# Harold 6Y-304

MD
2":100'

Polaris Guidance Systems LLC

**Company:** Petroleum Development Corp.
**Well Name:** Harold 6y-304
**API:** 05123457480
**County/Parish:** Weld
**State:** Colorado
**Country:** United States
**Job number:** 161-163
**Field:** Wattenburg
**Rig Id:** Ensign 161
**Survey Company:** Ensign
**Operator:** Petroleum Development Corp.
**Company Man:** Brady Sharp / John Falton
**Daylight DD:** Zach Gentry
**Swing Shift DD:** Tony Callow
**Night DD:** Eric Mays
**Daylight MWD:** Ryan Prue
**Night MWD:** Bobby blevins

**Log measurements:** Gamma, ROP
**Depth measured from:** 2556 ft
**Maximum temperature:** 190

| | Depth | Date |
|---|---|---|
| **Start:** | 0 ft | 2-3-2019 |
| **End:** | 11852 ft | 2-7-2019 |

| Casing | Depth | Size |
|---|---|---|
| **Surface:** | 2556 ft | 9 5/8" |
| **Intermediate:** | | |

**Mud Type:** H2O
**Density:**
**Viscosity:**
**Rm:** **Rmf:** **Rmc:**

**Elevations**
**KB:** 23 ft
**GL:** 4787 ft
**DF:** 4810 ft

| Run | Bit Size | Offsets | | Depths | | Dates | |
|---|---|---|---|---|---|---|---|
| | | Gamma | Survey | Start | End | Start | End |
| 1 | 12.25" | | 60.00 ft | 0 ft | 2576 ft | 2-3-2019 | 2-3-2019 |
| 2 | 8.5" | 60.45 ft | 57.95 ft | 2576 ft | 11852 ft | 2-4-2019 | 2-7-2019 |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |

Ensign 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.

#26 MD(2637.00) Inc(10.9) Azm(109.6) TVD(2592.66)
VS(-395.95) N/-S(-138.45) E/-W(410.16)

#27 MD(2733.00) Inc(11.9) Azm(123.6) TVD(2686.78)
VS(-411.94) N/-S(-146.98) E/-W(426.99)

#28 MD(2828.00) Inc(12.5) Azm(121.2) TVD(2779.64)
VS(-427.84) N/-S(-157.72) E/-W(443.93)

#29 MD(2924.00) Inc(13.6) Azm(124.2) TVD(2873.16)
VS(-444.93) N/-S(-169.45) E/-W(462.15)

#30 MD(3019.00) Inc(13.5) Azm(118.6) TVD(2965.50)
VS(-462.81) N/-S(-181.07) E/-W(481.16)

#31 MD(3115.00) Inc(12.9) Azm(112.8) TVD(3058.97)
VS(-481.59) N/-S(-190.59) E/-W(500.88)

#32 MD(3210.00) Inc(12.0) Azm(113.1) TVD(3151.74)
VS(-499.64) N/-S(-198.58) E/-W(519.73)

#33 MD(3306.00) Inc(10.4) Azm(112.1) TVD(3245.90)
VS(-516.17) N/-S(-205.77) E/-W(536.99)

#34 MD(3401.00) Inc(11.2) Azm(109.5) TVD(3339.20)
VS(-532.25) N/-S(-212.10) E/-W(553.71)

#35 MD(3496.00) Inc(11.6) Azm(107.9) TVD(3432.31)
VS(-549.49) N/-S(-218.13) E/-W(571.57)

#36 MD(3592.00) Inc(10.7) Azm(106.6) TVD(3526.48)
VS(-566.70) N/-S(-223.66) E/-W(589.35)

#37 MD(3688.00) Inc(11.4) Azm(104.8) TVD(3620.70)
VS(-583.93) N/-S(-228.64) E/-W(607.10)

#38 MD(3783.00) Inc(10.7) Azm(104.1) TVD(3713.93)
VS(-601.08) N/-S(-233.19) E/-W(624.74)

#39 MD(3878.00) Inc(11.6) Azm(104.5) TVD(3807.15)
VS(-618.35) N/-S(-237.73) E/-W(642.49)

#40 MD(3974.00) Inc(12.5) Azm(105.3) TVD(3901.03)
VS(-637.16) N/-S(-242.88) E/-W(661.85)

#41 MD(4070.00) Inc(11.8) Azm(102.3) TVD(3994.88)
VS(-656.29) N/-S(-247.72) E/-W(681.49)

#42 MD(4165.00) Inc(11.9) Azm(108.9) TVD(4087.85)
VS(-674.52) N/-S(-252.97) E/-W(700.27)

#43 MD(4260.00) Inc(10.9) Azm(108.0) TVD(4180.97)
VS(-691.76) N/-S(-258.93) E/-W(718.12)

#44 MD(4356.00) Inc(12.1) Azm(105.8) TVD(4275.04)
VS(-709.51) N/-S(-264.48) E/-W(736.45)

#45 MD(4452.00) Inc(11.6) Azm(103.9) TVD(4368.99)
VS(-728.00) N/-S(-269.53) E/-W(755.48)

#46 MD(4547.00) Inc(12.8) Azm(104.7) TVD(4461.85)
VS(-746.89) N/-S(-274.50) E/-W(774.90)

#47 MD(4642.00) Inc(14.6) Azm(106.3) TVD(4554.16)
VS(-767.90) N/-S(-280.52) E/-W(796.54)

#48 MD(4738.00) Inc(12.9) Azm(104.9) TVD(4647.40)
VS(-789.23) N/-S(-286.66) E/-W(818.52)

#49 MD(4833.00) Inc(14.0) Azm(103.6) TVD(4739.79)
VS(-810.10) N/-S(-292.10) E/-W(839.97)

#50 MD(4929.00) Inc(13.7) Azm(102.3) TVD(4832.99)
VS(-831.95) N/-S(-297.26) E/-W(862.38)

#51 MD(5025.00) Inc(12.3) Azm(98.9) TVD(4926.53)
VS(-852.73) N/-S(-301.27) E/-W(883.60)

#52 MD(5120.00) Inc(12.1) Azm(98.9) TVD(5019.39)
VS(-872.16) N/-S(-304.37) E/-W(903.40)

#53 MD(5216.00) Inc(11.3) Azm(97.5) TVD(5113.40)
VS(-891.05) N/-S(-307.16) E/-W(922.61)

#54 MD(5312.00) Inc(9.5) Azm(104.5) TVD(5207.83)
VS(-907.68) N/-S(-310.37) E/-W(939.61)

#55 MD(5407.00) Inc(8.7) Azm(96.3) TVD(5301.63)
VS(-922.15) N/-S(-313.13) E/-W(954.38)

#56 MD(5502.00) Inc(7.3) Azm(104.0) TVD(5395.69)
VS(-934.96) N/-S(-315.40) E/-W(967.46)

#57 MD(5598.00) Inc(6.2) Azm(101.1) TVD(5491.02)
VS(-945.74) N/-S(-317.88) E/-W(978.51)

#58 MD(5693.00) Inc(4.8) Azm(105.2) TVD(5585.58)
VS(-954.39) N/-S(-319.91) E/-W(987.38)

#59 MD(5789.00) Inc(3.8) Azm(129.8) TVD(5681.31)
VS(-960.43) N/-S(-323.02) E/-W(993.73)

#60 MD(5885.00) Inc(1.4) Azm(101.3) TVD(5777.21)
VS(-963.81) N/-S(-325.31) E/-W(997.33)

#61 MD(5980.00) Inc(0.5) Azm(14.7) TVD(5872.20)
VS(-965.05) N/-S(-325.11) E/-W(998.55)

#62 MD(6076.00) Inc(1.2) Azm(356.0) TVD(5968.19)
VS(-965.22) N/-S(-323.68) E/-W(998.60)

#63 MD(6172.00) Inc(1.9) Azm(334.1) TVD(6064.15)
VS(-964.68) N/-S(-321.24) E/-W(997.83)

#64 MD(6267.00) Inc(2.1) Azm(347.1) TVD(6159.09)
VS(-963.88) N/-S(-318.08) E/-W(996.73)

#65 MD(6363.00) Inc(5.6) Azm(278.0) TVD(6254.90)
VS(-959.06) N/-S(-315.68) E/-W(991.68)

#66 MD(6458.00) Inc(12.4) Azm(263.0) TVD(6348.68)
VS(-944.30) N/-S(-316.29) E/-W(976.91)

#67 MD(6554.00) Inc(16.6) Azm(259.9) TVD(6441.60)
VS(-920.31) N/-S(-319.95) E/-W(953.16)

#68 MD(6650.00) Inc(21.2) Azm(258.1) TVD(6532.40)
VS(-889.40) N/-S(-325.92) E/-W(922.66)

#69 MD(6746.00) Inc(31.5) Azm(261.2) TVD(6618.32)
VS(-847.01) N/-S(-333.37) E/-W(880.78)

#70 MD(6841.00) Inc(41.3) Azm(270.6) TVD(6694.74)
VS(-790.87) N/-S(-336.84) E/-W(824.72)

#71 MD(6937.00) Inc(48.6) Azm(268.9) TVD(6762.62)
VS(-723.33) N/-S(-337.18) E/-W(756.93)

#72 MD(7033.00) Inc(56.3) Azm(268.9) TVD(6821.11)
VS(-647.48) N/-S(-338.66) E/-W(680.91)

#73 MD(7129.00) Inc(64.2) Azm(270.8) TVD(6868.74)
VS(-564.55) N/-S(-338.89) E/-W(597.65)

#74 MD(7225.00) Inc(70.1) Azm(270.8) TVD(6905.98)
VS(-476.59) N/-S(-337.70) E/-W(509.23)

#75 MD(7321.00) Inc(77.4) Azm(270.4) TVD(6932.77)
VS(-384.94) N/-S(-336.75) E/-W(417.11)

#76 MD(7416.00) Inc(88.5) Azm(270.7) TVD(6944.39)
VS(-291.28) N/-S(-335.81) E/-W(322.98)

#77 MD(7512.00) Inc(91.3) Azm(269.6) TVD(6944.58)
VS(-195.71) N/-S(-335.50) E/-W(226.99)

#78 MD(7607.00) Inc(91.3) Azm(269.0) TVD(6942.42)
VS(-101.03) N/-S(-336.62) E/-W(132.02)

#79 MD(7702.00) Inc(90.6) Azm(270.0) TVD(6940.79)
VS(-6.37) N/-S(-337.42) E/-W(37.04)

#80 MD(7798.00) Inc(91.3) Azm(269.1) TVD(6939.13)
VS(89.29) N/-S(-338.15) E/-W(-58.94)

#81 MD(7894.00) Inc(90.3) Azm(269.4) TVD(6937.71)
VS(184.99) N/-S(-339.39) E/-W(-154.92)

#82 MD(7990.00) Inc(90.7) Azm(269.1) TVD(6936.84)
VS(280.70) N/-S(-340.66) E/-W(-250.91)

#83 MD(8085.00) Inc(89.4) Azm(269.7) TVD(6936.77)
VS(375.39) N/-S(-341.70) E/-W(-345.90)

#84 MD(8180.00) Inc(89.3) Azm(268.2) TVD(6937.81)
VS(470.13) N/-S(-343.42) E/-W(-440.88)

#85 MD(8276.00) Inc(89.4) Azm(267.7) TVD(6938.88)
VS(565.98) N/-S(-346.79) E/-W(-536.81)

#86 MD(8372.00) Inc(89.4) Azm(267.0) TVD(6939.89)
VS(661.88) N/-S(-351.17) E/-W(-632.71)

#87 MD(8468.00) Inc(89.0) Azm(268.8) TVD(6941.25)
VS(757.72) N/-S(-354.63) E/-W(-728.63)

#88 MD(8563.00) Inc(90.6) Azm(271.7) TVD(6941.59)
VS(852.28) N/-S(-354.20) E/-W(-823.61)

#89 MD(8659.00) Inc(90.6) Azm(270.9) TVD(6940.55)
VS(947.66) N/-S(-352.03) E/-W(-919.58)

#90 MD(8754.00) Inc(91.1) Azm(270.3) TVD(6939.15)
VS(1042.16) N/-S(-351.04) E/-W(-1014.57)

#91 MD(8850.00) Inc(91.2) Azm(269.9) TVD(6937.25)
VS(1137.74) N/-S(-350.91) E/-W(-1110.55)

#92 MD(8946.00) Inc(90.7) Azm(270.8) TVD(6935.69)
VS(1233.28) N/-S(-350.40) E/-W(-1206.53)

#93 MD(9041.00) Inc(91.0) Azm(270.2) TVD(6934.33)
VS(1327.81) N/-S(-349.62) E/-W(-1301.52)

#94 MD(9137.00) Inc(91.4) Azm(269.9) TVD(6932.33)
VS(1423.39) N/-S(-349.56) E/-W(-1397.50)

#95 MD(9232.00) Inc(91.7) Azm(269.5) TVD(6929.76)
VS(1518.01) N/-S(-350.09) E/-W(-1492.46)

#96 MD(9327.00) Inc(91.0) Azm(270.7) TVD(6927.54)
VS(1612.58) N/-S(-349.94) E/-W(-1587.43)

#97 MD(9423.00) Inc(91.2) Azm(270.4) TVD(6925.74)
VS(1708.08) N/-S(-349.04) E/-W(-1683.41)

#98 MD(9518.00) Inc(90.3) Azm(271.0) TVD(6924.52)
VS(1802.58) N/-S(-347.95) E/-W(-1778.40)

#99 MD(9614.00) Inc(90.3) Azm(270.5) TVD(6923.99)
VS(1898.07) N/-S(-346.76) E/-W(-1874.39)

#100 MD(9709.00) Inc(90.8) Azm(270.2) TVD(6923.02)
VS(1992.62) N/-S(-346.22) E/-W(-1969.38)

#101 MD(9805.00) Inc(89.2) Azm(271.4) TVD(6923.02)
VS(2088.10) N/-S(-344.91) E/-W(-2065.37)

#102 MD(9899.00) Inc(89.5) Azm(271.5) TVD(6924.13)
VS(2181.47) N/-S(-342.57) E/-W(-2159.33)

#103 MD(9995.00) Inc(89.3) Azm(271.1) TVD(6925.14)
VS(2276.84) N/-S(-340.38) E/-W(-2255.30)

#104 MD(10090.00) Inc(88.8) Azm(270.4) TVD(6926.67)
VS(2371.32) N/-S(-339.09) E/-W(-2350.28)

#105 MD(10184.00) Inc(88.4) Azm(270.5) TVD(6928.96)
VS(2464.84) N/-S(-338.38) E/-W(-2444.25)

#106 MD(10280.00) Inc(87.9) Azm(269.7) TVD(6932.10)
VS(2560.38) N/-S(-338.21) E/-W(-2540.19)

#107 MD(10375.00) Inc(89.9) Azm(267.9) TVD(6933.91)
VS(2655.11) N/-S(-340.13) E/-W(-2635.15)

#108 MD(10471.00) Inc(90.4) Azm(267.3) TVD(6933.64)
VS(2751.00) N/-S(-344.08) E/-W(-2731.07)

#109 MD(10566.00) Inc(91.7) Azm(269.1) TVD(6931.87)
VS(2845.81) N/-S(-347.04) E/-W(-2826.00)

#110 MD(10662.00) Inc(92.7) Azm(268.7) TVD(6928.21)
VS(2941.49) N/-S(-348.89) E/-W(-2921.91)

#111 MD(10757.00) Inc(92.1) Azm(269.6) TVD(6924.28)
VS(3036.14) N/-S(-350.35) E/-W(-3016.82)

#112 MD(10853.00) Inc(92.1) Azm(269.1) TVD(6920.75)
VS(3131.78) N/-S(-351.48) E/-W(-3112.74)

#113 MD(10949.00) Inc(90.2) Azm(270.0) TVD(6918.81)
VS(3227.43) N/-S(-352.26) E/-W(-3208.72)

#114 MD(11044.00) Inc(90.3) Azm(269.2) TVD(6918.38)
VS(3322.09) N/-S(-352.95) E/-W(-3303.71)

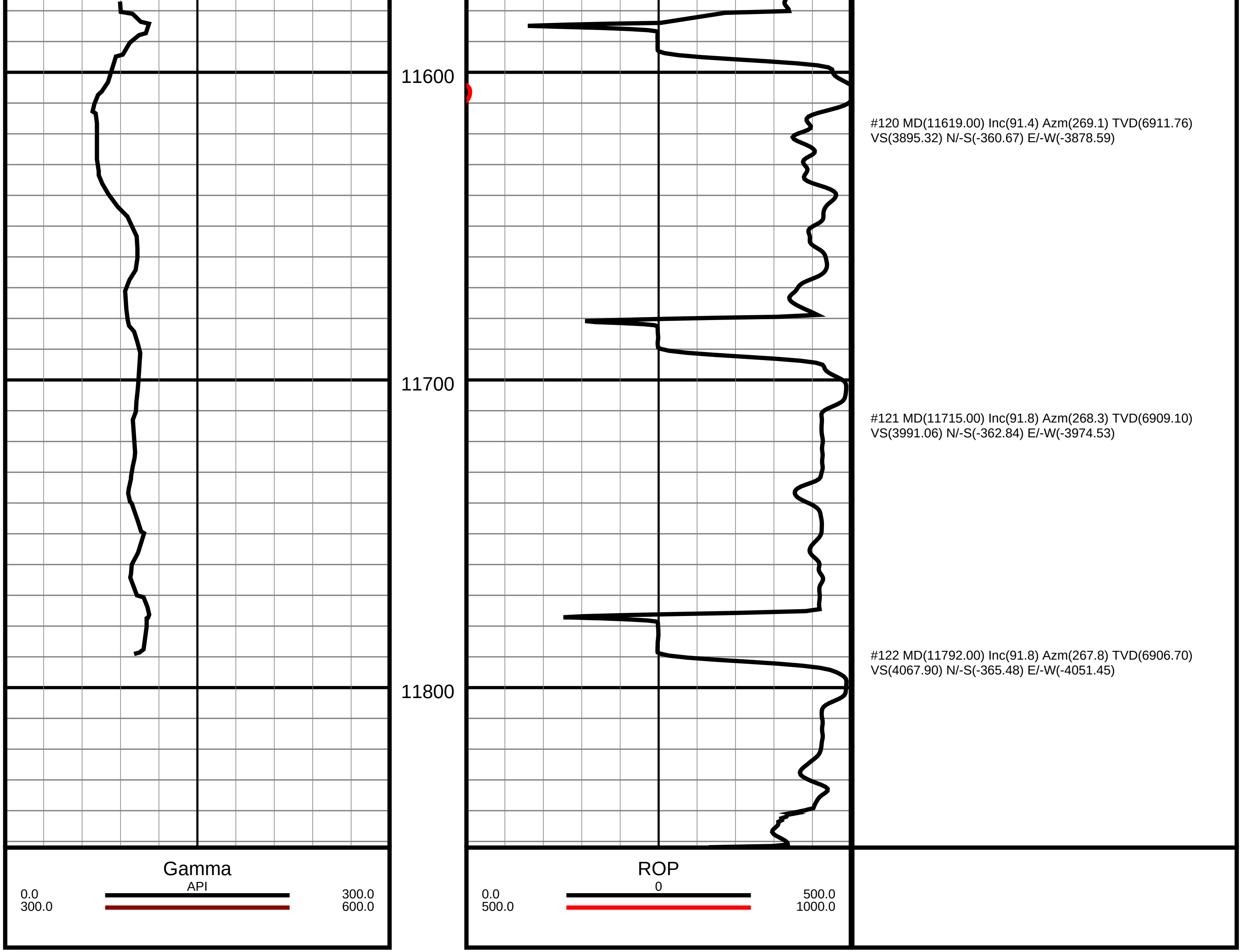
#115 MD(11140.00) Inc(90.8) Azm(268.8) TVD(6917.41)
VS(3417.83) N/-S(-354.63) E/-W(-3399.69)

#116 MD(11235.00) Inc(91.3) Azm(268.3) TVD(6915.64)
VS(3512.61) N/-S(-357.02) E/-W(-3494.64)

#117 MD(11331.00) Inc(89.9) Azm(270.0) TVD(6914.61)
VS(3608.33) N/-S(-358.44) E/-W(-3590.62)

#118 MD(11427.00) Inc(90.6) Azm(269.6) TVD(6914.15)
VS(3703.97) N/-S(-358.84) E/-W(-3686.62)

#119 MD(11523.00) Inc(90.4) Azm(269.6) TVD(6913.28)
VS(3799.63) N/-S(-359.57) E/-W(-3782.61)



#120 MD(11619.00) Inc(91.4) Azm(269.1) TVD(6911.76)
VS(3895.32) N/-S(-360.67) E/-W(-3878.59)

#121 MD(11715.00) Inc(91.8) Azm(268.3) TVD(6909.10)
VS(3991.06) N/-S(-362.84) E/-W(-3974.53)

#122 MD(11792.00) Inc(91.8) Azm(267.8) TVD(6906.70)
VS(4067.90) N/-S(-365.48) E/-W(-4051.45)