ENSIGN Directional Services

Heartland State H01-74-1HN

MD
2":100’

Company:	Noble Energy
Well Name:	Heartland State H01-74-1HN
API:	05-123-39550
Rig Id:	Precision 829
State:	Colorado
County/Parish:	Weld
Country:	USA
Survey Company:	Ensign Directional
Job number:	PD829-207-23
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:	745 ft	08-06-2014
End:	ft	

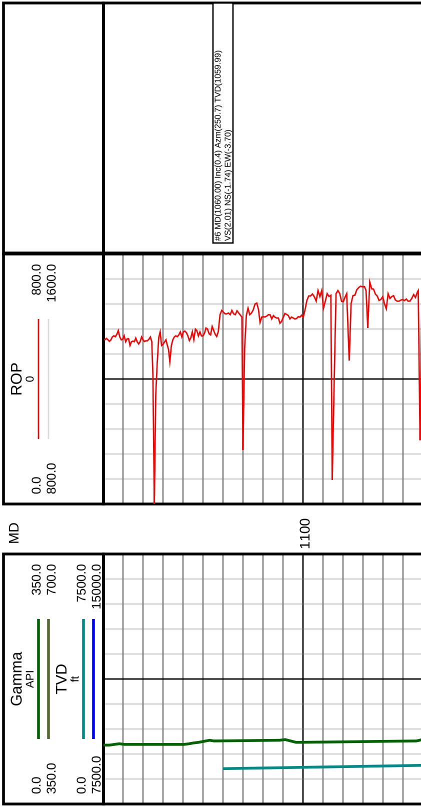
Casing	Depth	Size
Surface:	740	9 5/8
Intermediate:		

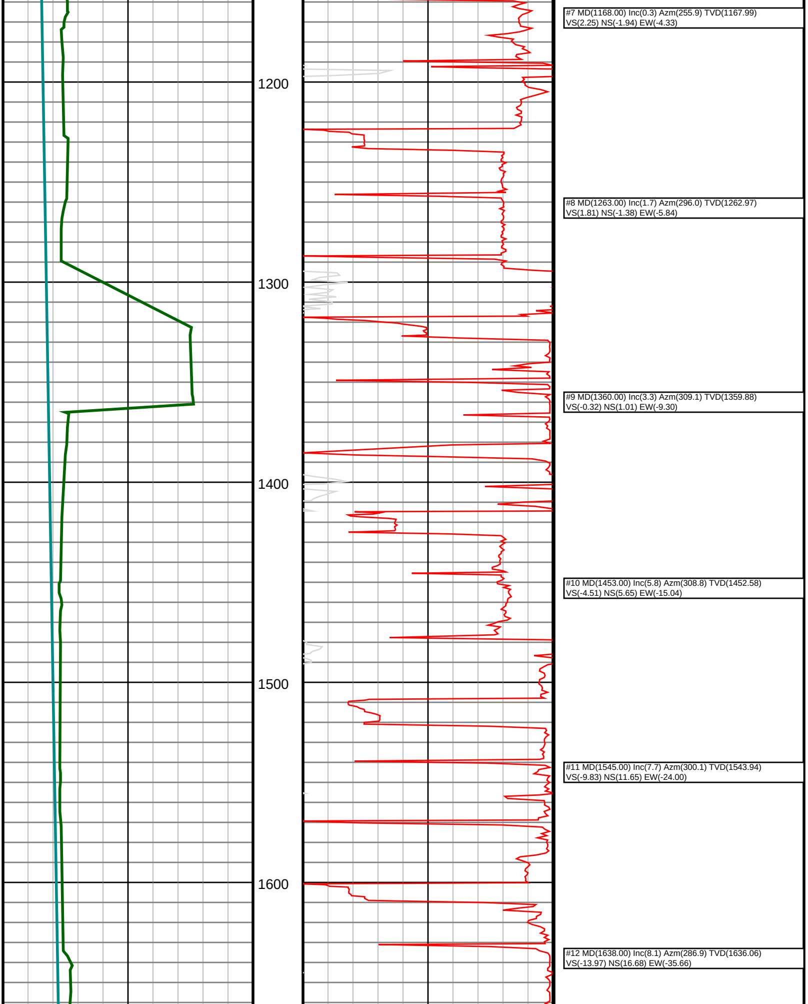
Mud Type:
Density:
Viscosity:
Rm: **Rmf:** **Rmc:**

Elevations
KB: 16
GL: 4834
DF: 4850

		Offsets		Depths		Dates	
Run	Bit Size	Gamma	Survey	Start	End	Start	End
1	13.5			0	745	08-05-2014	08-05-2014
2	8.75	58.77	53.77	745		08-06-2014	
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.





#7 MD(1168.00) Inc(0.3) Azm(255.9) TVD(1167.99)
VS(2.25) NS(-1.94) EW(-4.33)

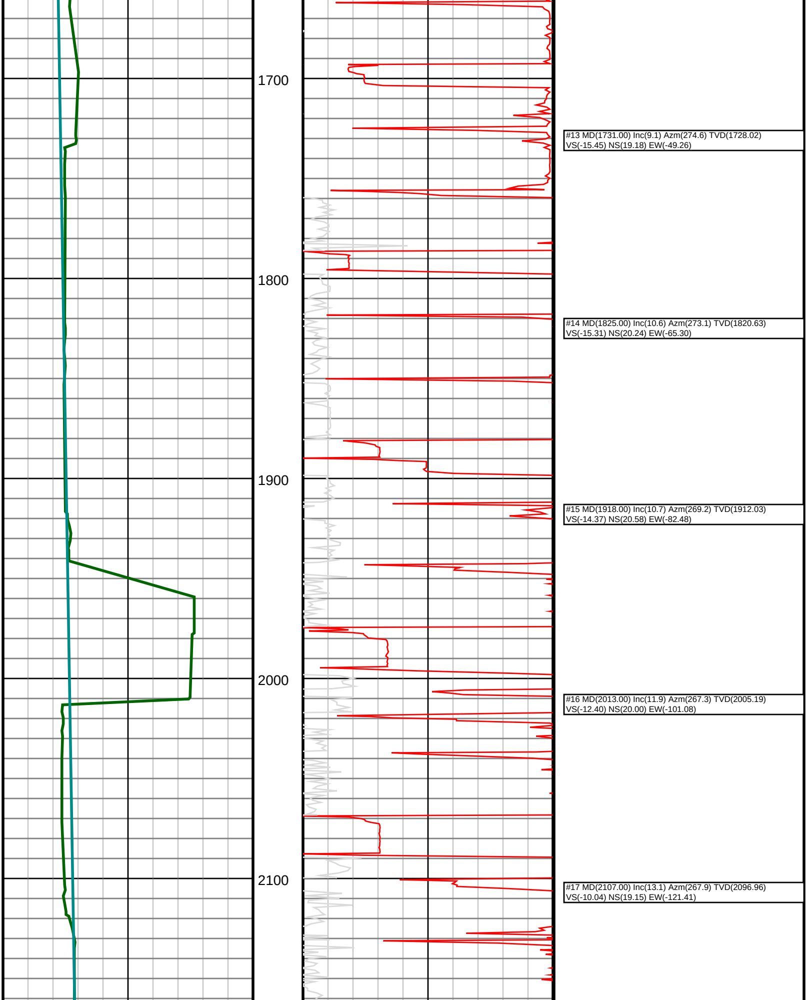
#8 MD(1263.00) Inc(1.7) Azm(296.0) TVD(1262.97)
VS(1.81) NS(-1.38) EW(-5.84)

#9 MD(1360.00) Inc(3.3) Azm(309.1) TVD(1359.88)
VS(-0.32) NS(1.01) EW(-9.30)

#10 MD(1453.00) Inc(5.8) Azm(308.8) TVD(1452.58)
VS(-4.51) NS(5.65) EW(-15.04)

#11 MD(1545.00) Inc(7.7) Azm(300.1) TVD(1543.94)
VS(-9.83) NS(11.65) EW(-24.00)

#12 MD(1638.00) Inc(8.1) Azm(286.9) TVD(1636.06)
VS(-13.97) NS(16.68) EW(-35.66)



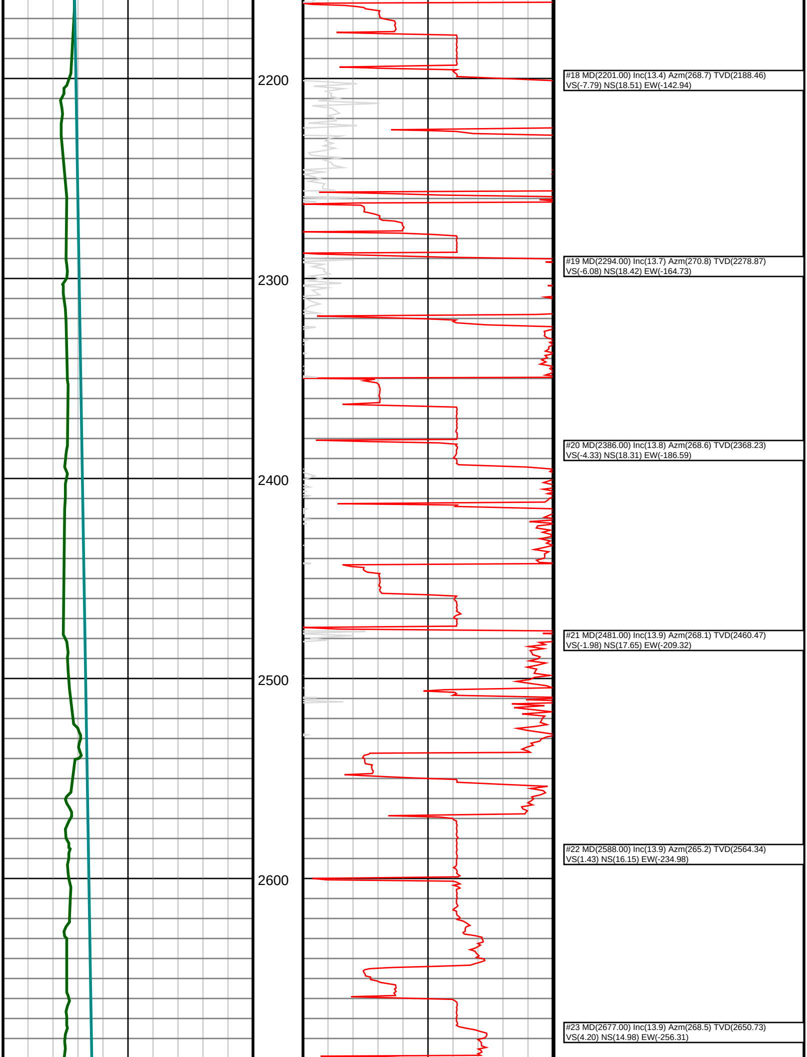
#13 MD(1731.00) Inc(9.1) Azm(274.6) TVD(1728.02)
VS(-15.45) NS(19.18) EW(-49.26)

#14 MD(1825.00) Inc(10.6) Azm(273.1) TVD(1820.63)
VS(-15.31) NS(20.24) EW(-65.30)

#15 MD(1918.00) Inc(10.7) Azm(269.2) TVD(1912.03)
VS(-14.37) NS(20.58) EW(-82.48)

#16 MD(2013.00) Inc(11.9) Azm(267.3) TVD(2005.19)
VS(-12.40) NS(20.00) EW(-101.08)

#17 MD(2107.00) Inc(13.1) Azm(267.9) TVD(2096.96)
VS(-10.04) NS(19.15) EW(-121.41)



#18 MD(2201.00) Inc(13.4) Azm(268.7) TVD(2188.46)
VS(-7.79) NS(18.51) EW(-142.94)

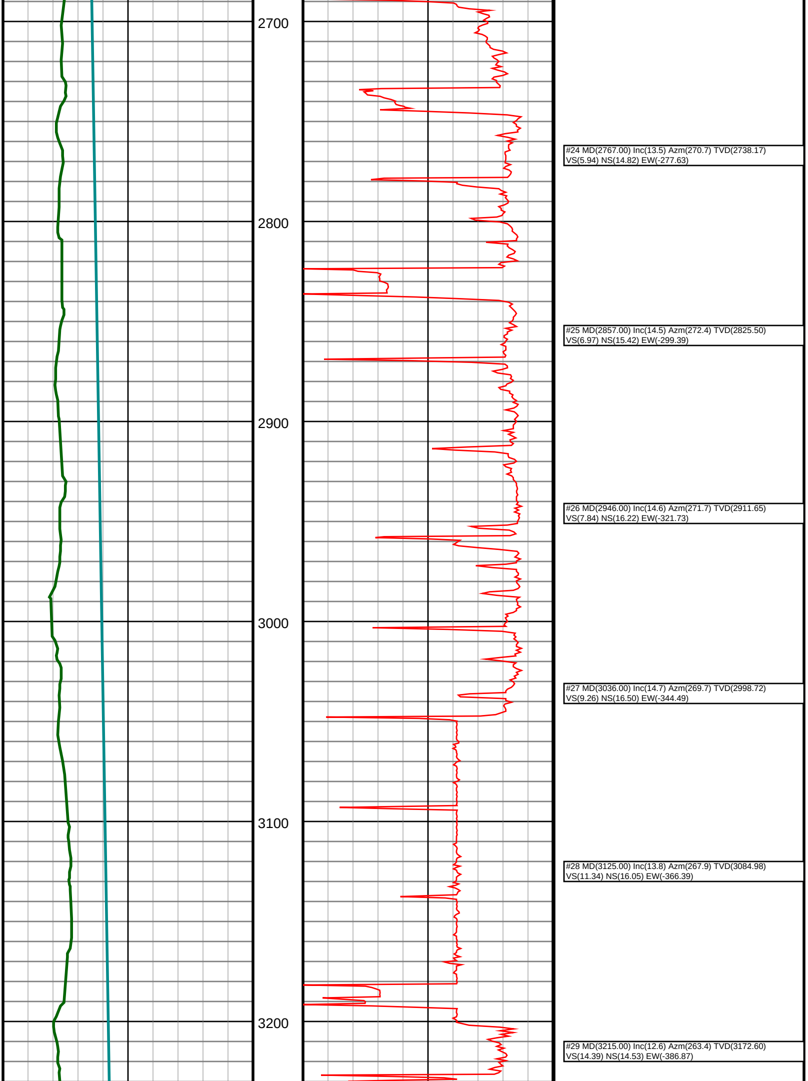
#19 MD(2294.00) Inc(13.7) Azm(270.8) TVD(2278.87)
VS(-6.08) NS(18.42) EW(-164.73)

#20 MD(2386.00) Inc(13.8) Azm(268.6) TVD(2368.23)
VS(-4.33) NS(18.31) EW(-186.59)

#21 MD(2481.00) Inc(13.9) Azm(268.1) TVD(2460.47)
VS(-1.98) NS(17.65) EW(-209.32)

#22 MD(2588.00) Inc(13.9) Azm(265.2) TVD(2564.34)
VS(1.43) NS(16.15) EW(-234.98)

#23 MD(2677.00) Inc(13.9) Azm(268.5) TVD(2650.73)
VS(4.20) NS(14.98) EW(-256.31)



#24 MD(2767.00) Inc(13.5) Azm(270.7) TVD(2738.17)
VS(5.94) NS(14.82) EW(-277.63)

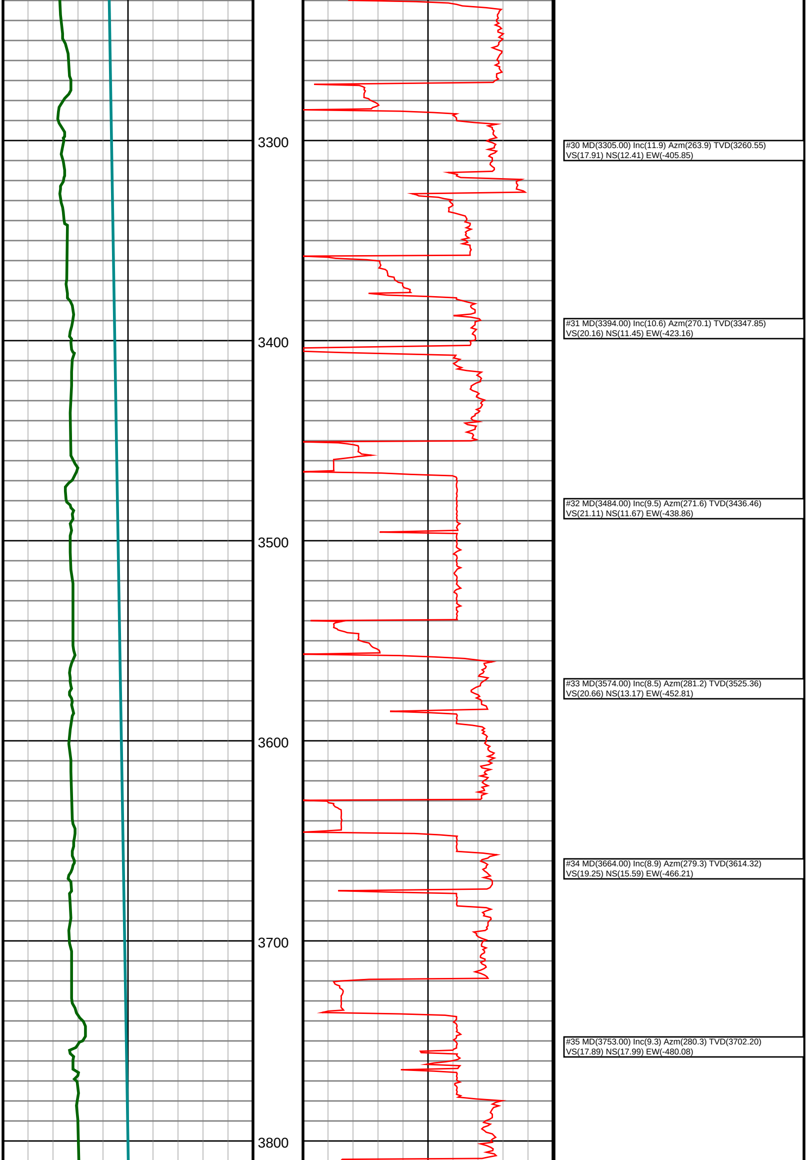
#25 MD(2857.00) Inc(14.5) Azm(272.4) TVD(2825.50)
VS(6.97) NS(15.42) EW(-299.39)

#26 MD(2946.00) Inc(14.6) Azm(271.7) TVD(2911.65)
VS(7.84) NS(16.22) EW(-321.73)

#27 MD(3036.00) Inc(14.7) Azm(269.7) TVD(2998.72)
VS(9.26) NS(16.50) EW(-344.49)

#28 MD(3125.00) Inc(13.8) Azm(267.9) TVD(3084.98)
VS(11.34) NS(16.05) EW(-366.39)

#29 MD(3215.00) Inc(12.6) Azm(263.4) TVD(3172.60)
VS(14.39) NS(14.53) EW(-386.87)



#30 MD(3305.00) Inc(11.9) Azm(263.9) TVD(3260.55)
VS(17.91) NS(12.41) EW(-405.85)

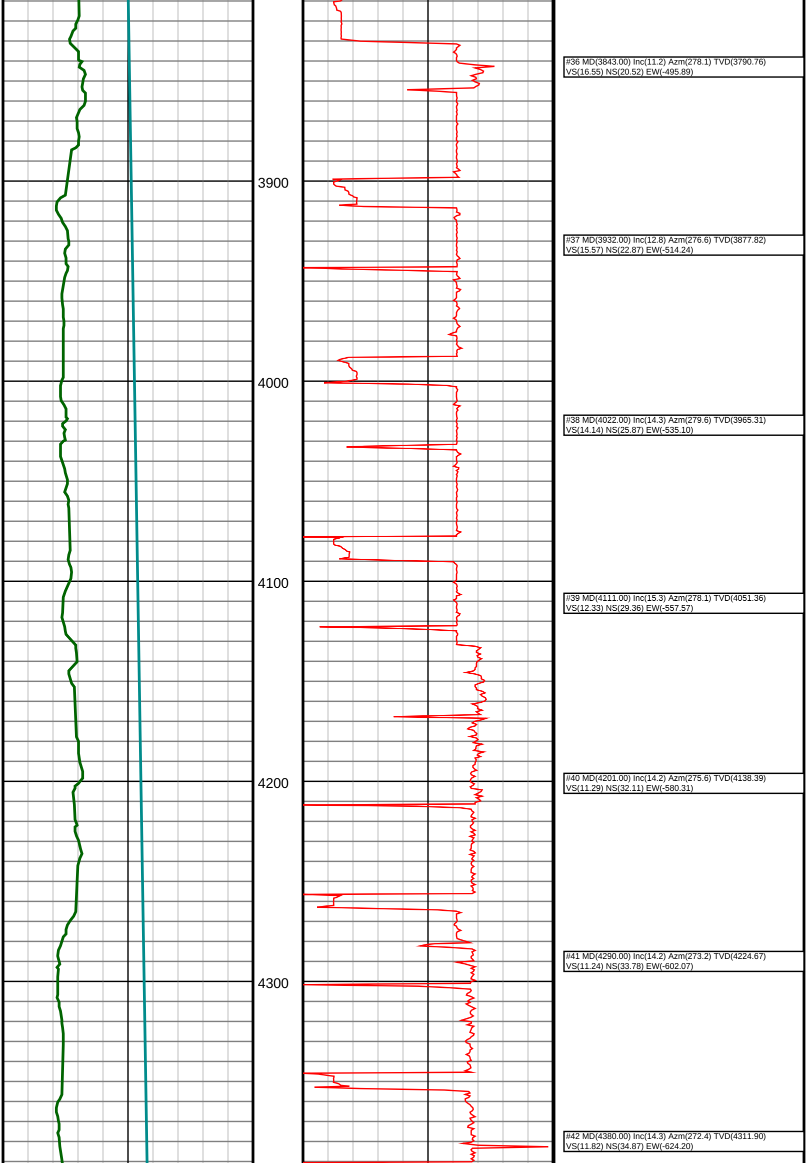
#31 MD(3394.00) Inc(10.6) Azm(270.1) TVD(3347.85)
VS(20.16) NS(11.45) EW(-423.16)

#32 MD(3484.00) Inc(9.5) Azm(271.6) TVD(3436.46)
VS(21.11) NS(11.67) EW(-438.86)

#33 MD(3574.00) Inc(8.5) Azm(281.2) TVD(3525.36)
VS(20.66) NS(13.17) EW(-452.81)

#34 MD(3664.00) Inc(8.9) Azm(279.3) TVD(3614.32)
VS(19.25) NS(15.59) EW(-466.21)

#35 MD(3753.00) Inc(9.3) Azm(280.3) TVD(3702.20)
VS(17.89) NS(17.99) EW(-480.08)



#36 MD(3843.00) Inc(11.2) Azm(278.1) TVD(3790.76)
VS(16.55) NS(20.52) EW(-495.89)

#37 MD(3932.00) Inc(12.8) Azm(276.6) TVD(3877.82)
VS(15.57) NS(22.87) EW(-514.24)

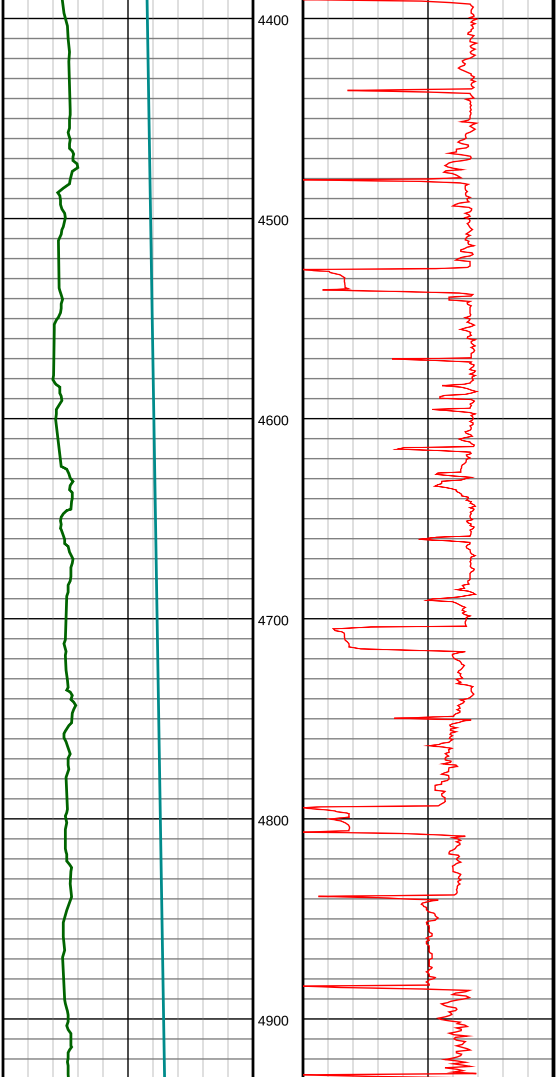
#38 MD(4022.00) Inc(14.3) Azm(279.6) TVD(3965.31)
VS(14.14) NS(25.87) EW(-535.10)

#39 MD(4111.00) Inc(15.3) Azm(278.1) TVD(4051.36)
VS(12.33) NS(29.36) EW(-557.57)

#40 MD(4201.00) Inc(14.2) Azm(275.6) TVD(4138.39)
VS(11.29) NS(32.11) EW(-580.31)

#41 MD(4290.00) Inc(14.2) Azm(273.2) TVD(4224.67)
VS(11.24) NS(33.78) EW(-602.07)

#42 MD(4380.00) Inc(14.3) Azm(272.4) TVD(4311.90)
VS(11.82) NS(34.87) EW(-624.20)



#43 MD(4469.00) Inc(13.0) Azm(269.7) TVD(4398.39)
VS(12.98) NS(35.27) EW(-645.19)

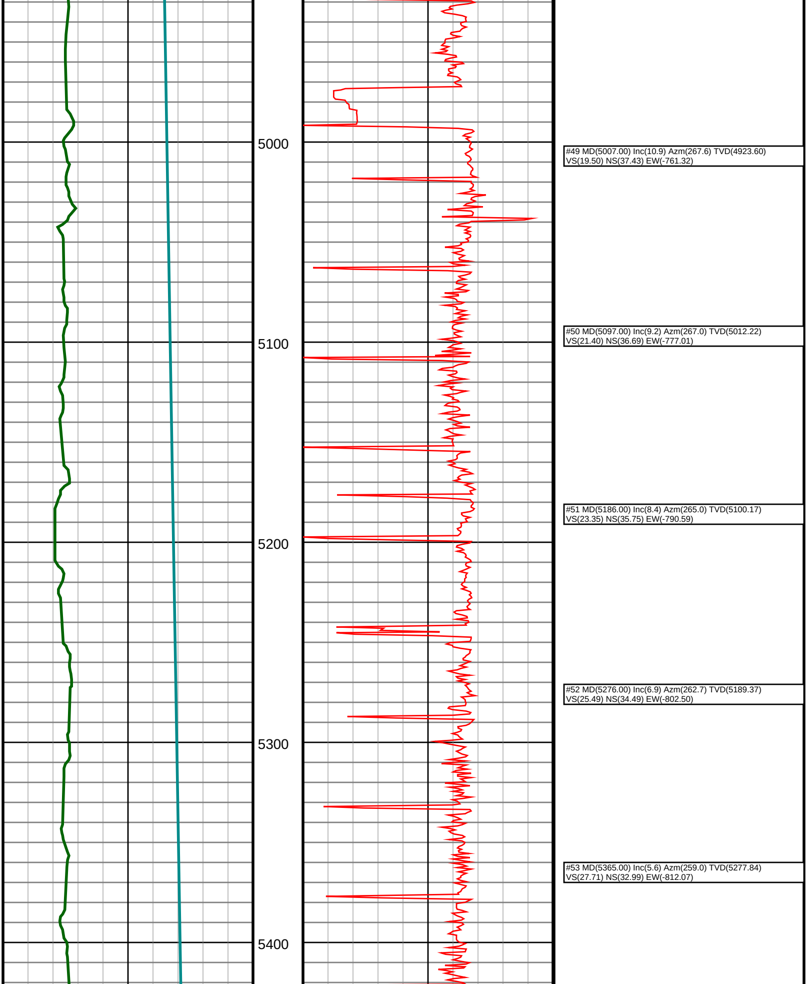
#44 MD(4559.00) Inc(13.5) Azm(272.3) TVD(4485.99)
VS(14.15) NS(35.64) EW(-665.81)

#45 MD(4648.00) Inc(13.0) Azm(271.1) TVD(4572.62)
VS(15.06) NS(36.25) EW(-686.20)

#46 MD(4738.00) Inc(13.6) Azm(273.3) TVD(4660.21)
VS(15.80) NS(37.05) EW(-706.89)

#47 MD(4828.00) Inc(12.1) Azm(271.6) TVD(4747.95)
VS(16.43) NS(37.93) EW(-726.88)

#48 MD(4917.00) Inc(10.7) Azm(268.6) TVD(4835.20)
VS(17.68) NS(37.99) EW(-744.46)



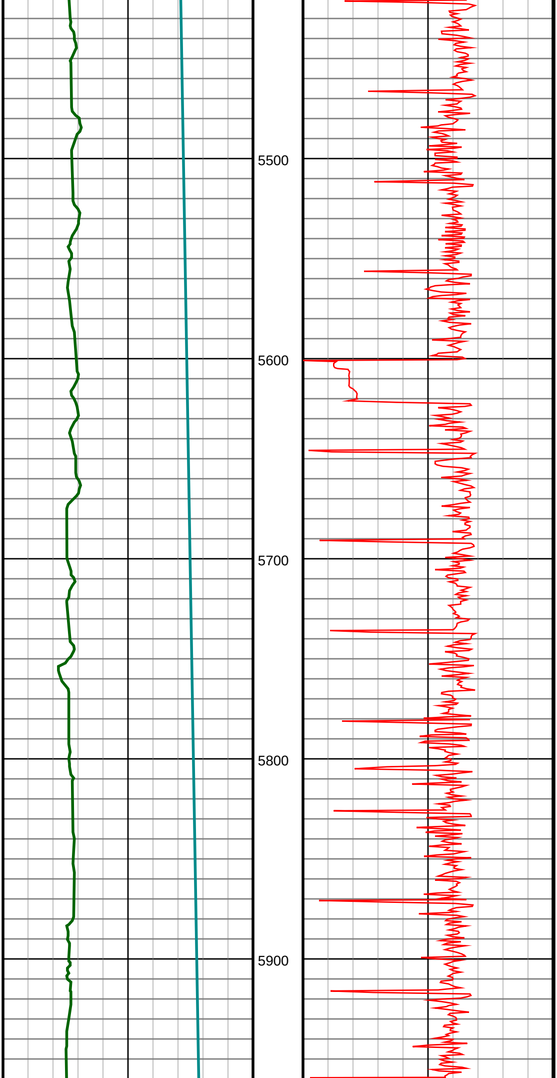
#49 MD(5007.00) Inc(10.9) Azm(267.6) TVD(4923.60)
VS(19.50) NS(37.43) EW(-761.32)

#50 MD(5097.00) Inc(9.2) Azm(267.0) TVD(5012.22)
VS(21.40) NS(36.69) EW(-777.01)

#51 MD(5186.00) Inc(8.4) Azm(265.0) TVD(5100.17)
VS(23.35) NS(35.75) EW(-790.59)

#52 MD(5276.00) Inc(6.9) Azm(262.7) TVD(5189.37)
VS(25.49) NS(34.49) EW(-802.50)

#53 MD(5365.00) Inc(5.6) Azm(259.0) TVD(5277.84)
VS(27.71) NS(32.99) EW(-812.07)



#54 MD(5455.00) Inc(4.4) Azm(253.6) TVD(5367.49)
VS(30.09) NS(31.17) EW(-819.69)

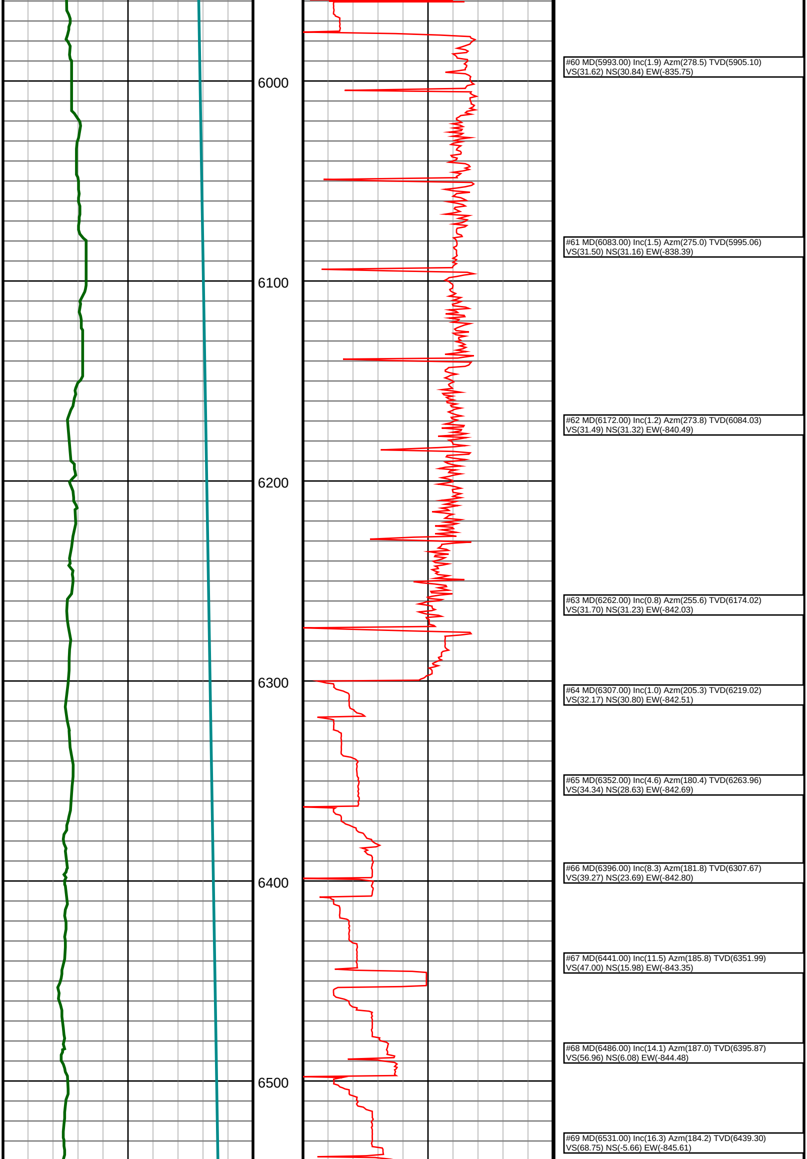
#55 MD(5545.00) Inc(3.2) Azm(244.7) TVD(5457.29)
VS(32.55) NS(29.12) EW(-825.27)

#56 MD(5634.00) Inc(2.2) Azm(272.3) TVD(5546.20)
VS(33.83) NS(28.13) EW(-829.22)

#57 MD(5724.00) Inc(1.8) Azm(290.8) TVD(5636.14)
VS(33.49) NS(28.70) EW(-832.27)

#58 MD(5814.00) Inc(0.6) Azm(312.2) TVD(5726.12)
VS(32.80) NS(29.52) EW(-833.94)

#59 MD(5903.00) Inc(0.5) Azm(1.3) TVD(5815.12)
VS(32.12) NS(30.22) EW(-834.28)



#60 MD(5993.00) Inc(1.9) Azm(278.5) TVD(5905.10)
VS(31.62) NS(30.84) EW(-835.75)

#61 MD(6083.00) Inc(1.5) Azm(275.0) TVD(5995.06)
VS(31.50) NS(31.16) EW(-838.39)

#62 MD(6172.00) Inc(1.2) Azm(273.8) TVD(6084.03)
VS(31.49) NS(31.32) EW(-840.49)

#63 MD(6262.00) Inc(0.8) Azm(255.6) TVD(6174.02)
VS(31.70) NS(31.23) EW(-842.03)

#64 MD(6307.00) Inc(1.0) Azm(205.3) TVD(6219.02)
VS(32.17) NS(30.80) EW(-842.51)

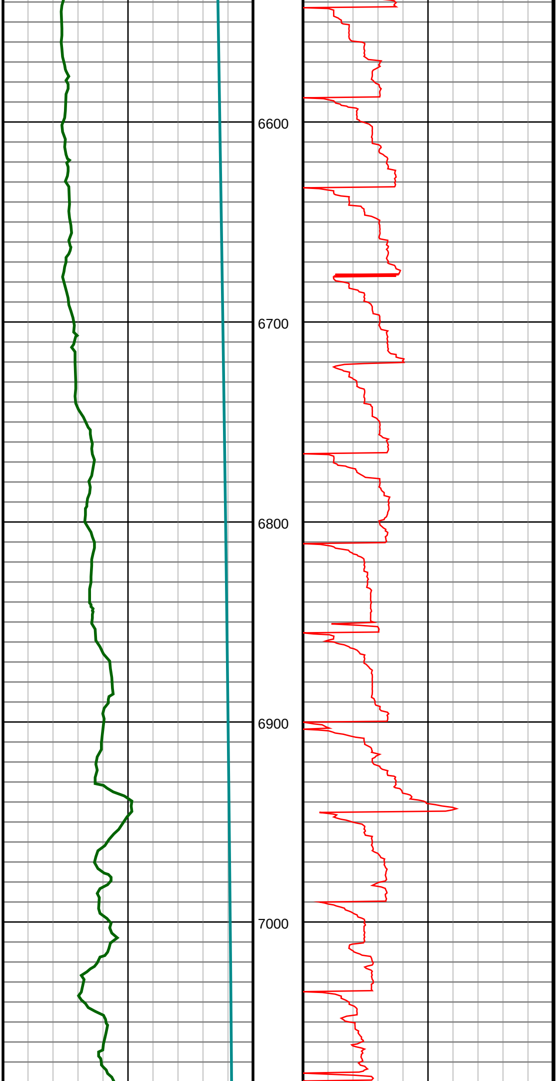
#65 MD(6352.00) Inc(4.6) Azm(180.4) TVD(6263.96)
VS(34.34) NS(28.63) EW(-842.69)

#66 MD(6396.00) Inc(8.3) Azm(181.8) TVD(6307.67)
VS(39.27) NS(23.69) EW(-842.80)

#67 MD(6441.00) Inc(11.5) Azm(185.8) TVD(6351.99)
VS(47.00) NS(15.98) EW(-843.35)

#68 MD(6486.00) Inc(14.1) Azm(187.0) TVD(6395.87)
VS(56.96) NS(6.08) EW(-844.48)

#69 MD(6531.00) Inc(16.3) Azm(184.2) TVD(6439.30)
VS(68.75) NS(-5.66) EW(-845.61)



#70 MD(6576.00) Inc(19.4) Azm(182.9) TVD(6482.13)
VS(82.54) NS(-19.43) EW(-846.45)

#71 MD(6620.00) Inc(22.7) Azm(183.4) TVD(6523.18)
VS(98.34) NS(-35.20) EW(-847.32)

#72 MD(6665.00) Inc(26.1) Azm(184.4) TVD(6564.16)
VS(116.93) NS(-53.75) EW(-848.60)

#73 MD(6710.00) Inc(29.8) Azm(184.9) TVD(6603.90)
VS(138.02) NS(-74.77) EW(-850.31)

#74 MD(6755.00) Inc(34.2) Azm(183.9) TVD(6642.06)
VS(161.86) NS(-98.54) EW(-852.13)

#75 MD(6799.00) Inc(38.2) Azm(179.5) TVD(6677.56)
VS(187.79) NS(-124.49) EW(-852.85)

#76 MD(6844.00) Inc(42.2) Azm(177.9) TVD(6711.93)
VS(216.69) NS(-153.52) EW(-852.17)

#77 MD(6889.00) Inc(45.4) Azm(179.2) TVD(6744.40)
VS(247.68) NS(-184.65) EW(-851.40)

#78 MD(6934.00) Inc(47.7) Azm(181.5) TVD(6775.35)
VS(280.27) NS(-217.32) EW(-851.61)

#79 MD(6979.00) Inc(52.0) Azm(183.7) TVD(6804.36)
VS(314.64) NS(-251.66) EW(-853.19)

#80 MD(7024.00) Inc(57.4) Azm(183.2) TVD(6830.35)
VS(351.34) NS(-288.31) EW(-855.39)

#81 MD(7068.00) Inc(63.3) Azm(183.6) TVD(6852.11)
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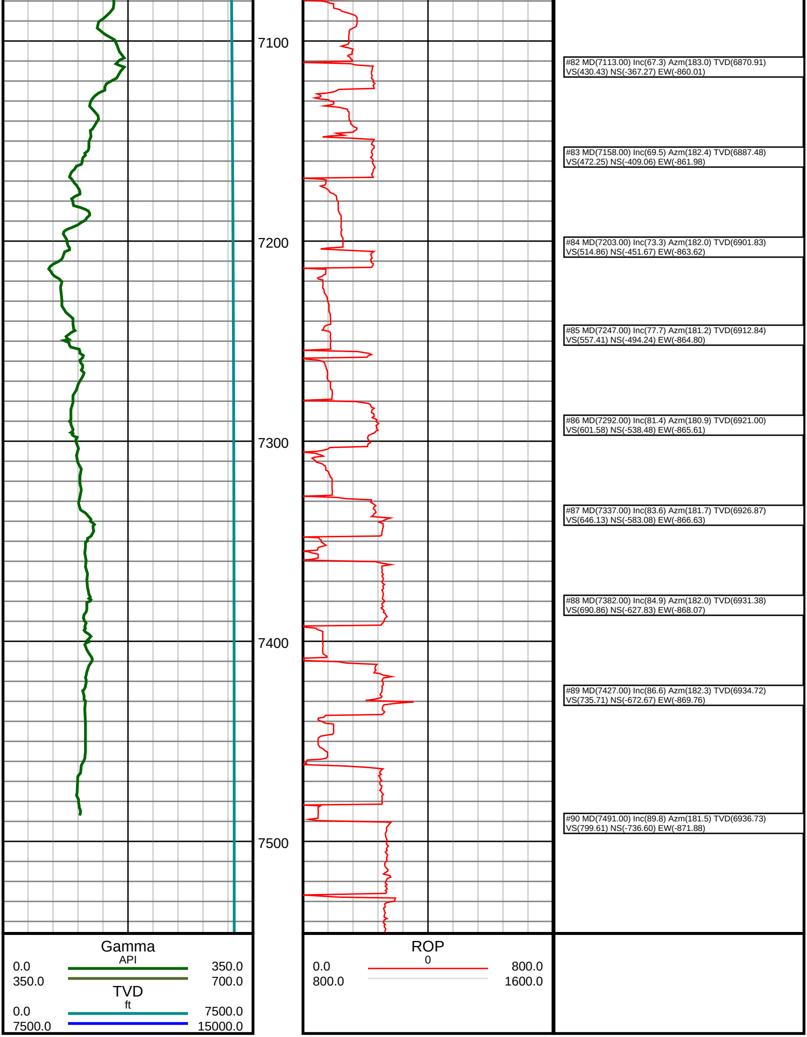

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#83 MD(7158.00) Inc(69.5) Azm(182.4) TVD(6887.48)
VS(472.25) NS(-409.06) EW(-861.98)

#84 MD(7203.00) Inc(73.3) Azm(182.0) TVD(6901.83)
VS(514.86) NS(-451.67) EW(-863.62)

#85 MD(7247.00) Inc(77.7) Azm(181.2) TVD(6912.84)
VS(557.41) NS(-494.24) EW(-864.80)

#86 MD(7292.00) Inc(81.4) Azm(180.9) TVD(6921.00)
VS(601.58) NS(-538.48) EW(-865.61)

#87 MD(7337.00) Inc(83.6) Azm(181.7) TVD(6926.87)
VS(646.13) NS(-583.08) EW(-866.63)

#88 MD(7382.00) Inc(84.9) Azm(182.0) TVD(6931.38)
VS(690.86) NS(-627.83) EW(-868.07)

#89 MD(7427.00) Inc(86.6) Azm(182.3) TVD(6934.72)
VS(735.71) NS(-672.67) EW(-869.76)

#90 MD(7491.00) Inc(89.8) Azm(181.5) TVD(6936.73)
VS(799.61) NS(-736.60) EW(-871.88)