ENSIGN Directional Services

Sandau K25-66-1HN

TVD
2":100'

Company: Noble Energy
Well Name: Sandau K25-66-1HN
API: 05-123-37764
Rig Id: Precision 829
State: Colorado
County/Parish: Weld
Country: USA
Survey Company: Ensign Directional
Job number: PD829-207-9
DD1 Zach Gentry
DD2 Colby Hansen
DD3 Tony Callow
MWD1 Andrew Demrow
MWD2 Steve Pickering

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

	Depth	Date
Start:	671 ft	02-19-2014
End:	12230 ft	03-01-2014

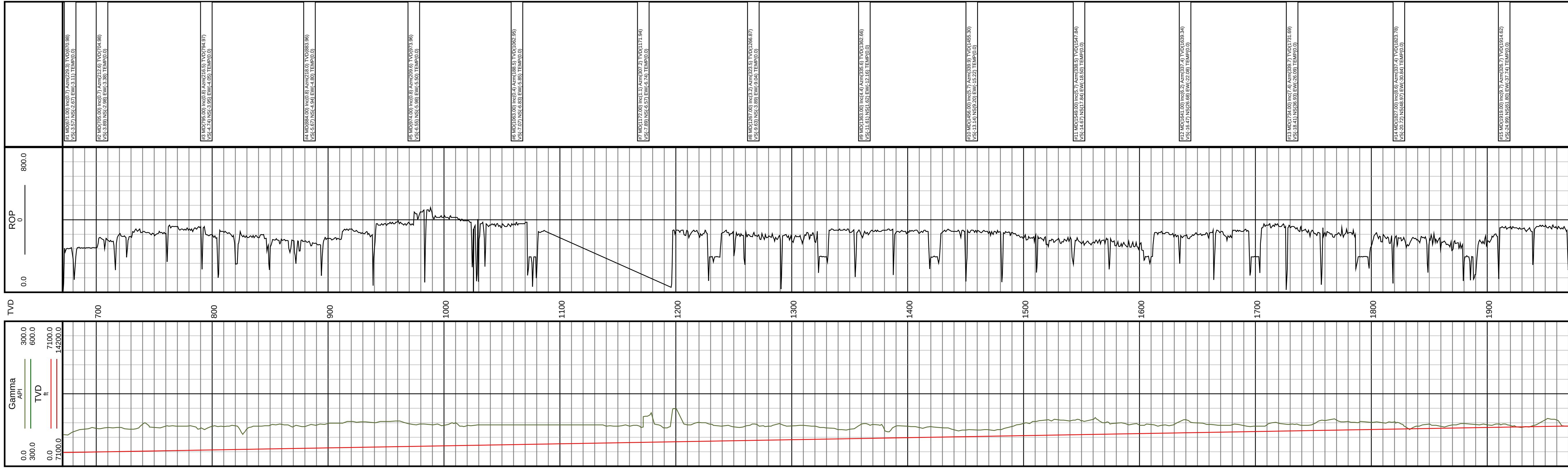
Casing	Depth	Size
Surface:	661	9 5/8
Intermediate:	7434	7

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

Elevations
KB: 4802
GL: 4786
DF: 4802

Run	Bit Size	Offsets		Depths		Dates	
		Gamma	Survey	Start	End	Start	End
1	13.5			0	671	02-18-2014	02-18-2014
2	8.75	58.33	53.33	671	6904	02-19-2014	02-22-2014
3	8.75	58.33	53.33	6904	7035	02-23-2014	02-23-2014
4	8.75	57.44	52.44	7035	7434	02-24-2014	02-24-2014
5	6.125	65.16	60.16	7434	12230	02-26-2014	03-01-2014
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.



#1 MD(671.00) Inc(0.7) Azm(229.3) TVD(670.98) VS(-3.57) NS(-2.67) EW(-3.11) TEMP(0.0)

#2 MD(705.00) Inc(0.7) Azm(212.6) TVD(704.98) VS(-3.89) NS(-2.98) EW(-3.38) TEMP(0.0)

#3 MD(795.00) Inc(0.8) Azm(216.5) TVD(794.97) VS(-4.74) NS(-3.95) EW(-4.05) TEMP(0.0)

#4 MD(884.00) Inc(0.8) Azm(218.0) TVD(883.96) VS(-5.67) NS(-4.94) EW(-4.80) TEMP(0.0)

#5 MD(974.00) Inc(0.8) Azm(209.6) TVD(973.96) VS(-6.55) NS(-5.98) EW(-5.50) TEMP(0.0)

#6 MD(1063.00) Inc(0.4) Azm(188.5) TVD(1062.95) VS(-7.07) NS(-6.83) EW(-5.85) TEMP(0.0)

#7 MD(1172.00) Inc(1.1) Azm(307.2) TVD(1171.94) VS(-7.89) NS(-6.57) EW(-6.74) TEMP(0.0)

#8 MD(1267.00) Inc(3.2) Azm(323.5) TVD(1266.87) VS(-9.63) NS(-3.89) EW(-9.04) TEMP(0.0)

#9 MD(1363.00) Inc(4.4) Azm(335.6) TVD(1362.66) VS(-11.61) NS(1.62) EW(-12.16) TEMP(0.0)

#10 MD(1456.00) Inc(5.7) Azm(339.9) TVD(1455.30) VS(-13.14) NS(9.20) EW(-15.22) TEMP(0.0)

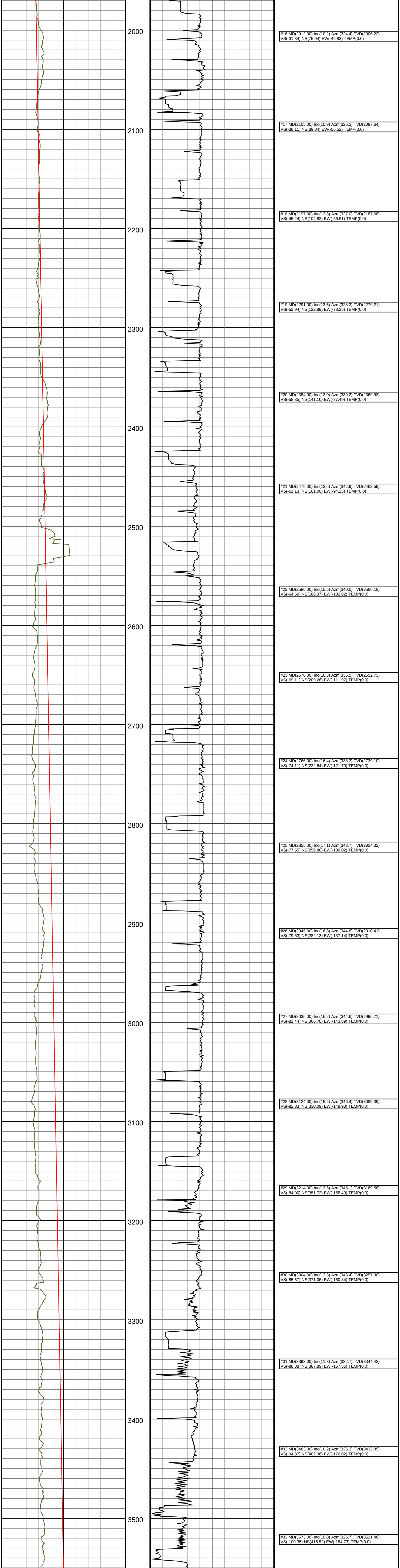
#11 MD(1549.00) Inc(5.7) Azm(338.5) TVD(1547.84) VS(-14.67) NS(17.84) EW(-18.50) TEMP(0.0)

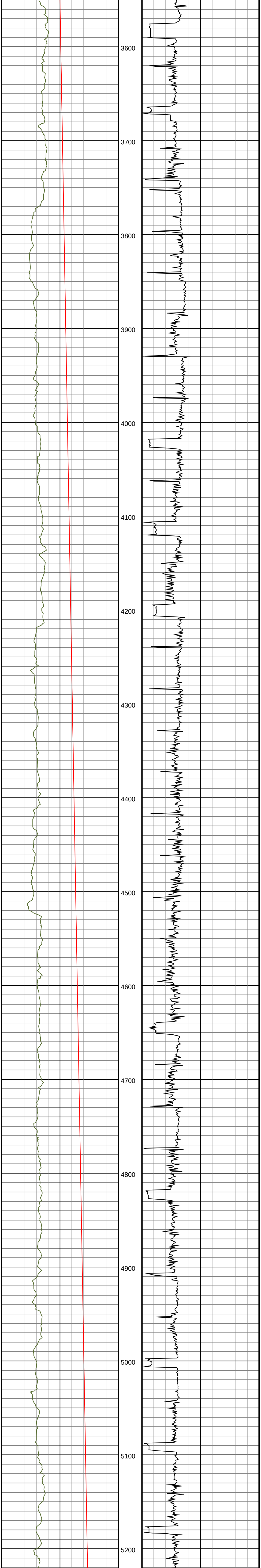
#12 MD(1641.00) Inc(6.2) Azm(337.4) TVD(1639.34) VS(-16.47) NS(26.68) EW(-22.08) TEMP(0.0)

#13 MD(1734.00) Inc(7.4) Azm(339.7) TVD(1731.69) VS(-18.41) NS(36.93) EW(-26.09) TEMP(0.0)

#14 MD(1827.00) Inc(8.6) Azm(337.4) TVD(1823.78) VS(-20.72) NS(48.97) EW(-30.84) TEMP(0.0)

#15 MD(1919.00) Inc(9.7) Azm(326.7) TVD(1914.62) VS(-24.99) NS(61.80) EW(-37.74) TEMP(0.0)





#34 MD(3662.00) Inc(10.3) Azm(338.8) TVD(3609.08)
VS(-104.63) NS(429.40) EW(-191.85) TEMP(0.0)

#35 MD(3752.00) Inc(10.2) Azm(342.2) TVD(3697.64)
VS(-106.94) NS(444.49) EW(-197.20) TEMP(0.0)

#36 MD(3842.00) Inc(9.9) Azm(341.4) TVD(3786.26)
VS(-108.85) NS(459.41) EW(-202.10) TEMP(0.0)

#37 MD(3931.00) Inc(10.0) Azm(340.0) TVD(3873.92)
VS(-111.01) NS(473.92) EW(-207.18) TEMP(0.0)

#38 MD(4021.00) Inc(10.3) Azm(339.0) TVD(3962.51)
VS(-113.57) NS(488.77) EW(-212.74) TEMP(0.0)

#39 MD(4111.00) Inc(9.8) Azm(339.7) TVD(4051.13)
VS(-116.15) NS(503.47) EW(-218.28) TEMP(0.0)

#40 MD(4201.00) Inc(8.5) Azm(335.1) TVD(4139.99)
VS(-118.93) NS(516.69) EW(-223.74) TEMP(0.0)

#41 MD(4291.00) Inc(8.0) Azm(339.7) TVD(4229.05)
VS(-121.49) NS(528.59) EW(-228.71) TEMP(0.0)

#42 MD(4380.00) Inc(7.6) Azm(339.7) TVD(4317.23)
VS(-123.40) NS(539.92) EW(-232.90) TEMP(0.0)

#43 MD(4470.00) Inc(6.8) Azm(341.4) TVD(4406.52)
VS(-125.02) NS(550.55) EW(-236.67) TEMP(0.0)

#44 MD(4560.00) Inc(6.4) Azm(340.2) TVD(4495.92)
VS(-126.45) NS(560.32) EW(-240.07) TEMP(0.0)

#45 MD(4650.00) Inc(6.4) Azm(336.3) TVD(4585.36)
VS(-128.28) NS(569.64) EW(-243.78) TEMP(0.0)

#46 MD(4739.00) Inc(6.2) Azm(343.6) TVD(4673.83)
VS(-129.79) NS(578.79) EW(-247.13) TEMP(0.0)

#47 MD(4829.00) Inc(5.6) Azm(349.5) TVD(4763.35)
VS(-130.17) NS(587.77) EW(-249.30) TEMP(0.0)

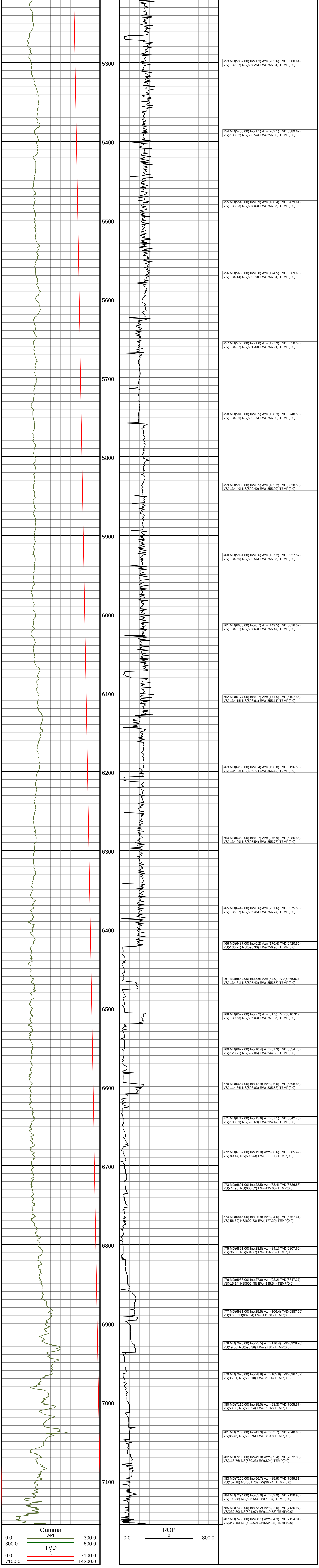
#48 MD(4919.00) Inc(4.2) Azm(337.1) TVD(4853.02)
VS(-130.79) NS(595.12) EW(-251.39) TEMP(0.0)

#49 MD(5008.00) Inc(3.6) Azm(329.7) TVD(4941.82)
VS(-132.36) NS(600.54) EW(-254.06) TEMP(0.0)

#50 MD(5098.00) Inc(2.4) Azm(353.6) TVD(5031.70)
VS(-133.12) NS(604.85) EW(-255.70) TEMP(0.0)

#51 MD(5187.00) Inc(1.0) Azm(27.0) TVD(5120.66)
VS(-132.49) NS(607.39) EW(-255.56) TEMP(0.0)

#52 MD(5277.00) Inc(0.2) Azm(72.3) TVD(5210.65)
VS(-131.84) NS(608.14) EW(-255.05) TEMP(0.0)



#53 MD(5367.00) Inc(1.3) Azm(203.6) TVD(5300.64)
VS(-132.27) NS(607.25) EW(-255.31) TEMP(0.0)

#54 MD(5456.00) Inc(1.1) Azm(202.1) TVD(5389.62)
VS(-133.32) NS(605.54) EW(-256.03) TEMP(0.0)

#55 MD(5546.00) Inc(0.9) Azm(180.4) TVD(5479.61)
VS(-133.93) NS(604.03) EW(-256.36) TEMP(0.0)

#56 MD(5636.00) Inc(0.8) Azm(174.5) TVD(5569.60)
VS(-134.14) NS(602.70) EW(-256.31) TEMP(0.0)

#57 MD(5725.00) Inc(1.0) Azm(177.3) TVD(5658.59)
VS(-134.32) NS(601.30) EW(-256.21) TEMP(0.0)

#58 MD(5815.00) Inc(0.5) Azm(158.3) TVD(5748.58)
VS(-134.36) NS(600.15) EW(-256.03) TEMP(0.0)

#59 MD(5905.00) Inc(0.5) Azm(185.2) TVD(5838.58)
VS(-134.40) NS(599.40) EW(-255.92) TEMP(0.0)

#60 MD(5994.00) Inc(0.6) Azm(167.2) TVD(5927.57)
VS(-134.50) NS(598.56) EW(-255.85) TEMP(0.0)

#61 MD(6083.00) Inc(0.7) Azm(149.5) TVD(6016.57)
VS(-134.31) NS(597.63) EW(-255.47) TEMP(0.0)

#62 MD(6174.00) Inc(0.7) Azm(171.5) TVD(6107.56)
VS(-134.15) NS(596.61) EW(-255.11) TEMP(0.0)

#63 MD(6263.00) Inc(0.4) Azm(196.8) TVD(6196.56)
VS(-134.32) NS(595.77) EW(-255.12) TEMP(0.0)

#64 MD(6353.00) Inc(0.7) Azm(276.9) TVD(6286.55)
VS(-134.99) NS(595.54) EW(-255.76) TEMP(0.0)

#65 MD(6442.00) Inc(0.6) Azm(251.6) TVD(6375.55)
VS(-135.97) NS(595.45) EW(-256.74) TEMP(0.0)

#66 MD(6487.00) Inc(0.2) Azm(176.4) TVD(6420.55)
VS(-136.21) NS(595.30) EW(-256.96) TEMP(0.0)

#67 MD(6532.00) Inc(3.6) Azm(82.0) TVD(6465.52)
VS(-134.81) NS(595.42) EW(-255.55) TEMP(0.0)

#68 MD(6577.00) Inc(7.2) Azm(81.5) TVD(6510.31)
VS(-130.58) NS(596.03) EW(-251.36) TEMP(0.0)

#69 MD(6622.00) Inc(10.4) Azm(81.3) TVD(6554.78)
VS(-123.71) NS(597.06) EW(-244.56) TEMP(0.0)

#70 MD(6667.00) Inc(12.9) Azm(86.0) TVD(6598.85)
VS(-114.66) NS(598.03) EW(-235.53) TEMP(0.0)

#71 MD(6712.00) Inc(15.6) Azm(87.1) TVD(6642.46)
VS(-103.69) NS(598.69) EW(-224.47) TEMP(0.0)

#72 MD(6757.00) Inc(19.0) Azm(86.6) TVD(6685.42)
VS(-90.44) NS(599.43) EW(-211.11) TEMP(0.0)

#73 MD(6801.00) Inc(22.5) Azm(83.4) TVD(6726.56)
VS(-74.95) NS(600.82) EW(-195.60) TEMP(0.0)

#74 MD(6846.00) Inc(25.8) Azm(84.6) TVD(6767.61)
VS(-56.62) NS(602.73) EW(-177.29) TEMP(0.0)

#75 MD(6891.00) Inc(28.8) Azm(84.1) TVD(6807.60)
VS(-36.08) NS(604.77) EW(-156.75) TEMP(0.0)

#76 MD(6936.00) Inc(27.6) Azm(92.2) TVD(6847.27)
VS(-15.14) NS(605.48) EW(-135.54) TEMP(0.0)

#77 MD(6981.00) Inc(25.5) Azm(106.4) TVD(6887.56)
VS(3.60) NS(602.34) EW(-115.81) TEMP(0.0)

#78 MD(7026.00) Inc(25.5) Azm(116.4) TVD(6928.20)
VS(19.86) NS(595.30) EW(-97.84) TEMP(0.0)

#79 MD(7070.00) Inc(28.8) Azm(105.9) TVD(6967.37)
VS(36.81) NS(588.18) EW(-79.14) TEMP(0.0)

#80 MD(7115.00) Inc(35.0) Azm(98.3) TVD(7005.57)
VS(58.66) NS(583.34) EW(-55.92) TEMP(0.0)

#81 MD(7160.00) Inc(41.9) Azm(92.7) TVD(7040.80)
VS(85.45) NS(580.76) EW(-28.09) TEMP(0.0)

#82 MD(7205.00) Inc(49.0) Azm(89.4) TVD(7072.35)
VS(116.76) NS(580.23) EW(3.94) TEMP(0.0)

#83 MD(7250.00) Inc(56.7) Azm(85.9) TVD(7099.51)
VS(152.18) NS(581.76) EW(39.74) TEMP(0.0)

#84 MD(7294.00) Inc(65.0) Azm(82.9) TVD(7120.93)
VS(190.38) NS(585.54) EW(77.94) TEMP(0.0)

#85 MD(7339.00) Inc(73.2) Azm(82.0) TVD(7136.97)
VS(232.30) NS(591.07) EW(119.58) TEMP(0.0)

#87 MD(7456.00) Inc(88.1) Azm(84.3) TVD(7154.31)
VS(347.15) NS(602.60) EW(234.38) TEMP(0.0)