

Provide Signature Page for  
Directional Survey

NM OIL CONSERVATION  
ARTESIA DISTRICT

NOV 06 2018



# Survey Report

30-015-45113

RECEIVED

Service Company: Wellbenders Directional Services

Location: Eddy County, New Mexico

Well: Rose 2H

Rig: Silver Oak #1

API or UWI: 30-015-45113

Job Number: NMDG2018-1134

State: New Mexico

Operating Company: Percussion Petroleum Operating

County: Eddy

Magnetic Declination: 7.32

Country: United States

Proposed Azimuth: 270.31

Comment

North Reference: GRID

Latitude: 32.680563

Longitude: -104.427371

## 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  |
|---------|-------------|---------|---------|--------|---------|--------|--------|--------|------|
| 131.00  | 0.09        | 155.06  | 131.00  | -0.09  | 0.04    | 155.06 | 0.10   | -0.04  | 0.07 |
| 223.00  | 0.13        | 331.72  | 223.00  | -0.07  | 0.02    | 159.96 | 0.07   | -0.02  | 0.24 |
| 315.00  | 0.31        | 243.22  | 315.00  | -0.09  | -0.25   | 250.59 | 0.26   | 0.25   | 0.36 |
| 407.00  | 2.11        | 334.62  | 406.98  | 1.33   | -1.20   | 318.07 | 1.79   | 1.20   | 2.33 |
| 499.00  | 1.93        | 334.01  | 498.92  | 4.25   | -2.60   | 328.56 | 4.99   | 2.62   | 0.20 |
| 591.00  | 3.30        | 328.65  | 590.82  | 7.91   | -4.66   | 329.51 | 9.18   | 4.70   | 1.51 |
| 683.00  | 4.97        | 323.37  | 682.58  | 13.37  | -8.41   | 327.82 | 15.79  | 8.48   | 1.86 |
| 775.00  | 7.03        | 322.32  | 774.07  | 21.02  | -14.23  | 325.90 | 25.39  | 14.35  | 2.24 |
| 866.00  | 9.19        | 317.49  | 864.16  | 30.79  | -22.55  | 323.78 | 38.16  | 22.71  | 2.49 |
| 958.00  | 10.02       | 315.29  | 954.87  | 41.89  | -33.14  | 321.65 | 53.42  | 33.37  | 0.99 |
| 1050.00 | 10.07       | 316.96  | 1045.46 | 53.46  | -44.26  | 320.38 | 69.40  | 44.55  | 0.32 |
| 1141.00 | 10.95       | 313.27  | 1134.93 | 65.20  | -55.99  | 319.35 | 85.94  | 56.34  | 1.22 |
| 1183.00 | 11.78       | 313.27  | 1176.11 | 70.87  | -62.01  | 318.81 | 94.17  | 62.39  | 1.98 |
| 1265.00 | 11.47       | 314.06  | 1256.42 | 82.28  | -73.97  | 318.04 | 110.64 | 74.41  | 0.42 |
| 1359.00 | 11.16       | 315.20  | 1348.60 | 95.23  | -87.09  | 317.56 | 129.05 | 87.61  | 0.41 |
| 1453.00 | 11.52       | 307.55  | 1440.77 | 107.41 | -100.94 | 316.78 | 147.40 | 101.52 | 1.64 |

| MD      | Inclination | Azimuth | TVD     | NS     | EW       | CA     | CD      | VS      | DLS   |
|---------|-------------|---------|---------|--------|----------|--------|---------|---------|-------|
| 1546.00 | 11.69       | 306.32  | 1531.87 | 118.65 | -115.90  | 315.67 | 165.86  | 116.54  | 0.32  |
| 1641.00 | 11.69       | 306.85  | 1624.90 | 130.12 | -131.35  | 314.73 | 184.89  | 132.06  | 0.11  |
| 1734.00 | 11.52       | 307.55  | 1716.00 | 141.43 | -146.26  | 314.04 | 203.45  | 147.02  | 0.24  |
| 1829.00 | 11.30       | 308.35  | 1809.12 | 152.99 | -161.08  | 313.52 | 222.15  | 161.90  | 0.29  |
| 1924.00 | 11.03       | 309.14  | 1902.32 | 164.50 | -175.42  | 313.16 | 240.49  | 176.31  | 0.33  |
| 2018.00 | 10.86       | 309.58  | 1994.61 | 175.82 | -189.22  | 312.90 | 258.30  | 190.17  | 0.20  |
| 2112.00 | 10.90       | 309.75  | 2086.92 | 187.14 | -202.88  | 312.69 | 276.01  | 203.89  | 0.05  |
| 2206.00 | 10.77       | 310.37  | 2179.24 | 198.51 | -216.41  | 312.53 | 293.67  | 217.48  | 0.19  |
| 2299.00 | 10.81       | 310.72  | 2270.60 | 209.83 | -229.64  | 312.42 | 311.07  | 230.77  | 0.08  |
| 2393.00 | 12.66       | 303.95  | 2362.64 | 221.34 | -244.86  | 312.11 | 330.07  | 246.06  | 2.45  |
| 2440.00 | 18.07       | 296.22  | 2407.94 | 227.44 | -255.68  | 311.65 | 342.20  | 256.91  | 12.28 |
| 2487.00 | 22.20       | 292.35  | 2452.06 | 234.04 | -270.44  | 310.87 | 357.65  | 271.71  | 9.23  |
| 2534.00 | 26.55       | 289.27  | 2494.87 | 240.88 | -288.58  | 309.85 | 375.90  | 289.88  | 9.64  |
| 2581.00 | 30.24       | 285.85  | 2536.21 | 247.59 | -309.89  | 308.62 | 396.65  | 311.23  | 8.58  |
| 2629.00 | 35.12       | 281.45  | 2576.60 | 253.63 | -335.07  | 307.12 | 420.24  | 336.44  | 11.30 |
| 2676.00 | 39.65       | 279.08  | 2613.94 | 258.69 | -363.14  | 305.46 | 445.86  | 364.54  | 10.11 |
| 2724.00 | 45.01       | 278.02  | 2649.41 | 263.47 | -395.10  | 303.70 | 474.89  | 396.52  | 11.26 |
| 2771.00 | 48.57       | 276.53  | 2681.59 | 267.80 | -429.07  | 301.97 | 505.78  | 430.51  | 7.92  |
| 2817.00 | 53.32       | 275.91  | 2710.56 | 271.66 | -464.57  | 300.32 | 538.17  | 466.03  | 10.38 |
| 2864.00 | 57.14       | 275.21  | 2737.36 | 275.40 | -502.99  | 298.70 | 573.45  | 504.47  | 8.22  |
| 2910.00 | 61.71       | 275.03  | 2760.75 | 278.93 | -542.43  | 297.21 | 609.94  | 543.93  | 9.94  |
| 2957.00 | 65.23       | 275.03  | 2781.74 | 282.61 | -584.31  | 295.81 | 649.07  | 585.83  | 7.49  |
| 3003.00 | 69.36       | 274.60  | 2799.49 | 286.17 | -626.59  | 294.55 | 688.84  | 628.12  | 9.02  |
| 3050.00 | 73.14       | 273.72  | 2814.60 | 289.40 | -670.97  | 293.33 | 730.72  | 672.52  | 8.24  |
| 3098.00 | 79.60       | 272.75  | 2825.91 | 292.02 | -717.51  | 292.15 | 774.66  | 719.08  | 13.60 |
| 3145.00 | 84.09       | 272.05  | 2832.57 | 293.97 | -763.99  | 291.05 | 818.59  | 765.57  | 9.67  |
| 3238.00 | 91.82       | 270.73  | 2835.89 | 296.22 | -856.83  | 289.07 | 906.59  | 858.42  | 8.43  |
| 3333.00 | 92.09       | 268.44  | 2832.65 | 295.53 | -951.76  | 287.25 | 996.59  | 953.35  | 2.43  |
| 3425.00 | 89.45       | 266.95  | 2831.41 | 291.83 | -1043.67 | 285.62 | 1083.70 | 1045.23 | 3.29  |
| 3519.00 | 89.32       | 266.51  | 2832.42 | 286.47 | -1137.51 | 284.14 | 1173.03 | 1139.04 | 0.49  |
| 3613.00 | 89.63       | 268.18  | 2833.28 | 282.12 | -1231.40 | 282.90 | 1263.31 | 1232.91 | 1.81  |
| 3706.00 | 89.49       | 267.74  | 2833.99 | 278.81 | -1324.34 | 281.89 | 1353.37 | 1325.83 | 0.50  |
| 3800.00 | 90.68       | 269.85  | 2833.85 | 276.83 | -1418.31 | 281.04 | 1445.08 | 1419.79 | 2.58  |
| 3895.00 | 91.52       | 270.29  | 2832.03 | 276.94 | -1513.29 | 280.37 | 1538.43 | 1514.77 | 1.00  |
| 4014.00 | 88.84       | 270.20  | 2831.66 | 277.45 | -1632.28 | 279.65 | 1655.69 | 1633.76 | 2.25  |
| 4109.00 | 89.14       | 270.03  | 2833.33 | 277.64 | -1727.27 | 279.13 | 1749.44 | 1728.74 | 0.36  |
| 4202.00 | 89.19       | 271.26  | 2834.69 | 278.69 | -1820.25 | 278.70 | 1841.46 | 1821.73 | 1.32  |

| MD      | Inclination | Azimuth | TVD     | NS     | EW       | CA     | CD      | VS      | DLS  |
|---------|-------------|---------|---------|--------|----------|--------|---------|---------|------|
| 4296.00 | 89.58       | 271.52  | 2835.70 | 280.97 | -1914.22 | 278.35 | 1934.73 | 1915.71 | 0.50 |
| 4391.00 | 89.45       | 271.26  | 2836.50 | 283.28 | -2009.18 | 278.03 | 2029.06 | 2010.69 | 0.31 |
| 4484.00 | 89.45       | 270.90  | 2837.39 | 285.03 | -2102.16 | 277.72 | 2121.40 | 2103.67 | 0.39 |
| 4578.00 | 89.71       | 270.46  | 2838.08 | 286.14 | -2196.15 | 277.42 | 2214.72 | 2197.67 | 0.54 |
| 4669.00 | 89.58       | 270.11  | 2838.65 | 286.60 | -2287.15 | 277.14 | 2305.04 | 2288.67 | 0.41 |
| 4760.00 | 89.41       | 269.32  | 2839.45 | 286.14 | -2378.15 | 276.86 | 2395.30 | 2379.66 | 0.89 |
| 4859.00 | 89.67       | 270.82  | 2840.24 | 286.26 | -2477.14 | 276.59 | 2493.62 | 2478.65 | 1.54 |
| 4954.00 | 89.85       | 271.26  | 2840.64 | 287.99 | -2572.12 | 276.39 | 2588.19 | 2573.64 | 0.50 |
| 5048.00 | 89.98       | 272.13  | 2840.78 | 290.77 | -2666.08 | 276.22 | 2681.89 | 2667.61 | 0.94 |
| 5142.00 | 89.93       | 273.19  | 2840.85 | 295.13 | -2759.98 | 276.10 | 2775.71 | 2761.53 | 1.13 |
| 5237.00 | 90.24       | 271.70  | 2840.71 | 299.18 | -2854.89 | 275.98 | 2870.52 | 2856.46 | 1.60 |
| 5332.00 | 90.77       | 271.34  | 2839.88 | 301.70 | -2949.85 | 275.84 | 2965.24 | 2951.44 | 0.67 |
| 5426.00 | 90.59       | 270.20  | 2838.76 | 302.97 | -3043.83 | 275.68 | 3058.87 | 3045.43 | 1.23 |
| 5521.00 | 91.21       | 270.20  | 2837.27 | 303.30 | -3138.82 | 275.52 | 3153.44 | 3140.42 | 0.65 |
| 5615.00 | 89.76       | 270.38  | 2836.47 | 303.77 | -3232.81 | 275.37 | 3247.05 | 3234.41 | 1.55 |
| 5708.00 | 89.63       | 270.29  | 2836.97 | 304.32 | -3325.81 | 275.23 | 3339.70 | 3327.41 | 0.17 |
| 5803.00 | 89.89       | 270.73  | 2837.37 | 305.16 | -3420.81 | 275.10 | 3434.39 | 3422.41 | 0.54 |
| 5897.00 | 90.15       | 271.26  | 2837.33 | 306.80 | -3514.79 | 274.99 | 3528.16 | 3516.40 | 0.63 |
| 5991.00 | 90.59       | 270.03  | 2836.73 | 307.85 | -3608.78 | 274.88 | 3621.89 | 3610.39 | 1.39 |
| 6084.00 | 91.16       | 270.11  | 2835.31 | 307.97 | -3701.77 | 274.76 | 3714.56 | 3703.38 | 0.62 |
| 6175.00 | 91.47       | 270.64  | 2833.22 | 308.56 | -3792.74 | 274.65 | 3805.27 | 3794.36 | 0.67 |
| 6266.00 | 91.52       | 268.97  | 2830.84 | 308.25 | -3883.71 | 274.54 | 3895.92 | 3885.32 | 1.84 |
| 6358.00 | 92.04       | 268.62  | 2827.98 | 306.32 | -3975.64 | 274.41 | 3987.43 | 3977.24 | 0.68 |
| 6451.00 | 92.35       | 269.06  | 2824.42 | 304.44 | -4068.56 | 274.28 | 4079.93 | 4070.14 | 0.58 |
| 6542.00 | 90.46       | 269.41  | 2822.19 | 303.22 | -4159.52 | 274.17 | 4170.55 | 4161.10 | 2.11 |
| 6635.00 | 90.24       | 269.59  | 2821.62 | 302.41 | -4252.51 | 274.07 | 4263.25 | 4254.09 | 0.31 |
| 6726.00 | 90.51       | 270.20  | 2821.03 | 302.25 | -4343.51 | 273.98 | 4354.01 | 4345.08 | 0.73 |
| 6819.00 | 90.95       | 270.90  | 2819.84 | 303.14 | -4436.50 | 273.91 | 4446.84 | 4438.07 | 0.89 |
| 6910.00 | 91.25       | 271.70  | 2818.10 | 305.20 | -4527.45 | 273.86 | 4537.73 | 4529.04 | 0.94 |
| 7002.00 | 90.07       | 270.73  | 2817.04 | 307.15 | -4619.43 | 273.80 | 4629.63 | 4621.02 | 1.66 |
| 7094.00 | 90.95       | 270.20  | 2816.22 | 307.90 | -4711.42 | 273.74 | 4721.47 | 4713.01 | 1.12 |
| 7185.00 | 92.48       | 270.46  | 2813.49 | 308.42 | -4802.37 | 273.67 | 4812.27 | 4803.97 | 1.71 |
| 7278.00 | 93.36       | 271.08  | 2808.76 | 309.67 | -4895.24 | 273.62 | 4905.03 | 4896.85 | 1.16 |
| 7372.00 | 92.26       | 270.03  | 2804.15 | 310.58 | -4989.12 | 273.56 | 4998.78 | 4990.73 | 1.62 |
| 7465.00 | 92.57       | 270.20  | 2800.23 | 310.77 | -5082.04 | 273.50 | 5091.53 | 5083.65 | 0.38 |
| 7560.00 | 92.48       | 271.08  | 2796.04 | 311.83 | -5176.94 | 273.45 | 5186.32 | 5178.55 | 0.93 |
| 7655.00 | 91.34       | 269.50  | 2792.88 | 312.31 | -5271.88 | 273.39 | 5281.12 | 5273.49 | 2.05 |

| MD      | Inclination | Azimuth | TVD     | NS     | EW       | CA     | CD      | VS      | DLS  |
|---------|-------------|---------|---------|--------|----------|--------|---------|---------|------|
| 7748.00 | 91.65       | 269.15  | 2790.45 | 311.21 | -5364.84 | 273.32 | 5373.86 | 5366.45 | 0.50 |
| 7843.00 | 92.31       | 269.59  | 2787.17 | 310.17 | -5459.78 | 273.25 | 5468.58 | 5461.38 | 0.83 |
| 7937.00 | 92.70       | 270.20  | 2783.06 | 310.00 | -5553.69 | 273.19 | 5562.33 | 5555.28 | 0.77 |
| 8032.00 | 91.08       | 269.85  | 2779.93 | 310.04 | -5648.63 | 273.14 | 5657.14 | 5650.23 | 1.74 |
| 8126.00 | 91.30       | 270.11  | 2777.98 | 310.00 | -5742.61 | 273.09 | 5750.97 | 5744.21 | 0.36 |
| 8220.00 | 91.47       | 270.55  | 2775.70 | 310.55 | -5836.58 | 273.05 | 5844.84 | 5838.18 | 0.50 |
| 8312.00 | 91.47       | 270.99  | 2773.34 | 311.78 | -5928.55 | 273.01 | 5936.74 | 5930.15 | 0.48 |
| 8360.00 | 91.60       | 271.17  | 2772.06 | 312.69 | -5976.52 | 272.99 | 5984.69 | 5978.12 | 0.46 |

**Projected Survey**

| MD      | Inclination | Azimuth | TVD     | NS     | EW       | CA     | CD      | VS      | DLS  |
|---------|-------------|---------|---------|--------|----------|--------|---------|---------|------|
| 8427.00 | 91.60       | 271.17  | 2770.19 | 314.05 | -6043.48 | 272.97 | 6051.63 | 6045.09 | 0.00 |