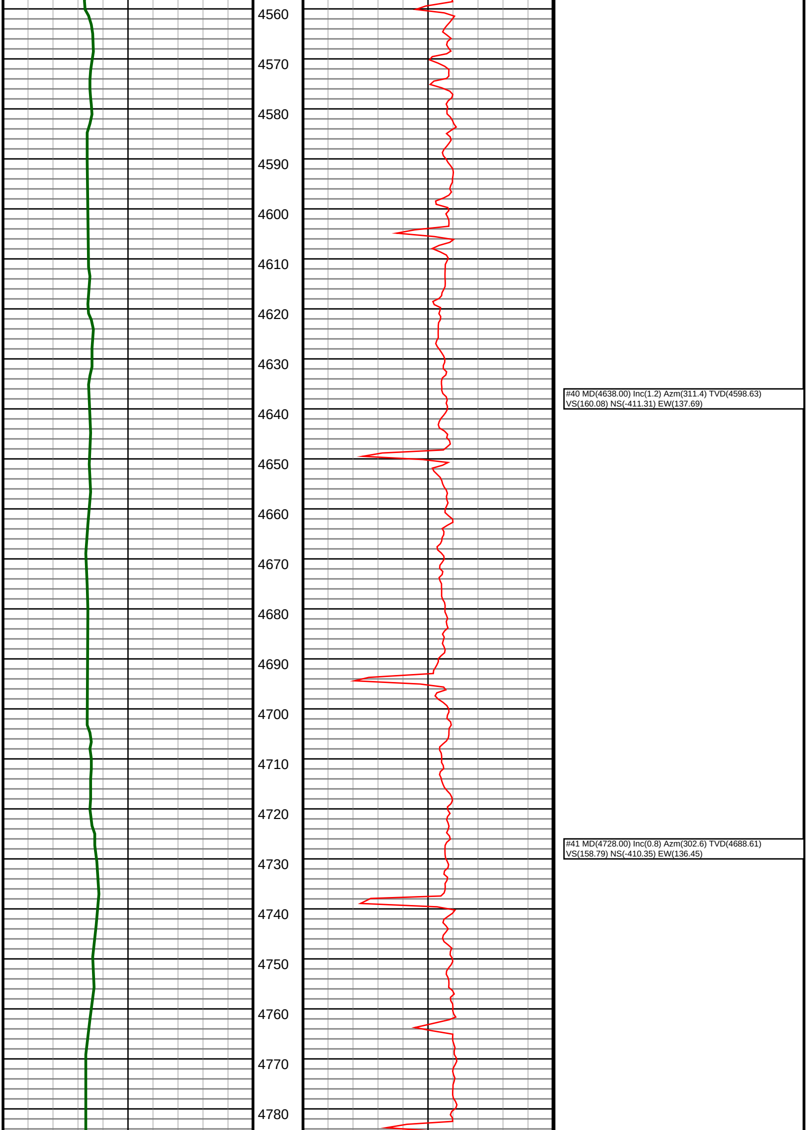

#40 MD(4638.00) Inc(1.2) Azm(311.4) TVD(4598.63)
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#41 MD(4728.00) Inc(0.8) Azm(302.6) TVD(4688.61)
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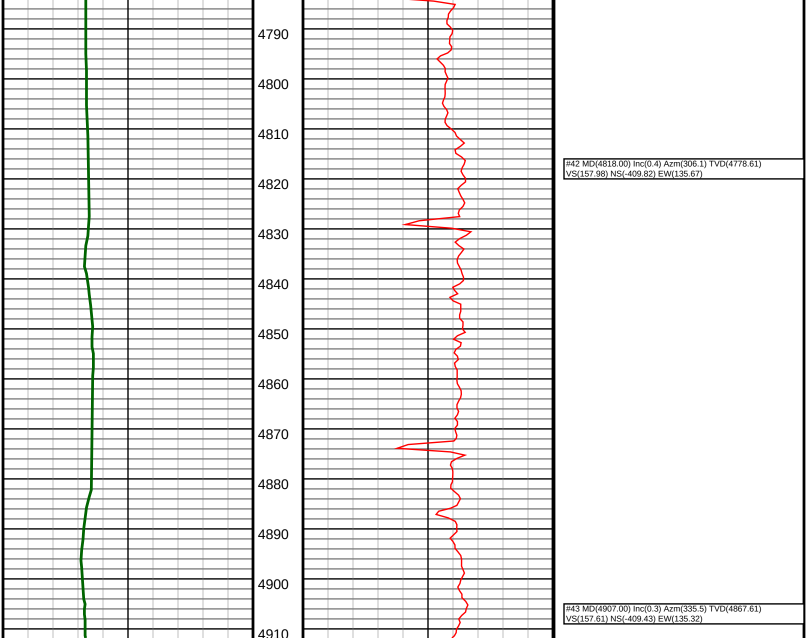

#42 MD(4818.00) Inc(0.4) Azm(306.1) TVD(4778.61)
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#43 MD(4907.00) Inc(0.3) Azm(335.5) TVD(4867.61)
VS(157.61) NS(-409.43) EW(135.32)

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#45 MD(4997.00) Inc(3.7) Azm(69.7) TVD(4957.57) VS(159.14) NS(-408.53) EW(136.90)
#46 MD(5042.00) Inc(7.5) Azm(69.7) TVD(5002.35) VS(163.17) NS(-407.00) EW(141.02)
#47 MD(5087.00) Inc(10.9) Azm(74.7) TVD(5046.76) VS(169.90) NS(-404.86) EW(147.88)
#48 MD(5131.00) Inc(12.6) Azm(80.4) TVD(5089.84) VS(178.53) NS(-402.96) EW(156.62)
#49 MD(5176.00) Inc(15.3) Azm(79.3) TVD(5133.51) VS(189.08) NS(-401.04) EW(167.30)
#50 MD(5221.00) Inc(18.4) Azm(79.4) TVD(5176.57) VS(201.75) NS(-398.63) EW(180.12)
#51 MD(5266.00) Inc(21.6) Azm(79.9) TVD(5218.85) VS(216.71) NS(-395.87) EW(195.25)
#52 MD(5311.00) Inc(24.2) Azm(81.7) TVD(5260.30) VS(233.82) NS(-393.09) EW(212.54)
#53 MD(5356.00) Inc(26.5) Azm(87.8) TVD(5300.98) VS(252.86) NS(-391.37) EW(231.70)
#54 MD(5401.00) Inc(30.1) Azm(91.6) TVD(5340.59) VS(274.14) NS(-391.30) EW(253.02)
#55 MD(5445.00) Inc(35.7) Azm(93.8) TVD(5377.52) VS(298.03) NS(-392.46) EW(276.88)
#56 MD(5490.00) Inc(41.1) Azm(93.8) TVD(5412.78) VS(325.97) NS(-394.31) EW(304.76)
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#58 MD(5580.00) Inc(46.8) Azm(90.4) TVD(5477.52) VS(388.41) NS(-396.66) EW(367.17)
#59 MD(5625.00) Inc(51.2) Azm(88.6) TVD(5507.04) VS(422.29) NS(-396.35) EW(401.12)
#60 MD(5669.00) Inc(56.9) Azm(87.1) TVD(5532.86) VS(457.74) NS(-395.00) EW(436.70)
#61 MD(5714.00) Inc(60.5) Azm(86.2) TVD(5556.23) VS(495.94) NS(-392.74) EW(475.08)
#62 MD(5759.00) Inc(61.5) Azm(85.9) TVD(5578.05) VS(534.99) NS(-390.03) EW(514.34)
#63 MD(5804.00) Inc(62.9) Azm(86.4) TVD(5599.04) VS(574.50) NS(-387.36) EW(554.05)
#64 MD(5849.00) Inc(65.6) Azm(85.8) TVD(5618.59) VS(614.72) NS(-384.60) EW(594.49)
#65 MD(5894.00) Inc(69.6) Azm(85.4) TVD(5635.73) VS(655.96) NS(-381.41) EW(635.96)
#66 MD(5938.00) Inc(73.1) Azm(86.8) TVD(5649.80) VS(697.33) NS(-378.58) EW(677.55)
#67 MD(5983.00) Inc(76.4) Azm(87.6) TVD(5661.63) VS(740.50) NS(-376.46) EW(720.90)
#68 MD(6028.00) Inc(78.8) Azm(87.6) TVD(5671.30) VS(784.28) NS(-375.04) EW(764.83)
#69 MD(6065.00) Inc(80.6) Azm(88.8) TVD(5677.91) VS(820.58) NS(-374.25) EW(801.22)
#70 MD(6143.00) Inc(84.7) Azm(87.7) TVD(5687.89) VS(897.63) NS(-371.89) EW(878.53)
#71 MD(6188.00) Inc(84.6) Azm(88.0) TVD(5692.08) VS(942.25) NS(-370.20) EW(923.30)
#72 MD(6232.00) Inc(86.6) Azm(88.7) TVD(5695.46) VS(985.96) NS(-368.94) EW(967.15)
#73 MD(6277.00) Inc(87.5) Azm(89.0) TVD(5697.78) VS(1030.77) NS(-368.04) EW(1012.08)
#74 MD(6322.00) Inc(88.2) Azm(89.5) TVD(5699.46) VS(1075.64) NS(-367.45) EW(1057.04)
#75 MD(6367.00) Inc(89.2) Azm(90.1) TVD(5700.49) VS(1120.55) NS(-367.29) EW(1102.03)
#76 MD(6458.00) Inc(89.9) Azm(89.7) TVD(5701.20) VS(1211.40) NS(-367.14) EW(1193.03)
#77 MD(6551.00) Inc(89.6) Azm(90.1) TVD(5701.61) VS(1304.25) NS(-366.97) EW(1286.03)
#78 MD(6644.00) Inc(90.2) Azm(89.2) TVD(5701.77) VS(1397.07) NS(-366.40) EW(1379.02)
#79 MD(6737.00) Inc(91.3) Azm(89.7) TVD(5700.55) VS(1489.87) NS(-365.51) EW(1472.01)
#80 MD(6829.00) Inc(90.9) Azm(89.4) TVD(5698.78) VS(1581.67) NS(-364.79) EW(1563.99)
#81 MD(6923.00) Inc(90.3) Azm(89.0) TVD(5697.80) VS(1675.44) NS(-363.48) EW(1657.97)
#82 MD(7015.00) Inc(89.7) Azm(89.3) TVD(5697.80) VS(1767.22) NS(-362.11) EW(1749.96)
#83 MD(7109.00) Inc(89.4) Azm(88.6) TVD(5698.54) VS(1860.96) NS(-360.39) EW(1843.94)
#84 MD(7203.00) Inc(91.5) Azm(87.9) TVD(5697.80) VS(1954.61) NS(-357.52) EW(1937.89)
#85 MD(7295.00) Inc(93.1) Azm(87.7) TVD(5694.11) VS(2046.13) NS(-353.99) EW(2029.75)
#86 MD(7389.00) Inc(91.3) Azm(88.5) TVD(5690.50) VS(2139.69) NS(-350.88) EW(2123.62)
#87 MD(7482.00) Inc(90.6) Azm(87.8) TVD(5688.96) VS(2232.33) NS(-347.88) EW(2216.56)
#88 MD(7574.00) Inc(90.2) Azm(87.4) TVD(5688.32) VS(2323.89) NS(-344.02) EW(2308.47)
#89 MD(7669.00) Inc(90.5) Azm(88.9) TVD(5687.74) VS(2418.53) NS(-340.96) EW(2403.42)
#90 MD(7763.00) Inc(90.7) Azm(88.1) TVD(5686.75) VS(2512.21) NS(-338.50) EW(2497.38)
#91 MD(7857.00) Inc(90.8) Azm(87.5) TVD(5685.52) VS(2605.79) NS(-334.89) EW(2591.30)
#92 MD(7951.00) Inc(90.6) Azm(87.1) TVD(5684.37) VS(2699.30) NS(-330.46) EW(2685.19)
#93 MD(8044.00) Inc(90.7) Azm(87.0) TVD(5683.32) VS(2791.76) NS(-325.67) EW(2778.06)
#94 MD(8138.00) Inc(92.3) Azm(88.9) TVD(5680.86) VS(2885.34) NS(-322.31) EW(2871.96)
#95 MD(8231.00) Inc(91.4) Azm(89.3) TVD(5677.85) VS(2978.05) NS(-320.85) EW(2964.90)
#96 MD(8320.00) Inc(90.9) Azm(89.4) TVD(5676.07) VS(3066.84) NS(-319.84) EW(3053.88)
#97 MD(8410.00) Inc(89.8) Azm(88.4) TVD(5675.52) VS(3156.59) NS(-318.12) EW(3143.86)
#98 MD(8500.00) Inc(89.8) Azm(88.0) TVD(5675.83) VS(3246.25) NS(-315.29) EW(3233.81)
#99 MD(8589.00) Inc(89.2) Azm(86.9) TVD(5676.61) VS(3334.81) NS(-311.33) EW(3322.72)
#100 MD(8679.00) Inc(89.3) Azm(87.4) TVD(5677.79) VS(3424.31) NS(-306.85) EW(3412.60)

#101 MD(8769.00) Inc(89.5) Azm(86.9) TVD(5678.73)
VS(3513.81) NS(-302.38) EW(3502.48)

#102 MD(8858.00) Inc(89.3) Azm(85.6) TVD(5679.66)
VS(3602.16) NS(-296.56) EW(3591.29)

#103 MD(8948.00) Inc(89.5) Azm(86.0) TVD(5680.60)
VS(3691.41) NS(-289.97) EW(3681.04)

#104 MD(9038.00) Inc(90.5) Azm(88.8) TVD(5680.60)
VS(3780.95) NS(-285.89) EW(3770.94)

#105 MD(9127.00) Inc(90.1) Azm(88.1) TVD(5680.14)
VS(3869.65) NS(-283.48) EW(3859.90)

#106 MD(9217.00) Inc(90.3) Azm(89.3) TVD(5679.82)
VS(3959.37) NS(-281.44) EW(3949.88)

#107 MD(9307.00) Inc(90.1) Azm(88.2) TVD(5679.51)
VS(4049.11) NS(-279.47) EW(4039.85)

#108 MD(9396.00) Inc(91.7) Azm(90.0) TVD(5678.11)
VS(4137.87) NS(-278.08) EW(4128.83)

#109 MD(9486.00) Inc(92.4) Azm(89.0) TVD(5674.89)
VS(4227.63) NS(-277.29) EW(4218.76)

#110 MD(9576.00) Inc(93.5) Azm(89.3) TVD(5670.26)
VS(4317.29) NS(-275.96) EW(4308.63)

#111 MD(9666.00) Inc(91.9) Azm(89.9) TVD(5666.02)
VS(4407.01) NS(-275.33) EW(4398.53)

#112 MD(9755.00) Inc(90.9) Azm(90.4) TVD(5663.85)
VS(4495.86) NS(-275.56) EW(4487.50)

#113 MD(9845.00) Inc(90.6) Azm(89.5) TVD(5662.67)
VS(4585.71) NS(-275.48) EW(4577.49)

#114 MD(9935.00) Inc(90.7) Azm(88.9) TVD(5661.65)
VS(4675.49) NS(-274.23) EW(4667.47)

#115 MD(10024.00) Inc(90.5) Azm(88.1) TVD(5660.72)
VS(4764.19) NS(-271.90) EW(4756.44)

#116 MD(10114.00) Inc(90.2) Azm(87.5) TVD(5660.17)
VS(4853.80) NS(-268.44) EW(4846.37)

#117 MD(10151.00) Inc(89.8) Azm(87.5) TVD(5660.17)
VS(4890.62) NS(-266.83) EW(4883.33)