

# MWD SURVEYS

Customer: TAPROCK OPERATI  
Well: COSMO K 113H  
Field/Block: WOLFCAMP  
Co./Parish: LEA COUNTY  
State: NEW MEXICO

PGS Job #: LNM5182818  
MWD Operator: MIKE BOSTIC  
Directional Driller: JOHN PENNY  
Date of First Survey: July 28, 2018  
Date of Last Survey: August 19, 2018



Total Correction: 6.19    0    0

Vertical Section Plane: 358.47    Nominal Dip Angle: 59.85    Magnetic Field Strength: 47961

3002544969

| MD | INC   | AZM | T.V.D | V. SECT | +N/-S  | +E/-W  | DIST   | ANGLE | DLS    | TEMP(F°) | SHK/VIB | DATE     | TIME  | FLOW      |
|----|-------|-----|-------|---------|--------|--------|--------|-------|--------|----------|---------|----------|-------|-----------|
| 1  | 151   | 0.5 | 103.1 | 151.00  | -0.17  | -0.15  | 0.64   | 0.66  | 103.10 | 0.33     | 90 °F   | 07/28/18 | 18:59 | 577 (gpm) |
| 2  | 241   | 0.4 | 33.3  | 241.00  | -0.01  | 0.02   | 1.20   | 1.20  | 88.84  | 0.58     | 90 °F   | 07/28/18 | 19:56 | 577 (gpm) |
| 3  | 331   | 0.4 | 89.1  | 330.99  | 0.25   | 0.29   | 1.68   | 1.71  | 80.17  | 0.42     | 90 °F   | 07/28/18 | 21:02 | 577 (gpm) |
| 4  | 420   | 0.7 | 61.0  | 419.99  | 0.49   | 0.56   | 2.47   | 2.53  | 77.22  | 0.44     | 91 °F   | 07/28/18 | 21:45 | 577 (gpm) |
| 5  | 510   | 1.0 | 55.8  | 509.98  | 1.17   | 1.27   | 3.60   | 3.82  | 70.59  | 0.34     | 93 °F   | 07/29/18 | 01:16 | 765 (gpm) |
| 6  | 600   | 0.6 | 48.4  | 599.97  | 1.90   | 2.02   | 4.60   | 5.03  | 66.27  | 0.46     | 93 °F   | 07/29/18 | 05:31 | 765 (gpm) |
| 7  | 691   | 1.3 | 97.2  | 690.96  | 2.05   | 2.21   | 5.98   | 6.38  | 69.73  | 1.11     | 97 °F   | 07/29/18 | 06:25 | 765 (gpm) |
| 8  | 781   | 1.5 | 71.2  | 780.93  | 2.24   | 2.46   | 8.11   | 8.48  | 73.12  | 0.73     | 100 °F  | 07/29/18 | 07:25 | 765 (gpm) |
| 9  | 873   | 1.5 | 61.6  | 872.90  | 3.15   | 3.42   | 10.31  | 10.86 | 71.64  | 0.27     | 100 °F  | 07/29/18 | 08:18 | 765 (gpm) |
| 10 | 962   | 1.1 | 108.4 | 961.88  | 3.38   | 3.71   | 12.14  | 12.70 | 73.03  | 1.23     | 100 °F  | 07/29/18 | 09:23 | 765 (gpm) |
| 11 | 1,082 | 1.4 | 111.9 | 1081.85 | 2.41   | 2.80   | 14.60  | 14.86 | 79.16  | 0.26     | 100 °F  | 08/01/18 | 20:27 | 765 (gpm) |
| 12 | 1,176 | 2.1 | 149.1 | 1175.81 | 0.45   | 0.89   | 16.55  | 16.57 | 86.92  | 1.38     | 100 °F  | 08/01/18 | 21:25 | 765 (gpm) |
| 13 | 1,271 | 3.3 | 158.2 | 1270.70 | -3.63  | -3.14  | 18.46  | 18.72 | 99.66  | 1.34     | 100 °F  | 08/01/18 | 22:26 | 765 (gpm) |
| 14 | 1,365 | 3.9 | 169.3 | 1364.52 | -9.33  | -8.80  | 20.06  | 21.90 | 113.68 | 0.98     | 104 °F  | 08/01/18 | 23:15 | 765 (gpm) |
| 15 | 1,459 | 3.9 | 172.6 | 1458.30 | -15.66 | -15.11 | 21.06  | 25.92 | 125.65 | 0.24     | 104 °F  | 08/01/18 | 23:42 | 765 (gpm) |
| 16 | 1,553 | 3.6 | 175.9 | 1552.10 | -21.79 | -21.22 | 21.68  | 30.34 | 134.38 | 0.39     | 109 °F  | 08/02/18 | 00:27 | 765 (gpm) |
| 17 | 1,648 | 3.3 | 178.0 | 1646.93 | -27.51 | -26.93 | 21.99  | 34.77 | 140.76 | 0.34     | 111 °F  | 08/02/18 | 00:52 | 765 (gpm) |
| 18 | 1,742 | 2.8 | 194.2 | 1740.80 | -32.42 | -31.86 | 21.52  | 38.45 | 145.96 | 1.05     | 91 °F   | 08/02/18 | 12:00 | 650 (gpm) |
| 19 | 1,931 | 3.0 | 198.7 | 1929.55 | -41.51 | -41.02 | 18.81  | 45.12 | 155.37 | 0.16     | 91 °F   | 08/02/18 | 13:02 | 650 (gpm) |
| 20 | 2,025 | 2.8 | 190.6 | 2023.43 | -46.06 | -45.60 | 17.59  | 48.88 | 158.90 | 0.48     | 99 °F   | 08/02/18 | 13:30 | 650 (gpm) |
| 21 | 2,120 | 3.3 | 196.0 | 2118.30 | -50.93 | -50.51 | 16.41  | 53.11 | 162.00 | 0.61     | 100 °F  | 08/02/18 | 14:09 | 650 (gpm) |
| 22 | 2,214 | 4.1 | 203.2 | 2212.10 | -56.57 | -56.20 | 14.34  | 58.01 | 165.68 | 0.98     | 104 °F  | 08/02/18 | 14:57 | 650 (gpm) |
| 23 | 2,308 | 4.4 | 202.4 | 2305.85 | -62.91 | -62.63 | 11.65  | 63.70 | 169.47 | 0.33     | 108 °F  | 08/02/18 | 15:35 | 650 (gpm) |
| 24 | 2,403 | 4.8 | 213.7 | 2400.54 | -69.49 | -69.30 | 8.05   | 69.77 | 173.37 | 1.04     | 108 °F  | 08/02/18 | 16:53 | 650 (gpm) |
| 25 | 2,497 | 4.8 | 218.8 | 2494.21 | -75.70 | -75.64 | 3.41   | 75.72 | 177.42 | 0.45     | 109 °F  | 08/02/18 | 17:29 | 650 (gpm) |
| 26 | 2,592 | 4.7 | 217.9 | 2588.89 | -81.74 | -81.81 | -1.48  | 81.82 | 181.03 | 0.13     | 109 °F  | 08/02/18 | 17:59 | 690 (gpm) |
| 27 | 2,686 | 4.3 | 218.5 | 2682.60 | -87.41 | -87.60 | -6.04  | 87.81 | 183.94 | 0.43     | 113 °F  | 08/02/18 | 18:39 | 690 (gpm) |
| 28 | 2,781 | 4.0 | 216.7 | 2777.35 | -92.74 | -93.05 | -10.23 | 93.61 | 186.28 | 0.34     | 115 °F  | 08/02/18 | 19:23 | 690 (gpm) |
| 29 | 2,875 | 3.9 | 218.0 | 2871.12 | -97.78 | -98.20 | -14.16 | 99.21 | 188.21 | 0.14     | 115 °F  | 08/02/18 | 20:02 | 690 (gpm) |

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Well: COSMO K 113H  
Field/Block: WOLFCAMP  
Co./Parish: LEA COUNTY  
State: NEW MEXICO

PGS Job #: LNM5182818  
MWD Operator: MIKE BOSTIC  
Directional Driller: JOHN PENNY  
Date of First Survey: July 28, 2018  
Date of Last Survey: August 19, 2018



Total Correction: 6.19 0 0

Vertical Section Plane: 358.47

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47961

| MD | INC   | AZM | T.V.D | V. SECT | +N / -S | +E / -W | DIST   | ANGLE  | DLS    | TEMP(F°) | SHK/VIB | DATE | TIME     | FLOW  |           |
|----|-------|-----|-------|---------|---------|---------|--------|--------|--------|----------|---------|------|----------|-------|-----------|
| 30 | 2,969 | 3.9 | 219.8 | 2964.91 | -102.65 | -103.17 | -18.17 | 104.76 | 189.99 | 0.13     | 117 °F  | 3442 | 08/02/18 | 20:32 | 690 (gpm) |
| 31 | 3,064 | 3.7 | 225.8 | 3059.70 | -107.15 | -107.79 | -22.44 | 110.10 | 191.76 | 0.47     | 117 °F  |      | 08/02/18 | 21:09 | 690 (gpm) |
| 32 | 3,158 | 3.3 | 216.8 | 3153.52 | -111.33 | -112.07 | -26.23 | 115.10 | 193.18 | 0.72     | 118 °F  |      | 08/02/18 | 22:27 | 690 (gpm) |
| 33 | 3,253 | 3.3 | 212.9 | 3248.36 | -115.73 | -116.56 | -29.36 | 120.20 | 194.14 | 0.24     | 118 °F  |      | 08/02/18 | 23:32 | 690 (gpm) |
| 34 | 3,347 | 3.5 | 216.7 | 3342.20 | -120.22 | -121.13 | -32.54 | 125.42 | 195.04 | 0.32     | 120 °F  |      | 08/03/18 | 00:31 | 690 (gpm) |
| 35 | 3,441 | 3.3 | 211.9 | 3436.03 | -124.73 | -125.73 | -35.69 | 130.69 | 195.85 | 0.37     | 120 °F  |      | 08/03/18 | 01:45 | 690 (gpm) |
| 36 | 3,536 | 3.3 | 215.9 | 3530.88 | -129.18 | -130.26 | -38.74 | 135.90 | 196.56 | 0.24     | 120 °F  |      | 08/03/18 | 02:49 | 690 (gpm) |
| 37 | 3,630 | 3.2 | 217.9 | 3624.73 | -133.36 | -134.52 | -41.93 | 140.91 | 197.31 | 0.16     | 120 °F  |      | 08/03/18 | 04:19 | 690 (gpm) |
| 38 | 3,725 | 3.0 | 192.2 | 3719.59 | -137.82 | -139.05 | -44.09 | 145.87 | 197.59 | 1.47     | 120 °F  |      | 08/03/18 | 05:29 | 690 (gpm) |
| 39 | 3,819 | 3.5 | 175.7 | 3813.44 | -143.08 | -144.31 | -44.39 | 150.99 | 197.10 | 1.12     | 118 °F  |      | 08/03/18 | 06:32 | 690 (gpm) |
| 40 | 3,913 | 4.3 | 183.0 | 3907.22 | -149.45 | -150.69 | -44.36 | 157.09 | 196.40 | 1.00     | 118 °F  | 3442 | 08/03/18 | 07:51 | 690 (gpm) |
| 41 | 4,008 | 4.4 | 181.2 | 4001.95 | -156.64 | -157.89 | -44.62 | 164.08 | 195.78 | 0.18     | 118 °F  | 3442 | 08/03/18 | 08:30 | 690 (gpm) |
| 42 | 4,102 | 3.6 | 196.4 | 4095.72 | -163.05 | -164.33 | -45.53 | 170.52 | 195.49 | 1.41     | 120 °F  | 3442 | 08/03/18 | 10:25 | 690 (gpm) |
| 43 | 4,196 | 3.8 | 208.0 | 4189.53 | -168.57 | -169.91 | -47.83 | 176.51 | 195.72 | 0.82     | 120 °F  | 3442 | 08/03/18 | 11:30 | 690 (gpm) |
| 44 | 4,290 | 3.6 | 204.7 | 4283.33 | -173.93 | -175.34 | -50.52 | 182.48 | 196.07 | 0.31     | 120 °F  | 3442 | 08/03/18 | 12:34 | 690 (gpm) |
| 45 | 4,385 | 4.1 | 220.6 | 4378.12 | -179.12 | -180.63 | -53.98 | 188.52 | 196.64 | 1.24     | 117 °F  | 3442 | 08/03/18 | 13:10 | 690 (gpm) |
| 46 | 4,479 | 4.9 | 238.8 | 4471.83 | -183.60 | -185.26 | -59.60 | 194.61 | 197.83 | 1.73     | 117 °F  | 3442 | 08/03/18 | 13:45 | 690 (gpm) |
| 47 | 4,574 | 4.3 | 252.7 | 4566.53 | -186.58 | -188.42 | -66.47 | 199.80 | 199.43 | 1.33     | 118 °F  |      | 08/03/18 | 15:02 | 690 (gpm) |
| 48 | 4,668 | 2.0 | 249.5 | 4660.38 | -188.07 | -190.05 | -71.37 | 203.01 | 200.58 | 2.45     | 117 °F  |      | 08/03/18 | 15:56 | 690 (gpm) |
| 49 | 4,762 | 1.2 | 162.7 | 4754.36 | -189.55 | -191.56 | -72.62 | 204.86 | 200.76 | 2.42     | 117 °F  |      | 08/03/18 | 16:45 | 690 (gpm) |
| 50 | 4,857 | 2.5 | 138.8 | 4849.31 | -192.10 | -194.07 | -70.96 | 206.63 | 200.08 | 1.56     | 118 °F  |      | 08/03/18 | 17:33 | 690 (gpm) |
| 51 | 4,951 | 2.6 | 136.1 | 4943.21 | -195.26 | -197.15 | -68.13 | 208.59 | 199.06 | 0.17     | 118 °F  |      | 08/03/18 | 18:34 | 690 (gpm) |
| 52 | 4,993 | 2.5 | 137.5 | 4985.17 | -196.65 | -198.51 | -66.85 | 209.46 | 198.61 | 0.28     | 118 °F  |      | 08/03/18 | 19:03 | 690 (gpm) |
| 53 | 5,093 | 2.2 | 140.0 | 5085.09 | -199.80 | -201.59 | -64.14 | 211.55 | 197.65 | 0.32     | 104 °F  |      | 08/05/18 | 21:21 | 595 (gpm) |
| 54 | 5,188 | 2.3 | 168.6 | 5180.02 | -203.11 | -204.85 | -62.59 | 214.20 | 196.99 | 1.17     | 111 °F  |      | 08/05/18 | 23:04 | 595 (gpm) |
| 55 | 5,282 | 2.3 | 193.6 | 5273.94 | -206.79 | -208.54 | -62.66 | 217.75 | 196.73 | 1.06     | 113 °F  |      | 08/06/18 | 00:26 | 595 (gpm) |
| 56 | 5,377 | 2.4 | 211.8 | 5368.86 | -210.29 | -212.08 | -64.16 | 221.57 | 196.83 | 0.79     | 113 °F  |      | 08/06/18 | 01:22 | 595 (gpm) |
| 57 | 5,471 | 2.3 | 216.8 | 5462.79 | -213.41 | -215.26 | -66.33 | 225.25 | 197.13 | 0.24     | 115 °F  | 3442 | 08/06/18 | 01:47 | 595 (gpm) |
| 58 | 5,565 | 2.9 | 216.7 | 5556.69 | -216.76 | -218.68 | -68.88 | 229.27 | 197.48 | 0.64     | 115 °F  | 3442 | 08/06/18 | 02:36 | 595 (gpm) |

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Total Correction: 6.19    0    0

Vertical Section Plane: 358.47    Nominal Dip Angle: 59.85    Magnetic Field Strength: 47961

|    | MD    | INC | AZM   | T.V.D   | V. SECT | +N/-S   | +E/-W   | DIST   | ANGLE  | DLS  | TEMP(F°) | SHK/VIB | DATE     | TIME  | FLOW      |
|----|-------|-----|-------|---------|---------|---------|---------|--------|--------|------|----------|---------|----------|-------|-----------|
| 59 | 5,660 | 3.0 | 217.2 | 5651.56 | -220.59 | -222.59 | -71.82  | 233.89 | 197.88 | 0.11 | 115 °F   |         | 08/06/18 | 03:05 | 595 (gpm) |
| 60 | 5,754 | 3.0 | 218.7 | 5745.43 | -224.39 | -226.46 | -74.84  | 238.51 | 198.29 | 0.08 | 115 °F   |         | 08/06/18 | 03:31 | 595 (gpm) |
| 61 | 5,848 | 3.5 | 210.7 | 5839.28 | -228.69 | -230.85 | -77.85  | 243.62 | 198.63 | 0.72 | 115 °F   |         | 08/06/18 | 04:21 | 595 (gpm) |
| 62 | 5,943 | 3.4 | 210.3 | 5934.11 | -233.54 | -235.78 | -80.75  | 249.22 | 198.90 | 0.11 | 117 °F   |         | 08/06/18 | 04:46 | 595 (gpm) |
| 63 | 6,037 | 3.4 | 208.6 | 6027.95 | -238.32 | -240.63 | -83.49  | 254.70 | 199.13 | 0.11 | 117 °F   |         | 08/06/18 | 05:16 | 595 (gpm) |
| 64 | 6,132 | 3.3 | 206.0 | 6122.78 | -243.18 | -245.56 | -86.04  | 260.20 | 199.31 | 0.19 | 117 °F   |         | 08/06/18 | 05:47 | 595 (gpm) |
| 65 | 6,321 | 2.6 | 210.9 | 6311.53 | -251.62 | -254.13 | -90.62  | 269.80 | 199.63 | 0.39 | 118 °F   |         | 08/06/18 | 06:36 | 595 (gpm) |
| 66 | 6,415 | 2.6 | 212.5 | 6405.44 | -255.19 | -257.76 | -92.86  | 273.97 | 199.81 | 0.08 | 118 °F   |         | 08/06/18 | 07:01 | 595 (gpm) |
| 67 | 6,510 | 2.5 | 210.9 | 6500.34 | -258.72 | -261.35 | -95.08  | 278.11 | 199.99 | 0.13 | 118 °F   |         | 08/06/18 | 07:25 | 595 (gpm) |
| 68 | 6,605 | 2.4 | 208.6 | 6595.25 | -262.19 | -264.88 | -97.10  | 282.11 | 200.13 | 0.15 | 118 °F   |         | 08/06/18 | 07:57 | 595 (gpm) |
| 69 | 6,699 | 2.5 | 211.0 | 6689.17 | -265.62 | -268.36 | -99.10  | 286.07 | 200.27 | 0.15 | 117 °F   |         | 08/06/18 | 08:20 | 595 (gpm) |
| 70 | 6,793 | 2.3 | 211.9 | 6783.09 | -268.92 | -271.72 | -101.15 | 289.94 | 200.42 | 0.22 | 117 °F   |         | 08/06/18 | 08:44 | 595 (gpm) |
| 71 | 6,887 | 2.5 | 204.4 | 6877.00 | -272.34 | -275.19 | -102.99 | 293.83 | 200.52 | 0.40 | 117 °F   |         | 08/06/18 | 09:06 | 595 (gpm) |
| 72 | 6,982 | 1.6 | 192.2 | 6971.94 | -275.49 | -278.37 | -104.13 | 297.21 | 200.51 | 1.05 | 118 °F   |         | 08/06/18 | 09:50 | 595 (gpm) |
| 73 | 7,076 | 1.5 | 191.3 | 7065.91 | -277.97 | -280.86 | -104.65 | 299.72 | 200.44 | 0.11 | 118 °F   |         | 08/06/18 | 10:29 | 595 (gpm) |
| 74 | 7,170 | 1.6 | 194.0 | 7159.87 | -280.43 | -283.34 | -105.21 | 302.24 | 200.37 | 0.13 | 118 °F   |         | 08/06/18 | 11:13 | 595 (gpm) |
| 75 | 7,264 | 1.6 | 190.3 | 7253.84 | -282.98 | -285.91 | -105.76 | 304.84 | 200.30 | 0.11 | 120 °F   |         | 08/06/18 | 11:54 | 595 (gpm) |
| 76 | 7,358 | 0.9 | 156.5 | 7347.81 | -284.95 | -287.87 | -105.70 | 306.67 | 200.16 | 1.05 | 120 °F   |         | 08/06/18 | 12:51 | 595 (gpm) |
| 77 | 7,453 | 1.1 | 150.5 | 7442.80 | -286.45 | -289.35 | -104.95 | 307.80 | 199.94 | 0.24 | 120 °F   |         | 08/06/18 | 13:22 | 595 (gpm) |
| 78 | 7,547 | 1.2 | 154.4 | 7536.78 | -288.14 | -291.02 | -104.08 | 309.08 | 199.68 | 0.14 | 120 °F   |         | 08/06/18 | 13:56 | 595 (gpm) |
| 79 | 7,641 | 1.3 | 145.6 | 7630.76 | -289.94 | -292.79 | -103.06 | 310.40 | 199.39 | 0.23 | 120 °F   |         | 08/06/18 | 14:25 | 595 (gpm) |
| 80 | 7,735 | 1.3 | 150.6 | 7724.74 | -291.77 | -294.60 | -101.93 | 311.74 | 199.09 | 0.12 | 122 °F   |         | 08/06/18 | 14:56 | 595 (gpm) |
| 81 | 7,829 | 1.3 | 140.7 | 7818.71 | -293.56 | -296.36 | -100.73 | 313.01 | 198.77 | 0.24 | 122 °F   |         | 08/06/18 | 15:26 | 595 (gpm) |
| 82 | 7,923 | 1.3 | 137.2 | 7912.69 | -295.20 | -297.96 | -99.33  | 314.08 | 198.44 | 0.08 | 124 °F   |         | 08/06/18 | 15:55 | 595 (gpm) |
| 83 | 8,018 | 1.2 | 136.4 | 8007.66 | -296.75 | -299.47 | -97.91  | 315.07 | 198.11 | 0.11 | 124 °F   |         | 08/06/18 | 16:25 | 595 (gpm) |
| 84 | 8,112 | 1.0 | 127.2 | 8101.65 | -298.00 | -300.68 | -96.58  | 315.81 | 197.81 | 0.28 | 126 °F   |         | 08/06/18 | 16:56 | 595 (gpm) |
| 85 | 8,207 | 1.0 | 97.1  | 8196.63 | -298.64 | -301.29 | -95.10  | 315.94 | 197.52 | 0.55 | 126 °F   |         | 08/06/18 | 17:45 | 595 (gpm) |
| 86 | 8,302 | 1.1 | 76.4  | 8291.62 | -298.57 | -301.17 | -93.39  | 315.32 | 197.23 | 0.41 | 126 °F   |         | 08/06/18 | 18:23 | 595 (gpm) |
| 87 | 8,396 | 1.3 | 69.0  | 8385.60 | -298.03 | -300.58 | -91.52  | 314.20 | 196.93 | 0.27 | 127 °F   |         | 08/06/18 | 19:03 | 595 (gpm) |

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Co./Parish: LEA COUNTY  
State: NEW MEXICO

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MWD Operator: MIKE BOSTIC  
Directional Driller: JOHN PENNY  
Date of First Survey: July 28, 2018  
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Total Correction: 6.19 0 0

Vertical Section Plane: 358.47

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47961

| MD  | INC    | AZM  | T.V.D | V. SECT  | +N / -S | +E / -W | DIST   | ANGLE  | DLS    | TEMP(F°) | SHK/VIB | DATE | TIME     | FLOW  |           |
|-----|--------|------|-------|----------|---------|---------|--------|--------|--------|----------|---------|------|----------|-------|-----------|
| 88  | 8,491  | 1.6  | 55.4  | 8480.57  | -296.95 | -299.44 | -89.42 | 312.51 | 196.63 | 0.48     | 127 °F  |      | 08/06/18 | 19:38 | 595 (gpm) |
| 89  | 8,586  | 1.7  | 41.9  | 8575.53  | -295.20 | -297.64 | -87.39 | 310.20 | 196.36 | 0.42     | 127 °F  |      | 08/06/18 | 20:14 | 595 (gpm) |
| 90  | 8,680  | 1.3  | 59.1  | 8669.50  | -293.66 | -296.05 | -85.54 | 308.16 | 196.12 | 0.64     | 129 °F  |      | 08/06/18 | 20:48 | 595 (gpm) |
| 91  | 8,775  | 1.3  | 66.3  | 8764.47  | -292.73 | -295.07 | -83.63 | 306.69 | 195.82 | 0.17     | 129 °F  |      | 08/06/18 | 21:34 | 595 (gpm) |
| 92  | 8,869  | 1.5  | 77.4  | 8858.44  | -292.09 | -294.37 | -81.45 | 305.43 | 195.47 | 0.36     | 129 °F  |      | 08/06/18 | 22:24 | 595 (gpm) |
| 93  | 8,964  | 1.5  | 83.1  | 8953.41  | -291.73 | -293.95 | -79.00 | 304.38 | 195.04 | 0.16     | 129 °F  |      | 08/06/18 | 23:19 | 595 (gpm) |
| 94  | 9,059  | 1.5  | 93.0  | 9048.38  | -291.72 | -293.86 | -76.53 | 303.67 | 194.60 | 0.27     | 127 °F  |      | 08/07/18 | 00:39 | 450 (gpm) |
| 95  | 9,153  | 1.4  | 96.7  | 9142.35  | -291.98 | -294.06 | -74.16 | 303.27 | 194.15 | 0.15     | 127 °F  |      | 08/07/18 | 01:49 | 422 (gpm) |
| 96  | 9,248  | 1.3  | 94.2  | 9237.32  | -292.25 | -294.28 | -71.93 | 302.94 | 193.74 | 0.12     | 126 °F  |      | 08/07/18 | 03:36 | 450 (gpm) |
| 97  | 9,342  | 0.8  | 67.2  | 9331.31  | -292.12 | -294.10 | -70.26 | 302.38 | 193.44 | 0.73     | 126 °F  |      | 08/07/18 | 05:48 | 502 (gpm) |
| 98  | 9,437  | 1.0  | 41.1  | 9426.29  | -291.27 | -293.22 | -69.11 | 301.25 | 193.26 | 0.47     | 126 °F  |      | 08/07/18 | 06:57 | 448 (gpm) |
| 99  | 9,531  | 0.9  | 44.5  | 9520.28  | -290.15 | -292.07 | -68.05 | 299.90 | 193.12 | 0.12     | 126 °F  |      | 08/07/18 | 08:27 | 448 (gpm) |
| 100 | 9,626  | 0.7  | 44.8  | 9615.27  | -289.24 | -291.13 | -67.12 | 298.77 | 192.98 | 0.21     | 126 °F  |      | 08/07/18 | 09:39 | 448 (gpm) |
| 101 | 9,721  | 0.6  | 43.3  | 9710.27  | -288.48 | -290.36 | -66.37 | 297.85 | 192.88 | 0.11     | 126 °F  |      | 08/07/18 | 11:03 | 448 (gpm) |
| 102 | 9,815  | 0.5  | 29.7  | 9804.26  | -287.78 | -289.64 | -65.83 | 297.03 | 192.80 | 0.17     | 126 °F  |      | 08/07/18 | 15:21 | 448 (gpm) |
| 103 | 9,916  | 0.9  | 347.4 | 9905.26  | -286.63 | -288.49 | -65.78 | 295.89 | 192.85 | 0.62     | 122 °F  |      | 08/08/18 | 16:25 | 550 (gpm) |
| 104 | 9,961  | 5.2  | 342.4 | 9950.18  | -284.32 | -286.20 | -66.48 | 293.81 | 193.08 | 9.56     | 122 °F  |      | 08/08/18 | 17:46 | 550 (gpm) |
| 105 | 10,011 | 11.6 | 350.7 | 9999.62  | -277.15 | -279.07 | -67.97 | 287.23 | 193.69 | 12.99    | 124 °F  |      | 08/08/18 | 19:39 | 550 (gpm) |
| 106 | 10,056 | 17.5 | 351.3 | 10043.16 | -265.95 | -267.91 | -69.73 | 276.83 | 194.59 | 13.12    | 126 °F  |      | 08/08/18 | 21:52 | 550 (gpm) |
| 107 | 10,106 | 22.9 | 351.1 | 10090.07 | -248.83 | -250.85 | -72.37 | 261.08 | 196.09 | 10.80    | 127 °F  |      | 08/08/18 | 23:48 | 550 (gpm) |
| 108 | 10,153 | 25.1 | 354.0 | 10133.00 | -229.82 | -231.90 | -74.83 | 243.67 | 197.88 | 5.31     | 127 °F  |      | 08/09/18 | 01:40 | 550 (gpm) |
| 109 | 10,201 | 27.1 | 356.6 | 10176.11 | -208.74 | -210.86 | -76.54 | 224.32 | 199.95 | 4.80     | 126 °F  |      | 08/09/18 | 05:43 | 550 (gpm) |
| 110 | 10,247 | 29.5 | 356.9 | 10216.60 | -186.94 | -189.09 | -77.78 | 204.46 | 202.36 | 5.23     | 127 °F  |      | 08/10/18 | 01:15 | 550 (gpm) |
| 111 | 10,295 | 35.4 | 358.4 | 10257.09 | -161.20 | -163.36 | -78.81 | 181.38 | 205.75 | 12.40    | 127 °F  |      | 08/10/18 | 03:31 | 550 (gpm) |
| 112 | 10,342 | 42.3 | 359.1 | 10293.67 | -131.74 | -133.91 | -79.44 | 155.70 | 210.68 | 14.71    | 126 °F  |      | 08/10/18 | 05:53 | 550 (gpm) |
| 113 | 10,390 | 45.8 | 358.1 | 10328.17 | -98.37  | -100.55 | -80.26 | 128.65 | 218.60 | 7.43     | 126 °F  |      | 08/10/18 | 08:34 | 550 (gpm) |
| 114 | 10,436 | 48.5 | 356.9 | 10359.45 | -64.66  | -66.86  | -81.74 | 105.60 | 230.72 | 6.17     | 108 °F  |      | 08/10/18 | 16:56 | 450 (gpm) |
| 115 | 10,483 | 50.8 | 357.4 | 10389.88 | -28.85  | -31.09  | -83.52 | 89.12  | 249.58 | 4.96     | 102 °F  |      | 08/10/18 | 20:45 | 450 (gpm) |
| 116 | 10,530 | 55.1 | 358.3 | 10418.19 | 8.65    | 6.39    | -84.92 | 85.16  | 274.30 | 9.28     | 99 °F   |      | 08/11/18 | 00:21 | 450 (gpm) |

# MWD SURVEYS

Customer: TAPROCK OPERATI  
Well: COSMO K 113H  
Field/Block: WOLFCAMP  
Co./Parish: LEA COUNTY  
State: NEW MEXICO

PGS Job #: LNM5182818  
MWD Operator: MIKE BOSTIC  
Directional Driller: JOHN PENNY  
Date of First Survey: July 28, 2018  
Date of Last Survey: August 19, 2018



Total Correction: 6.19    0    0

Vertical Section Plane: 358.47    Nominal Dip Angle: 59.85    Magnetic Field Strength: 47961

| MD  | INC    | AZM  | T.V.D | V. SECT  | +N / -S  | +E / -W  | DIST    | ANGLE    | DLS    | TEMP(F°) | SHK/VIB | DATE     | TIME     | FLOW      |           |
|-----|--------|------|-------|----------|----------|----------|---------|----------|--------|----------|---------|----------|----------|-----------|-----------|
| 117 | 10,578 | 61.0 | 359.4 | 10443.58 | 49.36    | 47.09    | -85.72  | 97.80    | 298.78 | 12.44    | 129 °F  |          | 08/11/18 | 22:46     | 465 (gpm) |
| 118 | 10,625 | 66.3 | 0.5   | 10464.43 | 91.45    | 89.19    | -85.75  | 123.72   | 316.13 | 11.47    | 129 °F  |          | 08/12/18 | 03:08     | 601 (gpm) |
| 119 | 10,673 | 71.4 | 1.2   | 10481.75 | 136.16   | 133.93   | -85.08  | 158.67   | 327.57 | 10.71    | 129 °F  |          | 08/12/18 | 06:33     | 601 (gpm) |
| 120 | 10,719 | 78.7 | 1.3   | 10493.61 | 180.52   | 178.34   | -84.11  | 197.18   | 334.75 | 15.87    | 131 °F  |          | 08/12/18 | 11:13     | 601 (gpm) |
| 121 | 10,765 | 84.7 | 0.7   | 10500.24 | 225.97   | 223.83   | -83.32  | 238.83   | 339.58 | 13.11    | 131 °F  |          | 08/13/18 | 10:10     | 601 (gpm) |
| 122 | 10,859 | 87.3 | 0.3   | 10506.80 | 319.68   | 317.59   | -82.50  | 328.13   | 345.44 | 2.80     | 131 °F  |          | 08/13/18 | 11:40     | 601 (gpm) |
| 123 | 10,954 | 87.7 | 0.1   | 10510.94 | 414.54   | 412.50   | -82.17  | 420.60   | 348.73 | 0.47     | 136 °F  |          | 08/13/18 | 12:22     | 601 (gpm) |
| 124 | 11,048 | 87.6 | 359.8 | 10514.80 | 508.43   | 506.42   | -82.25  | 513.05   | 350.77 | 0.34     | 136 °F  |          | 08/13/18 | 13:03     | 601 (gpm) |
| 125 | 11,143 | 88.1 | 359.9 | 10518.36 | 603.34   | 601.35   | -82.50  | 606.98   | 352.19 | 0.54     | 140 °F  |          | 08/13/18 | 13:43     | 601 (gpm) |
| 126 | 11,237 | 88.6 | 0.5   | 10521.07 | 697.25   | 695.31   | -82.17  | 700.15   | 353.26 | 0.83     | 144 °F  |          | 08/13/18 | 14:21     | 601 (gpm) |
| 127 | 11,332 | 89.0 | 0.6   | 10523.06 | 792.17   | 790.28   | -81.26  | 794.45   | 354.13 | 0.43     | 144 °F  |          | 08/13/18 | 15:05     | 601 (gpm) |
| 128 | 11,427 | 88.6 | 359.8 | 10525.05 | 887.11   | 885.26   | -80.93  | 888.95   | 354.78 | 0.94     | 144 °F  |          | 08/13/18 | 15:45     | 601 (gpm) |
| 129 | 11,521 | 88.0 | 359.4 | 10527.84 | 981.05   | 979.22   | -81.58  | 982.61   | 355.24 | 0.77     | 145 °F  |          | 08/13/18 | 16:26     | 601 (gpm) |
| 130 | 11,615 | 89.0 | 358.7 | 10530.30 | 1,075.01 | 1,073.17 | -83.14  | 1,076.38 | 355.57 | 1.30     | 147 °F  |          | 08/13/18 | 17:39     | 601 (gpm) |
| 131 | 11,709 | 90.9 | 359.0 | 10530.38 | 1,169.00 | 1,167.15 | -85.03  | 1,170.24 | 355.83 | 2.05     | 145 °F  |          | 08/13/18 | 18:44     | 601 (gpm) |
| 132 | 11,804 | 91.6 | 358.6 | 10528.31 | 1,263.97 | 1,262.10 | -87.02  | 1,265.10 | 356.06 | 0.85     | 149 °F  |          | 08/13/18 | 19:38     | 601 (gpm) |
| 133 | 11,898 | 91.7 | 358.6 | 10525.60 | 1,357.94 | 1,356.03 | -89.31  | 1,358.97 | 356.23 | 0.11     | 151 °F  |          | 08/13/18 | 20:32     | 601 (gpm) |
| 134 | 11,992 | 92.5 | 358.1 | 10522.16 | 1,451.87 | 1,449.93 | -92.02  | 1,452.85 | 356.37 | 1.00     | 151 °F  |          | 08/13/18 | 21:19     | 601 (gpm) |
| 135 | 12,087 | 92.9 | 357.9 | 10517.68 | 1,546.76 | 1,544.77 | -95.33  | 1,547.71 | 356.47 | 0.47     | 153 °F  |          | 08/13/18 | 22:09     | 601 (gpm) |
| 136 | 12,182 | 94.0 | 357.1 | 10511.96 | 1,641.57 | 1,639.50 | -99.47  | 1,642.52 | 356.53 | 1.43     | 153 °F  |          | 08/13/18 | 23:01     | 601 (gpm) |
| 137 | 12,276 | 92.4 | 355.8 | 10506.72 | 1,735.36 | 1,733.17 | -105.28 | 1,736.37 | 356.52 | 2.19     | 153 °F  |          | 08/14/18 | 00:58     | 601 (gpm) |
| 138 | 12,370 | 91.0 | 356.2 | 10503.93 | 1,829.23 | 1,826.90 | -111.83 | 1,830.32 | 356.50 | 1.55     | 153 °F  |          | 08/14/18 | 02:30     | 601 (gpm) |
| 139 | 12,464 | 92.0 | 355.7 | 10501.47 | 1,923.11 | 1,920.63 | -118.47 | 1,924.28 | 356.47 | 1.19     | 153 °F  |          | 08/14/18 | 03:21     | 601 (gpm) |
| 140 | 12,559 | 92.8 | 355.6 | 10497.49 | 2,017.91 | 2,015.27 | -125.67 | 2,019.19 | 356.43 | 0.85     | 153 °F  |          | 08/14/18 | 04:12     | 601 (gpm) |
| 141 | 12,653 | 92.4 | 356.2 | 10493.22 | 2,111.72 | 2,108.93 | -132.38 | 2,113.09 | 356.41 | 0.77     | 153 °F  |          | 08/14/18 | 05:21     | 601 (gpm) |
| 142 | 12,748 | 92.9 | 355.6 | 10488.83 | 2,206.52 | 2,203.59 | -139.17 | 2,207.98 | 356.39 | 0.82     | 153 °F  |          | 08/14/18 | 06:10     | 601 (gpm) |
| 143 | 12,842 | 92.5 | 355.0 | 10484.40 | 2,300.27 | 2,297.17 | -146.86 | 2,301.86 | 356.34 | 0.77     | 158 °F  |          | 08/14/18 | 07:02     | 601 (gpm) |
| 144 | 12,937 | 93.4 | 355.2 | 10479.52 | 2,394.98 | 2,391.70 | -154.96 | 2,396.71 | 356.29 | 0.97     | 158 °F  |          | 08/14/18 | 07:54     | 601 (gpm) |
| 145 | 13,032 | 94.3 | 355.3 | 10473.14 | 2,489.62 | 2,486.15 | -162.81 | 2,491.48 | 356.25 | 0.95     | 158 °F  | 08/14/18 | 08:47    | 601 (gpm) |           |

# MWD SURVEYS

Customer: TAPROCK OPERATI  
Well: COSMO K 113H  
Field/Block: WOLFCAMP  
Co./Parish: LEA COUNTY  
State: NEW MEXICO

PGS Job #: LNM5182818  
MWD Operator: MIKE BOSTIC  
Directional Driller: JOHN PENNY  
Date of First Survey: July 28, 2018  
Date of Last Survey: August 19, 2018



Total Correction: 6.19 0 0

Vertical Section Plane: 358.47

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47961

|  | MD  | INC    | AZM  | T.V.D | V. SECT  | +N/-S    | +E/-W    | DIST    | ANGLE    | DLS    | TEMP(F°) | SHK/VIB | DATE     | TIME     | FLOW      |           |
|--|-----|--------|------|-------|----------|----------|----------|---------|----------|--------|----------|---------|----------|----------|-----------|-----------|
|  | 146 | 13,127 | 92.2 | 356.1 | 10467.75 | 2,584.35 | 2,580.73 | -169.92 | 2,586.32 | 356.23 | 2.36     | 158 °F  |          | 08/14/18 | 10:45     | 601 (gpm) |
|  | 147 | 13,222 | 92.0 | 356.6 | 10464.27 | 2,679.22 | 2,675.47 | -175.97 | 2,681.25 | 356.24 | 0.57     | 158 °F  |          | 08/14/18 | 11:37     | 601 (gpm) |
|  | 148 | 13,316 | 92.7 | 358.0 | 10460.42 | 2,773.11 | 2,769.29 | -180.39 | 2,775.15 | 356.27 | 1.66     | 158 °F  |          | 08/14/18 | 13:19     | 601 (gpm) |
|  | 149 | 13,411 | 93.4 | 359.7 | 10455.36 | 2,867.97 | 2,864.13 | -182.29 | 2,869.92 | 356.36 | 1.93     | 158 °F  |          | 08/14/18 | 14:01     | 601 (gpm) |
|  | 150 | 13,505 | 92.3 | 0.3   | 10450.69 | 2,961.82 | 2,958.01 | -182.29 | 2,963.62 | 356.47 | 1.33     | 160 °F  |          | 08/14/18 | 16:09     | 601 (gpm) |
|  | 151 | 13,600 | 88.8 | 359.9 | 10449.77 | 3,056.76 | 3,052.99 | -182.13 | 3,058.42 | 356.59 | 3.71     | 160 °F  |          | 08/14/18 | 18:55     | 601 (gpm) |
|  | 152 | 13,694 | 88.0 | 0.0   | 10452.40 | 3,150.70 | 3,146.95 | -182.21 | 3,152.22 | 356.69 | 0.86     | 160 °F  |          | 08/14/18 | 19:40     | 601 (gpm) |
|  | 153 | 13,789 | 88.6 | 0.2   | 10455.22 | 3,245.62 | 3,241.91 | -182.05 | 3,247.02 | 356.79 | 0.67     | 162 °F  |          | 08/14/18 | 20:43     | 601 (gpm) |
|  | 154 | 13,883 | 88.6 | 0.5   | 10457.51 | 3,339.54 | 3,335.88 | -181.47 | 3,340.81 | 356.89 | 0.32     | 162 °F  |          | 08/14/18 | 21:42     | 601 (gpm) |
|  | 155 | 13,978 | 89.6 | 0.9   | 10459.01 | 3,434.45 | 3,430.86 | -180.31 | 3,435.60 | 356.99 | 1.13     | 162 °F  |          | 08/14/18 | 23:17     | 601 (gpm) |
|  | 156 | 14,073 | 90.2 | 0.9   | 10459.17 | 3,529.37 | 3,525.85 | -178.82 | 3,530.38 | 357.10 | 0.63     | 162 °F  |          | 08/15/18 | 00:27     | 601 (gpm) |
|  | 157 | 14,167 | 90.2 | 0.9   | 10458.84 | 3,623.28 | 3,619.84 | -177.34 | 3,624.18 | 357.20 | 0.00     | 163 °F  |          | 08/15/18 | 01:31     | 601 (gpm) |
|  | 158 | 14,262 | 89.3 | 1.0   | 10459.26 | 3,718.19 | 3,714.82 | -175.77 | 3,718.98 | 357.29 | 0.95     | 163 °F  |          | 08/15/18 | 02:26     | 601 (gpm) |
|  | 159 | 14,356 | 89.9 | 0.7   | 10459.92 | 3,812.11 | 3,808.81 | -174.37 | 3,812.80 | 357.38 | 0.71     | 165 °F  |          | 08/15/18 | 03:25     | 601 (gpm) |
|  | 160 | 14,450 | 90.3 | 0.9   | 10459.75 | 3,906.03 | 3,902.80 | -173.06 | 3,906.63 | 357.46 | 0.48     | 165 °F  |          | 08/15/18 | 04:25     | 601 (gpm) |
|  | 161 | 14,545 | 90.7 | 1.0   | 10458.92 | 4,000.93 | 3,997.78 | -171.48 | 4,001.46 | 357.54 | 0.43     | 165 °F  |          | 08/15/18 | 06:20     | 601 (gpm) |
|  | 162 | 14,640 | 91.3 | 1.3   | 10457.26 | 4,095.82 | 4,092.75 | -169.58 | 4,096.26 | 357.63 | 0.71     | 165 °F  |          | 08/15/18 | 07:24     | 601 (gpm) |
|  | 163 | 14,734 | 92.0 | 1.5   | 10454.56 | 4,189.65 | 4,186.68 | -167.28 | 4,190.02 | 357.71 | 0.77     | 167 °F  |          | 08/15/18 | 08:26     | 601 (gpm) |
|  | 164 | 14,829 | 92.9 | 1.7   | 10450.50 | 4,284.42 | 4,281.55 | -164.63 | 4,284.72 | 357.80 | 0.97     | 167 °F  |          | 08/15/18 | 09:47     | 601 (gpm) |
|  | 165 | 14,923 | 93.2 | 1.4   | 10445.49 | 4,378.15 | 4,375.39 | -162.09 | 4,378.39 | 357.88 | 0.45     | 167 °F  |          | 08/15/18 | 11:52     | 601 (gpm) |
|  | 166 | 15,018 | 92.9 | 1.2   | 10440.44 | 4,472.90 | 4,470.23 | -159.94 | 4,473.09 | 357.95 | 0.38     | 167 °F  |          | 08/15/18 | 15:35     | 601 (gpm) |
|  | 167 | 15,113 | 93.1 | 0.5   | 10435.47 | 4,567.69 | 4,565.09 | -158.53 | 4,567.84 | 358.01 | 0.77     | 154 °F  |          | 08/18/18 | 02:16     | 601 (gpm) |
|  | 168 | 15,207 | 91.7 | 1.0   | 10431.53 | 4,661.53 | 4,658.99 | -157.30 | 4,661.65 | 358.07 | 1.58     | 154 °F  |          | 08/18/18 | 05:05     | 601 (gpm) |
|  | 169 | 15,302 | 90.2 | 1.2   | 10429.96 | 4,756.42 | 4,753.96 | -155.48 | 4,756.50 | 358.13 | 1.59     | 154 °F  |          | 08/18/18 | 06:48     | 601 (gpm) |
|  | 170 | 15,396 | 87.9 | 1.3   | 10431.52 | 4,850.29 | 4,847.92 | -153.43 | 4,850.35 | 358.19 | 2.45     | 156 °F  | 08/18/18 | 08:40    | 601 (gpm) |           |
|  | 171 | 15,491 | 87.3 | 2.2   | 10435.49 | 4,945.05 | 4,942.79 | -150.53 | 4,945.08 | 358.26 | 1.14     | 156 °F  | 08/18/18 | 09:37    | 601 (gpm) |           |
|  | 172 | 15,586 | 87.1 | 2.6   | 10440.13 | 5,039.71 | 5,037.59 | -146.56 | 5,039.72 | 358.33 | 0.47     | 160 °F  | 08/18/18 | 10:30    | 601 (gpm) |           |
|  | 173 | 15,680 | 87.1 | 1.3   | 10444.89 | 5,133.41 | 5,131.42 | -143.36 | 5,133.42 | 358.40 | 1.38     | 162 °F  | 08/18/18 | 12:25    | 601 (gpm) |           |
|  | 174 | 15,775 | 86.9 | 0.3   | 10449.86 | 5,228.20 | 5,226.28 | -142.04 | 5,228.20 | 358.44 | 1.07     | 162 °F  | 08/18/18 | 15:02    | 601 (gpm) |           |

# MWD SURVEYS

Customer: TAPROCK OPERATI  
Well: COSMO K 113H  
Field/Block: WOLFCAMP  
Co./Parish: LEA COUNTY  
State: NEW MEXICO

PGS Job #: LNM5182818  
MWD Operator: MIKE BOSTIC  
Directional Driller: JOHN PENNY  
Date of First Survey: July 28, 2018  
Date of Last Survey: August 19, 2018



Total Correction: 6.19    0    0

Vertical Section Plane: 358.47

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47961

| MD  | INC    | AZM  | T.V.D | V. SECT  | +N / -S  | +E / -W  | DIST    | ANGLE    | DLS    | TEMP(F°) | SHK/VIB | DATE | TIME     | FLOW  |           |
|-----|--------|------|-------|----------|----------|----------|---------|----------|--------|----------|---------|------|----------|-------|-----------|
| 175 | 15,869 | 88.1 | 359.7 | 10453.96 | 5,322.08 | 5,320.18 | -142.04 | 5,322.08 | 358.47 | 1.43     | 160 °F  | 0.00 | 08/18/18 | 17:31 | 601 (gpm) |
| 176 | 15,964 | 89.5 | 359.8 | 10455.95 | 5,417.03 | 5,415.16 | -142.45 | 5,417.03 | 358.49 | 1.48     | 160 °F  |      | 08/18/18 | 18:32 | 601 (gpm) |
| 177 | 16,059 | 89.1 | 359.6 | 10457.11 | 5,512.00 | 5,510.15 | -142.95 | 5,512.00 | 358.51 | 0.47     | 163 °F  |      | 08/18/18 | 19:31 | 601 (gpm) |
| 178 | 16,153 | 88.7 | 359.8 | 10458.92 | 5,605.96 | 5,604.13 | -143.44 | 5,605.97 | 358.53 | 0.48     | 163 °F  |      | 08/18/18 | 20:39 | 601 (gpm) |
| 179 | 16,247 | 89.2 | 359.8 | 10460.64 | 5,699.92 | 5,698.12 | -143.77 | 5,699.93 | 358.55 | 0.53     | 165 °F  |      | 08/19/18 | 00:54 | 601 (gpm) |
| 180 | 16,342 | 91.0 | 359.7 | 10460.47 | 5,794.89 | 5,793.11 | -144.19 | 5,794.90 | 358.57 | 1.90     | 165 °F  |      | 08/19/18 | 03:29 | 601 (gpm) |
| 181 | 16,437 | 91.6 | 359.9 | 10458.32 | 5,889.84 | 5,888.08 | -144.52 | 5,889.86 | 358.59 | 0.67     | 165 °F  |      | 08/19/18 | 04:25 | 601 (gpm) |
| 182 | 16,531 | 91.9 | 0.1   | 10455.45 | 5,983.77 | 5,982.04 | -144.52 | 5,983.79 | 358.62 | 0.38     | 165 °F  |      | 08/19/18 | 05:26 | 601 (gpm) |
| 183 | 16,626 | 92.8 | 0.0   | 10451.55 | 6,078.65 | 6,076.96 | -144.44 | 6,078.68 | 358.64 | 0.95     | 167 °F  |      | 08/19/18 | 06:30 | 601 (gpm) |
| 184 | 16,720 | 93.4 | 0.1   | 10446.47 | 6,172.48 | 6,170.82 | -144.35 | 6,172.51 | 358.66 | 0.65     | 167 °F  |      | 08/19/18 | 07:48 | 601 (gpm) |
| 185 | 16,746 | 93.4 | 0.2   | 10444.93 | 6,198.42 | 6,196.78 | -144.29 | 6,198.46 | 358.67 | 0.38     | 169 °F  |      | 08/19/18 | 08:13 | 601 (gpm) |
| PTB | 16,802 | 93.4 | 0.2   | 10441.61 | 6,254.30 | 6,252.68 | -144.09 | 6,254.34 | 358.68 | 0.00     | 169 °F  |      | 08/19/18 | 08:13 | 601 (gpm) |

# MWD SURVEYS

Customer: TAPROCK OPERATI  
Well: COSMO K 113H  
Field/Block: WOLFCAMP  
Co./Parish: LEA COUNTY  
State: NEW MEXICO

PGS Job #: LN5182818  
MWD Operator: MIKE BOSTIC  
Directional Driller: JOHN PENNY  
Date of First Survey: July 28, 2018  
Date of Last Survey: August 19, 2018



Total Correction: 6.19    0    0

Vertical Section Plane: 358.47

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47961

| <u>MD</u> | <u>INC</u> | <u>AZM</u> | <u>T.V.D</u> | <u>V. SECT</u> | <u>+N/-S</u> | <u>+E/-W</u> | <u>DIST</u> | <u>ANGLE</u> | <u>DLS</u> | <u>TEMP(F°)</u> | <u>SHK/VIB</u> | <u>DATE</u> | <u>TIME</u> | <u>FLOW</u> |
|-----------|------------|------------|--------------|----------------|--------------|--------------|-------------|--------------|------------|-----------------|----------------|-------------|-------------|-------------|
|-----------|------------|------------|--------------|----------------|--------------|--------------|-------------|--------------|------------|-----------------|----------------|-------------|-------------|-------------|