



# Survey Report

Service Company: Wellbenders

Location: 15 miles South of Artesia

Well: Ross Ranch 14H

Rig: Akita 20

API or UWI: 30-015-45695

Job Number: NMDG2019-1046

State: New Mexico

Operating Company: Percussion Petroleum

County: Eddy

Magnetic Declination: 0

Country: USA

Proposed Azimuth: 359.91

Comment

North Reference: GRID

Latitude: 32.637049

Longitude: -104.479324

## Tie-In Data

| MD   | Inclination | Azimuth | TVD  | NS   | EW   |
|------|-------------|---------|------|------|------|
| 0.00 | 0.00        | 0.00    | 0.00 | 0.00 | 0.00 |

## Survey Data

| MD      | Inclination | Azimuth | TVD     | NS     | EW     | CA     | CD     | VS     | DLS  |
|---------|-------------|---------|---------|--------|--------|--------|--------|--------|------|
| 135.00  | 0.48        | 2.03    | 135.00  | 0.57   | 0.02   | 2.03   | 0.57   | 0.57   | 0.36 |
| 226.00  | 0.57        | 344.81  | 225.99  | 1.38   | -0.09  | 356.48 | 1.39   | 1.38   | 0.20 |
| 317.00  | 0.53        | 282.76  | 316.99  | 1.91   | -0.61  | 342.20 | 2.01   | 1.91   | 0.62 |
| 407.00  | 1.93        | 225.54  | 406.97  | 0.94   | -2.10  | 294.16 | 2.30   | 0.95   | 1.89 |
| 498.00  | 4.18        | 216.14  | 497.84  | -2.81  | -5.15  | 241.40 | 5.87   | -2.80  | 2.52 |
| 589.00  | 5.63        | 216.05  | 588.50  | -9.10  | -9.74  | 226.94 | 13.32  | -9.08  | 1.59 |
| 681.00  | 5.63        | 215.08  | 680.06  | -16.44 | -14.98 | 222.35 | 22.24  | -16.41 | 0.10 |
| 772.00  | 5.36        | 214.64  | 770.64  | -23.59 | -19.97 | 220.25 | 30.90  | -23.56 | 0.30 |
| 862.00  | 5.36        | 215.26  | 860.24  | -30.48 | -24.78 | 219.11 | 39.28  | -30.44 | 0.06 |
| 953.00  | 5.27        | 214.55  | 950.85  | -37.39 | -29.61 | 218.37 | 47.69  | -37.35 | 0.12 |
| 1043.00 | 5.36        | 217.28  | 1040.47 | -44.14 | -34.50 | 218.01 | 56.02  | -44.09 | 0.30 |
| 1134.00 | 5.41        | 217.63  | 1131.06 | -50.92 | -39.69 | 217.93 | 64.56  | -50.86 | 0.07 |
| 1186.00 | 5.58        | 216.93  | 1182.83 | -54.88 | -42.71 | 217.89 | 69.54  | -54.82 | 0.35 |
| 1364.00 | 5.14        | 216.40  | 1360.05 | -68.22 | -52.64 | 217.65 | 86.16  | -68.14 | 0.25 |
| 1458.00 | 5.10        | 219.47  | 1453.67 | -74.83 | -57.79 | 217.68 | 94.55  | -74.74 | 0.29 |
| 1551.00 | 4.97        | 218.77  | 1546.31 | -81.16 | -62.94 | 217.79 | 102.71 | -81.07 | 0.15 |
| 1647.00 | 4.57        | 218.95  | 1641.98 | -87.38 | -67.95 | 217.87 | 110.69 | -87.27 | 0.42 |

|         |       |        |         |         |         |        |        |         |      |
|---------|-------|--------|---------|---------|---------|--------|--------|---------|------|
| 1741.00 | 5.76  | 214.73 | 1735.60 | -94.17  | -72.99  | 217.78 | 119.15 | -94.06  | 1.33 |
| 1836.00 | 5.76  | 211.56 | 1830.12 | -102.15 | -78.20  | 217.44 | 128.65 | -102.03 | 0.33 |
| 1930.00 | 5.63  | 211.21 | 1923.65 | -110.11 | -83.06  | 217.03 | 137.93 | -109.98 | 0.14 |
| 2024.00 | 5.49  | 215.78 | 2017.21 | -117.70 | -88.08  | 216.81 | 147.01 | -117.57 | 0.49 |
| 2119.00 | 5.19  | 215.78 | 2111.80 | -124.88 | -93.25  | 216.75 | 155.85 | -124.73 | 0.32 |
| 2212.00 | 4.97  | 212.53 | 2204.43 | -131.69 | -97.87  | 216.62 | 164.07 | -131.53 | 0.39 |
| 2305.00 | 4.57  | 212.88 | 2297.11 | -138.19 | -102.05 | 216.44 | 171.79 | -138.03 | 0.43 |
| 2400.00 | 5.14  | 215.87 | 2391.77 | -144.82 | -106.60 | 216.36 | 179.82 | -144.65 | 0.66 |
| 2494.00 | 5.14  | 216.40 | 2485.39 | -151.62 | -111.57 | 216.35 | 188.24 | -151.45 | 0.05 |
| 2590.00 | 6.15  | 238.55 | 2580.94 | -157.77 | -118.51 | 216.91 | 197.32 | -157.58 | 2.48 |
| 2637.00 | 7.16  | 256.56 | 2627.63 | -159.76 | -123.50 | 217.71 | 201.93 | -159.57 | 4.91 |
| 2683.00 | 8.09  | 279.15 | 2673.23 | -159.91 | -129.49 | 219.00 | 205.77 | -159.71 | 6.77 |
| 2730.00 | 8.97  | 294.80 | 2719.71 | -157.85 | -136.08 | 220.76 | 208.41 | -157.64 | 5.26 |
| 2778.00 | 10.33 | 311.06 | 2767.04 | -153.45 | -142.72 | 222.93 | 209.57 | -153.23 | 6.32 |
| 2825.00 | 12.66 | 324.59 | 2813.11 | -146.49 | -148.89 | 225.47 | 208.87 | -146.25 | 7.55 |
| 2873.00 | 16.35 | 333.38 | 2859.57 | -136.15 | -154.96 | 228.70 | 206.28 | -135.91 | 8.93 |
| 2920.00 | 19.43 | 339.71 | 2904.30 | -122.90 | -160.64 | 232.58 | 202.26 | -122.65 | 7.74 |
| 2967.00 | 22.24 | 344.02 | 2948.22 | -107.02 | -165.80 | 237.16 | 197.34 | -106.75 | 6.81 |
| 3014.00 | 25.49 | 347.97 | 2991.20 | -88.57  | -170.36 | 242.53 | 192.01 | -88.30  | 7.70 |
| 3062.00 | 28.18 | 351.40 | 3034.03 | -67.25  | -174.21 | 248.89 | 186.74 | -66.98  | 6.46 |
| 3109.00 | 31.25 | 354.91 | 3074.85 | -44.13  | -176.95 | 256.00 | 182.37 | -43.85  | 7.51 |
| 3156.00 | 34.11 | 358.43 | 3114.41 | -18.81  | -178.39 | 263.98 | 179.38 | -18.53  | 7.30 |
| 3203.00 | 36.04 | 2.91   | 3152.88 | 8.18    | -178.05 | 272.63 | 178.24 | 8.46    | 6.84 |
| 3251.00 | 37.41 | 7.57   | 3191.36 | 36.75   | -175.41 | 281.83 | 179.22 | 37.02   | 6.47 |
| 3298.00 | 40.66 | 9.33   | 3227.86 | 66.02   | -171.05 | 291.10 | 183.35 | 66.28   | 7.31 |
| 3345.00 | 43.56 | 7.13   | 3262.73 | 97.20   | -166.56 | 300.27 | 192.85 | 97.46   | 6.92 |
| 3392.00 | 46.73 | 5.02   | 3295.88 | 130.33  | -163.05 | 308.64 | 208.73 | 130.58  | 7.46 |
| 3440.00 | 49.85 | 2.39   | 3327.81 | 166.08  | -160.75 | 315.93 | 231.13 | 166.33  | 7.68 |
| 3487.00 | 52.04 | 1.51   | 3357.42 | 202.55  | -159.52 | 321.78 | 257.82 | 202.80  | 4.88 |
| 3534.00 | 53.98 | 1.15   | 3385.70 | 240.08  | -158.65 | 326.54 | 287.76 | 240.33  | 4.17 |
| 3581.00 | 56.53 | 1.24   | 3412.49 | 278.69  | -157.84 | 330.47 | 320.28 | 278.93  | 5.43 |
| 3629.00 | 57.36 | 1.24   | 3438.67 | 318.91  | -156.97 | 333.79 | 355.45 | 319.15  | 1.73 |
| 3676.00 | 58.02 | 1.15   | 3463.79 | 358.62  | -156.14 | 336.47 | 391.14 | 358.87  | 1.41 |
| 3723.00 | 58.24 | 1.24   | 3488.60 | 398.53  | -155.31 | 338.71 | 427.72 | 398.77  | 0.50 |
| 3770.00 | 58.46 | 1.33   | 3513.27 | 438.53  | -154.41 | 340.60 | 464.92 | 438.77  | 0.50 |
| 3818.00 | 58.51 | 1.42   | 3538.36 | 479.44  | -153.43 | 342.25 | 503.39 | 479.68  | 0.19 |
| 3913.00 | 60.88 | 0.98   | 3586.29 | 561.43  | -151.72 | 344.88 | 581.57 | 561.67  | 2.53 |
| 3960.00 | 64.75 | 359.84 | 3607.76 | 603.23  | -151.42 | 345.91 | 621.94 | 603.47  | 8.51 |
| 4007.00 | 69.05 | 358.69 | 3626.20 | 646.45  | -151.99 | 346.77 | 664.07 | 646.68  | 9.42 |

|         |       |        |         |         |         |        |         |         |       |
|---------|-------|--------|---------|---------|---------|--------|---------|---------|-------|
| 4054.00 | 73.41 | 359.05 | 3641.32 | 690.93  | -152.86 | 347.52 | 707.63  | 691.17  | 9.30  |
| 4102.00 | 77.98 | 0.10   | 3653.17 | 737.42  | -153.20 | 348.26 | 753.17  | 737.66  | 9.75  |
| 4149.00 | 82.99 | 1.15   | 3660.94 | 783.76  | -152.69 | 348.98 | 798.49  | 784.00  | 10.88 |
| 4197.00 | 88.00 | 1.07   | 3664.71 | 831.59  | -151.77 | 349.66 | 845.32  | 831.82  | 10.44 |
| 4287.00 | 92.79 | 0.01   | 3664.09 | 921.55  | -150.92 | 350.70 | 933.83  | 921.79  | 5.45  |
| 4413.00 | 93.80 | 0.89   | 3656.85 | 1047.34 | -149.93 | 351.85 | 1058.01 | 1047.57 | 1.06  |
| 4508.00 | 92.66 | 0.89   | 3651.49 | 1142.17 | -148.46 | 352.59 | 1151.78 | 1142.41 | 1.20  |
| 4603.00 | 93.49 | 1.59   | 3646.40 | 1237.01 | -146.41 | 353.25 | 1245.65 | 1237.24 | 1.14  |
| 4697.00 | 92.35 | 1.42   | 3641.61 | 1330.86 | -143.94 | 353.83 | 1338.62 | 1331.08 | 1.23  |
| 4792.00 | 92.22 | 0.63   | 3637.82 | 1425.77 | -142.24 | 354.30 | 1432.84 | 1425.99 | 0.84  |
| 4887.00 | 92.09 | 359.48 | 3634.25 | 1520.70 | -142.15 | 354.66 | 1527.33 | 1520.92 | 1.22  |
| 4981.00 | 92.31 | 359.66 | 3630.64 | 1614.62 | -142.86 | 354.94 | 1620.93 | 1614.85 | 0.30  |
| 5076.00 | 93.10 | 0.10   | 3626.16 | 1709.52 | -143.05 | 355.22 | 1715.49 | 1709.74 | 0.95  |
| 5171.00 | 92.57 | 0.19   | 3621.46 | 1804.40 | -142.81 | 355.47 | 1810.04 | 1804.62 | 0.57  |
| 5265.00 | 92.13 | 0.01   | 3617.60 | 1898.32 | -142.65 | 355.70 | 1903.67 | 1898.54 | 0.51  |
| 5360.00 | 93.49 | 0.28   | 3612.95 | 1993.20 | -142.41 | 355.91 | 1998.29 | 1993.43 | 1.46  |
| 5455.00 | 91.56 | 0.45   | 3608.76 | 2088.11 | -141.81 | 356.11 | 2092.92 | 2088.33 | 2.04  |
| 5549.00 | 92.48 | 0.45   | 3605.45 | 2182.04 | -141.07 | 356.30 | 2186.60 | 2182.26 | 0.98  |
| 5643.00 | 93.36 | 1.07   | 3600.66 | 2275.91 | -139.82 | 356.48 | 2280.20 | 2276.13 | 1.14  |
| 5738.00 | 92.35 | 0.63   | 3595.93 | 2370.78 | -138.42 | 356.66 | 2374.82 | 2371.00 | 1.16  |
| 5832.00 | 92.79 | 358.52 | 3591.71 | 2464.68 | -139.11 | 356.77 | 2468.60 | 2464.89 | 2.29  |
| 5927.00 | 92.66 | 358.08 | 3587.20 | 2559.53 | -141.93 | 356.83 | 2563.46 | 2559.75 | 0.48  |
| 6021.00 | 91.47 | 358.43 | 3583.81 | 2653.42 | -144.79 | 356.88 | 2657.37 | 2653.65 | 1.32  |
| 6115.00 | 89.98 | 358.52 | 3582.62 | 2747.38 | -147.29 | 356.93 | 2751.33 | 2747.61 | 1.59  |
| 6210.00 | 91.34 | 358.78 | 3581.53 | 2842.34 | -149.53 | 356.99 | 2846.28 | 2842.58 | 1.46  |
| 6304.00 | 92.79 | 359.13 | 3578.14 | 2936.27 | -151.24 | 357.05 | 2940.16 | 2936.50 | 1.59  |
| 6399.00 | 90.99 | 0.01   | 3575.01 | 3031.21 | -151.95 | 357.13 | 3035.01 | 3031.44 | 2.11  |
| 6494.00 | 91.69 | 0.01   | 3572.78 | 3126.18 | -151.94 | 357.22 | 3129.87 | 3126.41 | 0.74  |
| 6589.00 | 91.56 | 0.36   | 3570.09 | 3221.14 | -151.63 | 357.30 | 3224.71 | 3221.38 | 0.39  |
| 6683.00 | 90.59 | 0.10   | 3568.33 | 3315.12 | -151.25 | 357.39 | 3318.57 | 3315.36 | 1.07  |
| 6778.00 | 91.25 | 359.75 | 3566.80 | 3410.11 | -151.38 | 357.46 | 3413.47 | 3410.34 | 0.79  |
| 6872.00 | 90.73 | 0.10   | 3565.18 | 3504.09 | -151.50 | 357.52 | 3507.37 | 3504.33 | 0.67  |
| 6966.00 | 91.60 | 0.28   | 3563.27 | 3598.07 | -151.19 | 357.59 | 3601.25 | 3598.31 | 0.95  |
| 7057.00 | 90.90 | 0.28   | 3561.28 | 3689.05 | -150.74 | 357.66 | 3692.13 | 3689.28 | 0.77  |
| 7149.00 | 90.42 | 0.28   | 3560.22 | 3781.04 | -150.29 | 357.72 | 3784.03 | 3781.27 | 0.52  |
| 7239.00 | 90.15 | 0.01   | 3559.77 | 3871.04 | -150.07 | 357.78 | 3873.95 | 3871.27 | 0.42  |
| 7330.00 | 89.32 | 359.75 | 3560.19 | 3962.04 | -150.26 | 357.83 | 3964.89 | 3962.27 | 0.96  |
| 7421.00 | 89.98 | 359.48 | 3560.75 | 4053.04 | -150.87 | 357.87 | 4055.84 | 4053.27 | 0.78  |
| 7512.00 | 90.68 | 359.40 | 3560.23 | 4144.03 | -151.76 | 357.90 | 4146.81 | 4144.26 | 0.77  |

|         |       |        |         |         |         |        |         |         |      |
|---------|-------|--------|---------|---------|---------|--------|---------|---------|------|
| 7603.00 | 89.98 | 359.92 | 3559.70 | 4235.02 | -152.30 | 357.94 | 4237.76 | 4235.26 | 0.96 |
| 7694.00 | 90.24 | 0.10   | 3559.53 | 4326.02 | -152.28 | 357.98 | 4328.70 | 4326.26 | 0.35 |
| 7784.00 | 91.08 | 0.01   | 3558.49 | 4416.02 | -152.19 | 358.03 | 4418.64 | 4416.25 | 0.94 |
| 7875.00 | 90.64 | 0.28   | 3557.12 | 4507.01 | -151.96 | 358.07 | 4509.57 | 4507.24 | 0.57 |
| 7966.00 | 89.27 | 0.19   | 3557.20 | 4598.00 | -151.59 | 358.11 | 4600.50 | 4598.24 | 1.51 |
| 8057.00 | 90.24 | 359.92 | 3557.59 | 4689.00 | -151.50 | 358.15 | 4691.45 | 4689.23 | 1.11 |
| 8148.00 | 91.52 | 359.92 | 3556.19 | 4779.99 | -151.63 | 358.18 | 4782.39 | 4780.22 | 1.41 |
| 8239.00 | 90.95 | 1.07   | 3554.23 | 4870.96 | -150.84 | 358.23 | 4873.30 | 4871.19 | 1.41 |
| 8330.00 | 89.85 | 1.59   | 3553.59 | 4961.93 | -148.73 | 358.28 | 4964.16 | 4962.16 | 1.34 |
| 8421.00 | 90.33 | 1.15   | 3553.45 | 5052.91 | -146.56 | 358.34 | 5055.03 | 5053.13 | 0.72 |
| 8515.00 | 90.64 | 0.36   | 3552.65 | 5146.90 | -145.32 | 358.38 | 5148.95 | 5147.12 | 0.90 |
| 8610.00 | 91.60 | 359.92 | 3550.80 | 5241.88 | -145.09 | 358.41 | 5243.88 | 5242.10 | 1.11 |
| 8704.00 | 91.60 | 0.01   | 3548.17 | 5335.84 | -145.14 | 358.44 | 5337.81 | 5336.06 | 0.10 |
| 8799.00 | 92.31 | 0.10   | 3544.93 | 5430.78 | -145.05 | 358.47 | 5432.72 | 5431.00 | 0.75 |
| 8893.00 | 91.25 | 359.22 | 3542.01 | 5524.73 | -145.61 | 358.49 | 5526.65 | 5524.96 | 1.47 |
| 8988.00 | 89.93 | 358.34 | 3541.03 | 5619.70 | -147.63 | 358.50 | 5621.64 | 5619.93 | 1.67 |
| 9082.00 | 89.36 | 359.05 | 3541.61 | 5713.68 | -149.77 | 358.50 | 5715.64 | 5713.90 | 0.97 |
| 9177.00 | 90.51 | 359.31 | 3541.72 | 5808.67 | -151.13 | 358.51 | 5810.63 | 5808.90 | 1.24 |
| 9272.00 | 92.62 | 359.31 | 3539.13 | 5903.62 | -152.28 | 358.52 | 5905.58 | 5903.85 | 2.22 |
| 9347.00 | 92.57 | 358.96 | 3535.73 | 5978.53 | -153.41 | 358.53 | 5980.50 | 5978.77 | 0.47 |

#### Projected Survey

| MD      | Inclination | Azimuth | TVD     | NS      | EW      | CA     | CD      | VS      | DLS  |
|---------|-------------|---------|---------|---------|---------|--------|---------|---------|------|
| 9402.00 | 92.57       | 358.96  | 3533.27 | 6033.47 | -154.40 | 358.53 | 6035.44 | 6033.70 | 0.00 |