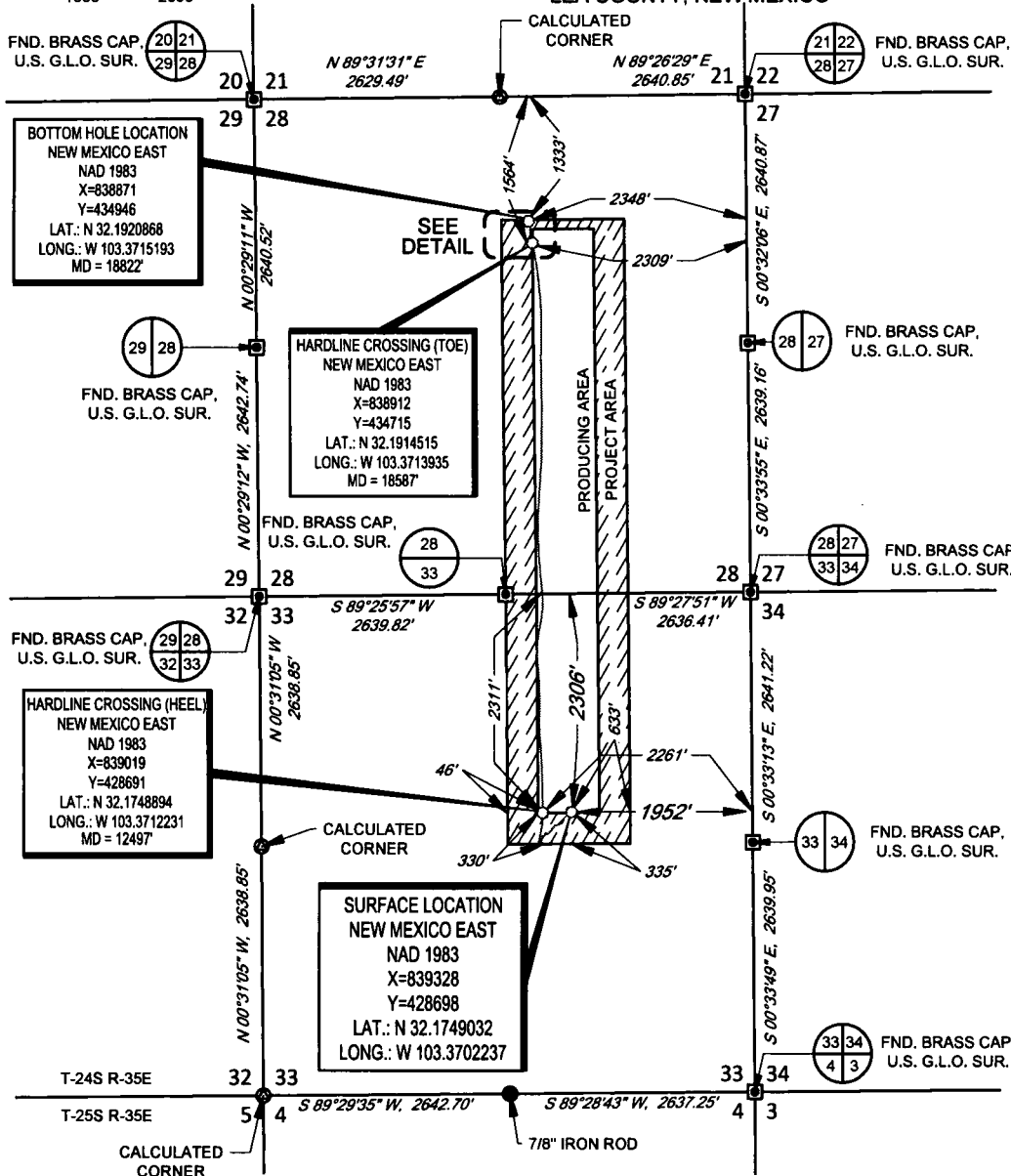


SCALE: 1" = 2000'

SECTION 33, TOWNSHIP 24-S, RANGE 35-E, N.M.P.M.  
LEA COUNTY, NEW MEXICO



HOEBS CGD

NOV 26 2018

RECEIVED

LEASE NAME & WELL NO.: COSMO K 24S35E3328 213H  
SECTION 33 TWP 24-S RGE 35-E SURVEY N.M.P.M.  
COUNTY LEA STATE NM ELEVATION 3289'  
DESCRIPTION 2306' FNL & 1952' FEL



**TOPOGRAPHIC**  
LOYALTY INNOVATION LEGACY

1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140  
TELEPHONE: (817) 744-7512 • FAX: (817) 744-7554  
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705  
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX: (432) 682-1743  
WWW.TOPOGRAPHIC.COM

INTERNAL  
PRE-COMPLETION  
PLAT

Stan W. Lloyd, P.S. No. 19642  
OCTOBER 5, 2018

|                                                           |  |                      |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------|--|----------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div>COSMO K<br/>24S35E3328 213H<br/>PRE-COMPLETION</div> |  | <div>REVISION:</div> |  | <div>NOTES:</div> <div>1. ORIGINAL DOCUMENT SIZE: 8.5" X 11"</div> <div>2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.</div> <div>3. THIS WELL LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY TAP ROCK OPERATING, LLC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.</div> |
|                                                           |  |                      |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                           |  |                      |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| DATE: 10/05/18                                            |  |                      |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| FILE: C:\COSMO_K_24S35E3328_213H                          |  |                      |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| DRAWN BY: GJU                                             |  |                      |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| SHEET: 1 OF 1                                             |  |                      |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

# MWD SURVEYS

Customer: TAPROCK  
Well: Cosmo K #213H  
Field/Block: Wolfcamp  
Co./Parish: Jal  
State: NM

PGS Job #: LNM5178818  
MWD Operator: Nabil Meridji  
Directional Driller: John Penny  
Date of First Survey: July 14, 2018  
Date of Last Survey:



Total Correction: 6.19 0 0

Vertical Section Plane: 359.42

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47963.6

| MD | INC      | AZM  | T.V.D  | V. SECT | +N/-S  | +E/-W  | DIST   | ANGLE | DLS    | TEMP(F°) | SHK/VIB | DATE | TIME | FLOW        |
|----|----------|------|--------|---------|--------|--------|--------|-------|--------|----------|---------|------|------|-------------|
| 0  | 0.00     | 0.00 | 0.00   | 0.00    | 0.00   | 0.00   | 0.00   | 0.00  | 0.00   |          |         |      |      |             |
| 1  | 101.76   | 1.14 | 343.80 | 101.75  | 0.97   | 0.97   | -0.28  | 1.01  | 343.80 | 1.12     |         |      |      | GYRO SURVEY |
| 2  | 196.18   | 0.92 | 331.93 | 196.16  | 2.54   | 2.54   | -0.90  | 2.70  | 340.49 | 0.32     |         |      |      | GYRO SURVEY |
| 3  | 290.60   | 1.24 | 325.35 | 290.56  | 4.05   | 4.05   | -1.84  | 4.45  | 335.61 | 0.36     |         |      |      | GYRO SURVEY |
| 4  | 385.02   | 1.29 | 325.40 | 384.96  | 5.76   | 5.76   | -3.02  | 6.50  | 332.35 | 0.05     |         |      |      | GYRO SURVEY |
| 5  | 479.44   | 1.11 | 344.92 | 479.36  | 7.52   | 7.52   | -3.86  | 8.45  | 332.84 | 0.47     |         |      |      | GYRO SURVEY |
| 6  | 573.86   | 1.28 | 344.67 | 573.76  | 9.42   | 9.42   | -4.37  | 10.39 | 335.09 | 0.18     |         |      |      | GYRO SURVEY |
| 7  | 668.28   | 1.59 | 355.77 | 668.15  | 11.74  | 11.74  | -4.75  | 12.67 | 337.98 | 0.44     |         |      |      | GYRO SURVEY |
| 8  | 762.70   | 1.90 | 0.74   | 762.52  | 14.61  | 14.61  | -4.83  | 15.39 | 341.72 | 0.37     |         |      |      | GYRO SURVEY |
| 9  | 857.12   | 1.81 | 9.36   | 856.89  | 17.65  | 17.65  | -4.56  | 18.23 | 345.50 | 0.31     |         |      |      | GYRO SURVEY |
| 10 | 951.54   | 2.27 | 18.42  | 951.26  | 20.89  | 20.89  | -3.73  | 21.22 | 349.88 | 0.59     |         |      |      | GYRO SURVEY |
| 11 | 1,045.96 | 2.31 | 18.93  | 1045.60 | 24.46  | 24.46  | -2.52  | 24.59 | 354.11 | 0.05     |         |      |      | GYRO SURVEY |
| 12 | 1,140.38 | 0.82 | 1.44   | 1139.98 | 26.94  | 26.94  | -1.89  | 27.00 | 355.99 | 1.64     |         |      |      | GYRO SURVEY |
| 13 | 1,234.80 | 1.15 | 234.49 | 1234.40 | 27.06  | 27.06  | -2.64  | 27.19 | 354.42 | 1.87     |         |      |      | GYRO SURVEY |
| 14 | 1,392.16 | 2.46 | 224.33 | 1391.67 | 23.73  | 23.73  | -6.29  | 24.55 | 345.15 | 0.85     |         |      |      | GYRO SURVEY |
| 15 | 1,486.58 | 2.83 | 220.69 | 1485.99 | 20.51  | 20.51  | -9.22  | 22.49 | 335.80 | 0.43     |         |      |      | GYRO SURVEY |
| 16 | 1,581.00 | 2.59 | 217.19 | 1580.31 | 17.05  | 17.05  | -12.03 | 20.87 | 324.80 | 0.31     |         |      |      | GYRO SURVEY |
| 17 | 1,675.42 | 2.40 | 215.33 | 1674.64 | 13.74  | 13.74  | -14.46 | 19.95 | 313.55 | 0.22     |         |      |      | GYRO SURVEY |
| 18 | 1,769.84 | 2.12 | 217.73 | 1768.99 | 10.75  | 10.75  | -16.67 | 19.83 | 302.83 | 0.31     |         |      |      | GYRO SURVEY |
| 19 | 1,864.26 | 1.87 | 216.29 | 1863.35 | 8.13   | 8.13   | -18.65 | 20.34 | 293.56 | 0.27     |         |      |      | GYRO SURVEY |
| 20 | 1,958.68 | 2.18 | 214.40 | 1957.71 | 5.40   | 5.40   | -20.57 | 21.27 | 284.72 | 0.34     |         |      |      | GYRO SURVEY |
| 21 | 2,053.10 | 3.47 | 218.91 | 2052.01 | 1.70   | 1.70   | -23.38 | 23.45 | 274.15 | 1.39     |         |      |      | GYRO SURVEY |
| 22 | 2,147.52 | 4.97 | 216.31 | 2146.17 | -3.83  | -3.83  | -27.60 | 27.87 | 262.11 | 1.60     |         |      |      | GYRO SURVEY |
| 23 | 2,241.94 | 5.47 | 216.90 | 2240.20 | -10.72 | -10.72 | -32.73 | 34.44 | 251.86 | 0.53     |         |      |      | GYRO SURVEY |
| 24 | 2,336.36 | 4.83 | 219.61 | 2334.24 | -17.39 | -17.39 | -37.97 | 41.76 | 245.40 | 0.72     |         |      |      | GYRO SURVEY |
| 25 | 2,430.78 | 4.58 | 219.87 | 2428.34 | -23.35 | -23.35 | -42.92 | 48.86 | 241.46 | 0.27     |         |      |      | GYRO SURVEY |
| 26 | 2,525.20 | 4.11 | 217.41 | 2522.49 | -28.93 | -28.93 | -47.40 | 55.53 | 238.60 | 0.54     |         |      |      | GYRO SURVEY |

HOBBS OCD  
NOV 26 2018  
RECEIVED

# MWD SURVEYS

Customer: TAPROCK  
Well: Cosmo K #213H  
Field/Block: Wolfcamp  
Co./Parish: Jal  
State: NM

PGS Job #: LNM5178818  
MWD Operator: Nabil Meridji  
Directional Driller: John Penny  
Date of First Survey: July 14, 2018  
Date of Last Survey:



Total Correction: 6.19 0 0

Vertical Section Plane: 359.42

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47963.6

| MD | INC      | AZM  | T.V.D  | V. SECT | +N/-S   | +E/-W   | DIST    | ANGLE  | DLS    | TEMP(F) | SHK/VIB | DATE        | TIME | FLOW |
|----|----------|------|--------|---------|---------|---------|---------|--------|--------|---------|---------|-------------|------|------|
| 27 | 2,619.62 | 3.71 | 220.63 | 2616.69 | -33.93  | -33.93  | -51.44  | 61.62  | 236.59 | 0.48    |         | GYRO SURVEY |      |      |
| 28 | 2,714.04 | 3.19 | 222.24 | 2710.94 | -38.19  | -38.19  | -55.19  | 67.12  | 235.32 | 0.56    |         | GYRO SURVEY |      |      |
| 29 | 2,808.46 | 4.48 | 217.27 | 2805.15 | -43.07  | -43.07  | -59.19  | 73.20  | 233.96 | 1.41    |         | GYRO SURVEY |      |      |
| 30 | 2,902.88 | 5.04 | 220.27 | 2899.24 | -49.18  | -49.18  | -64.11  | 80.80  | 232.51 | 0.65    |         | GYRO SURVEY |      |      |
| 31 | 2,997.30 | 4.51 | 223.64 | 2993.33 | -55.03  | -55.03  | -69.35  | 88.53  | 231.57 | 0.63    |         | GYRO SURVEY |      |      |
| 32 | 3,091.72 | 4.21 | 225.41 | 3087.48 | -60.15  | -60.15  | -74.38  | 95.66  | 231.04 | 0.35    |         | GYRO SURVEY |      |      |
| 33 | 3,186.14 | 4.83 | 227.44 | 3181.60 | -65.27  | -65.27  | -79.78  | 103.08 | 230.71 | 0.68    |         | GYRO SURVEY |      |      |
| 34 | 3,280.56 | 5.41 | 230.89 | 3275.65 | -70.77  | -70.77  | -86.16  | 111.50 | 230.60 | 0.70    |         | GYRO SURVEY |      |      |
| 35 | 3,374.98 | 5.10 | 230.91 | 3369.67 | -76.23  | -76.23  | -92.88  | 120.15 | 230.62 | 0.33    |         | GYRO SURVEY |      |      |
| 36 | 3,469.40 | 4.81 | 231.23 | 3463.74 | -81.35  | -81.35  | -99.22  | 128.31 | 230.65 | 0.31    |         | GYRO SURVEY |      |      |
| 37 | 3,563.82 | 4.71 | 232.38 | 3557.83 | -86.20  | -86.20  | -105.38 | 136.14 | 230.72 | 0.15    |         | GYRO SURVEY |      |      |
| 38 | 3,658.24 | 4.42 | 223.04 | 3651.95 | -91.22  | -91.22  | -110.93 | 143.62 | 230.57 | 0.84    |         | GYRO SURVEY |      |      |
| 39 | 3,752.66 | 4.31 | 211.45 | 3746.10 | -96.90  | -96.90  | -115.26 | 150.58 | 229.95 | 0.94    |         | GYRO SURVEY |      |      |
| 40 | 3,847.08 | 4.78 | 202.27 | 3840.23 | -103.57 | -103.57 | -118.60 | 157.46 | 228.87 | 0.92    |         | GYRO SURVEY |      |      |
| 41 | 3,941.50 | 4.75 | 202.33 | 3934.32 | -110.82 | -110.82 | -121.58 | 164.51 | 227.65 | 0.03    |         | GYRO SURVEY |      |      |
| 42 | 4,035.92 | 3.91 | 193.71 | 4028.47 | -117.56 | -117.56 | -123.82 | 170.74 | 226.49 | 1.12    |         | GYRO SURVEY |      |      |
| 43 | 4,130.34 | 3.29 | 210.45 | 4122.71 | -123.03 | -123.03 | -125.96 | 176.07 | 225.68 | 1.29    |         | GYRO SURVEY |      |      |
| 44 | 4,224.76 | 3.30 | 227.18 | 4216.97 | -127.21 | -127.21 | -129.33 | 181.41 | 225.47 | 1.01    |         | GYRO SURVEY |      |      |
| 45 | 4,319.18 | 4.21 | 239.33 | 4311.19 | -130.83 | -130.83 | -134.30 | 187.49 | 225.75 | 1.28    |         | GYRO SURVEY |      |      |
| 46 | 4,413.60 | 4.77 | 247.40 | 4405.32 | -134.10 | -134.10 | -140.90 | 194.52 | 226.42 | 0.89    |         | GYRO SURVEY |      |      |
| 47 | 4,508.02 | 5.22 | 263.64 | 4499.39 | -136.09 | -136.09 | -148.80 | 201.64 | 227.55 | 1.57    |         | GYRO SURVEY |      |      |
| 48 | 4,602.44 | 4.97 | 272.13 | 4593.43 | -136.41 | -136.41 | -157.15 | 208.10 | 229.04 | 0.84    |         | GYRO SURVEY |      |      |
| 49 | 4,696.86 | 4.45 | 257.34 | 4687.54 | -137.06 | -137.06 | -164.81 | 214.36 | 230.25 | 1.39    |         | GYRO SURVEY |      |      |
| 50 | 4,791.28 | 3.84 | 233.56 | 4781.72 | -139.74 | -139.74 | -170.93 | 220.78 | 230.73 | 1.91    |         | GYRO SURVEY |      |      |
| 51 | 4,885.70 | 3.67 | 213.23 | 4875.94 | -144.15 | -144.15 | -175.13 | 226.82 | 230.54 | 1.41    |         | GYRO SURVEY |      |      |
| 52 | 4,980.12 | 3.53 | 227.78 | 4970.18 | -148.62 | -148.62 | -178.93 | 232.61 | 230.29 | 0.98    |         | GYRO SURVEY |      |      |
| 53 | 5,074.54 | 3.26 | 228.78 | 5064.43 | -152.35 | -152.35 | -183.11 | 238.20 | 230.24 | 0.29    |         | GYRO SURVEY |      |      |

# MWD SURVEYS

Customer: TAPROCK  
Well: Cosmo K #213H  
Field/Block: Wolfcamp  
Co./Parish: Jal  
State: NM

PGS Job #: LNM5178818  
MWD Operator: Nabil Meridji  
Directional Driller: John Penny  
Date of First Survey: July 14, 2018  
Date of Last Survey:



Total Correction: 6.19 0 0

Vertical Section Plane: 359.42

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47963.6

| MD | INC      | AZM  | T.V.D  | V. SECT | +N/-S   | +E/-W   | DIST    | ANGLE  | DLS    | TEMP(F) | SHK/VIB | DATE        | TIME | FLOW |
|----|----------|------|--------|---------|---------|---------|---------|--------|--------|---------|---------|-------------|------|------|
| 54 | 5,168.96 | 3.16 | 227.92 | 5158.70 | -155.86 | -155.86 | -187.06 | 243.49 | 230.20 | 0.12    |         | GYRO SURVEY |      |      |
| 55 | 5,263.38 | 3.88 | 224.64 | 5252.94 | -159.88 | -159.88 | -191.24 | 249.27 | 230.10 | 0.79    |         | GYRO SURVEY |      |      |
| 56 | 5,357.80 | 4.10 | 219.00 | 5347.14 | -164.78 | -164.78 | -195.61 | 255.76 | 229.89 | 0.48    |         | GYRO SURVEY |      |      |
| 57 | 5,452.22 | 4.22 | 223.98 | 5441.31 | -169.90 | -169.90 | -200.14 | 262.53 | 229.67 | 0.40    |         | GYRO SURVEY |      |      |
| 58 | 5,546.64 | 4.47 | 221.90 | 5535.46 | -175.14 | -175.14 | -205.01 | 269.64 | 229.49 | 0.31    |         | GYRO SURVEY |      |      |
| 59 | 5,641.06 | 4.57 | 223.23 | 5629.58 | -180.62 | -180.62 | -210.05 | 277.02 | 229.31 | 0.15    |         | GYRO SURVEY |      |      |
| 60 | 5,735.48 | 4.63 | 214.85 | 5723.70 | -186.48 | -186.48 | -214.80 | 284.46 | 229.04 | 0.71    |         | GYRO SURVEY |      |      |
| 61 | 5,829.90 | 4.55 | 213.77 | 5817.82 | -192.72 | -192.72 | -219.06 | 291.77 | 228.66 | 0.12    |         | GYRO SURVEY |      |      |
| 62 | 5,924.32 | 4.80 | 219.89 | 5911.92 | -198.86 | -198.86 | -223.67 | 299.29 | 228.36 | 0.59    |         | GYRO SURVEY |      |      |
| 63 | 6,018.74 | 5.00 | 224.55 | 6006.00 | -204.82 | -204.82 | -229.09 | 307.30 | 228.20 | 0.47    |         | GYRO SURVEY |      |      |
| 64 | 6,113.16 | 4.71 | 226.77 | 6100.08 | -210.41 | -210.41 | -234.80 | 315.28 | 228.14 | 0.37    |         | GYRO SURVEY |      |      |
| 65 | 6,207.58 | 4.83 | 229.69 | 6194.17 | -215.64 | -215.64 | -240.66 | 323.13 | 228.14 | 0.29    |         | GYRO SURVEY |      |      |
| 66 | 6,302.00 | 4.79 | 229.45 | 6288.26 | -220.78 | -220.78 | -246.69 | 331.05 | 228.17 | 0.05    |         | GYRO SURVEY |      |      |
| 67 | 6,396.42 | 4.60 | 233.76 | 6382.36 | -225.58 | -225.58 | -252.74 | 338.76 | 228.25 | 0.42    |         | GYRO SURVEY |      |      |
| 68 | 6,490.84 | 4.52 | 242.56 | 6476.49 | -229.53 | -229.53 | -259.09 | 346.14 | 228.46 | 0.75    |         | GYRO SURVEY |      |      |
| 69 | 6,585.26 | 4.65 | 244.99 | 6570.60 | -232.86 | -232.86 | -265.85 | 353.42 | 228.79 | 0.25    |         | GYRO SURVEY |      |      |
| 70 | 6,679.68 | 4.71 | 245.06 | 6664.71 | -236.11 | -236.11 | -272.84 | 360.82 | 229.13 | 0.06    |         | GYRO SURVEY |      |      |
| 71 | 6,774.10 | 4.75 | 241.58 | 6758.81 | -239.61 | -239.61 | -279.79 | 368.36 | 229.42 | 0.31    |         | GYRO SURVEY |      |      |
| 72 | 6,868.52 | 4.60 | 243.42 | 6852.91 | -243.16 | -243.16 | -286.61 | 375.86 | 229.69 | 0.22    |         | GYRO SURVEY |      |      |
| 73 | 6,962.94 | 4.61 | 240.52 | 6947.03 | -246.72 | -246.72 | -293.30 | 383.27 | 229.93 | 0.25    |         | GYRO SURVEY |      |      |
| 74 | 7,057.36 | 4.29 | 239.79 | 7041.17 | -250.36 | -250.36 | -299.65 | 390.48 | 230.12 | 0.34    |         | GYRO SURVEY |      |      |
| 75 | 7,151.78 | 4.00 | 234.78 | 7135.34 | -254.04 | -254.04 | -305.39 | 397.24 | 230.24 | 0.49    |         | GYRO SURVEY |      |      |
| 76 | 7,246.20 | 3.71 | 231.50 | 7229.55 | -257.84 | -257.84 | -310.47 | 403.57 | 230.29 | 0.39    |         | GYRO SURVEY |      |      |
| 77 | 7,340.62 | 3.31 | 231.28 | 7323.79 | -261.44 | -261.44 | -314.98 | 409.35 | 230.31 | 0.42    |         | GYRO SURVEY |      |      |
| 78 | 7,435.04 | 3.15 | 231.58 | 7418.06 | -264.76 | -264.76 | -319.14 | 414.67 | 230.32 | 0.17    |         | GYRO SURVEY |      |      |
| 79 | 7,529.46 | 3.25 | 228.59 | 7512.33 | -268.14 | -268.14 | -323.18 | 419.93 | 230.32 | 0.21    |         | GYRO SURVEY |      |      |
| 80 | 7,623.88 | 2.93 | 223.89 | 7606.61 | -271.65 | -271.65 | -326.86 | 425.01 | 230.27 | 0.43    |         | GYRO SURVEY |      |      |

# MWD SURVEYS

Customer: TAPROCK  
Well: Cosmo K #213H  
Field/Block: Wolfcamp  
Co./Parish: Jal  
State: NM

PGS Job #: LN5178818  
MWD Operator: Nabil Meridji  
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Date of First Survey: July 14, 2018  
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Total Correction: 6.19 0 0

Vertical Section Plane: 359.42

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47963.6

| MD  | INC       | AZM  | T.V.D  | V. SECT  | +N/-S   | +E/-W   | DIST    | ANGLE  | DLS    | TEMP(F°) | SHK/VIB | DATE        | TIME | FLOW |
|-----|-----------|------|--------|----------|---------|---------|---------|--------|--------|----------|---------|-------------|------|------|
| 81  | 7,718.30  | 2.92 | 218.38 | 7700.91  | -275.27 | -275.27 | -330.02 | 429.75 | 230.17 | 0.30     |         | GYRO SURVEY |      |      |
| 82  | 7,812.72  | 2.56 | 206.60 | 7795.22  | -279.04 | -279.04 | -332.46 | 434.04 | 229.99 | 0.71     |         | GYRO SURVEY |      |      |
| 83  | 7,907.14  | 2.58 | 198.94 | 7889.55  | -282.93 | -282.93 | -334.09 | 437.80 | 229.74 | 0.36     |         | GYRO SURVEY |      |      |
| 84  | 8,001.56  | 2.23 | 190.61 | 7983.89  | -286.75 | -286.75 | -335.12 | 441.05 | 229.45 | 0.52     |         | GYRO SURVEY |      |      |
| 85  | 8,095.98  | 1.87 | 176.32 | 8078.25  | -290.09 | -290.09 | -335.36 | 443.42 | 229.14 | 0.66     |         | GYRO SURVEY |      |      |
| 86  | 8,190.40  | 1.36 | 169.00 | 8172.63  | -292.72 | -292.72 | -335.05 | 444.91 | 228.86 | 0.58     |         | GYRO SURVEY |      |      |
| 87  | 8,284.82  | 1.04 | 160.97 | 8267.03  | -294.63 | -294.63 | -334.55 | 445.80 | 228.63 | 0.38     |         | GYRO SURVEY |      |      |
| 88  | 8,379.24  | 0.58 | 139.56 | 8361.44  | -295.81 | -295.81 | -333.96 | 446.13 | 228.47 | 0.58     |         | GYRO SURVEY |      |      |
| 89  | 8,473.66  | 0.52 | 100.36 | 8455.85  | -296.25 | -296.25 | -333.24 | 445.88 | 228.36 | 0.40     |         | GYRO SURVEY |      |      |
| 90  | 8,568.08  | 0.49 | 70.51  | 8550.27  | -296.19 | -296.19 | -332.43 | 445.24 | 228.30 | 0.28     |         | GYRO SURVEY |      |      |
| 91  | 8,662.50  | 0.50 | 74.83  | 8644.69  | -295.94 | -295.94 | -331.65 | 444.49 | 228.26 | 0.04     |         | GYRO SURVEY |      |      |
| 92  | 8,756.92  | 0.59 | 87.68  | 8739.10  | -295.81 | -295.81 | -330.76 | 443.75 | 228.19 | 0.16     |         | GYRO SURVEY |      |      |
| 93  | 8,851.34  | 0.57 | 92.47  | 8833.52  | -295.81 | -295.81 | -329.81 | 443.03 | 228.11 | 0.06     |         | GYRO SURVEY |      |      |
| 94  | 8,945.76  | 0.54 | 100.45 | 8927.93  | -295.92 | -295.92 | -328.90 | 442.43 | 228.02 | 0.09     |         | GYRO SURVEY |      |      |
| 95  | 9,040.18  | 0.69 | 118.09 | 9022.35  | -296.26 | -296.26 | -327.97 | 441.97 | 227.91 | 0.25     |         | GYRO SURVEY |      |      |
| 96  | 9,134.60  | 0.76 | 110.04 | 9116.76  | -296.74 | -296.74 | -326.88 | 441.48 | 227.77 | 0.13     |         | GYRO SURVEY |      |      |
| 97  | 9,229.02  | 0.92 | 112.78 | 9211.17  | -297.25 | -297.25 | -325.60 | 440.88 | 227.61 | 0.17     |         | GYRO SURVEY |      |      |
| 98  | 9,323.44  | 0.68 | 118.43 | 9305.58  | -297.81 | -297.81 | -324.41 | 440.38 | 227.45 | 0.27     |         | GYRO SURVEY |      |      |
| 99  | 9,417.86  | 0.83 | 119.25 | 9399.99  | -298.41 | -298.41 | -323.32 | 439.98 | 227.29 | 0.16     |         | GYRO SURVEY |      |      |
| 100 | 9,512.28  | 1.09 | 134.64 | 9494.40  | -299.37 | -299.37 | -322.09 | 439.73 | 227.09 | 0.39     |         | GYRO SURVEY |      |      |
| 101 | 9,606.70  | 1.38 | 142.53 | 9588.80  | -300.91 | -300.91 | -320.76 | 439.81 | 226.83 | 0.36     |         | GYRO SURVEY |      |      |
| 102 | 9,701.12  | 1.63 | 157.83 | 9683.19  | -303.05 | -303.05 | -319.56 | 440.41 | 226.52 | 0.50     |         | GYRO SURVEY |      |      |
| 103 | 9,795.54  | 1.89 | 172.98 | 9777.56  | -305.84 | -305.84 | -318.86 | 441.83 | 226.19 | 0.56     |         | GYRO SURVEY |      |      |
| 104 | 9,889.96  | 2.30 | 192.95 | 9871.92  | -309.24 | -309.24 | -319.10 | 444.35 | 225.90 | 0.88     |         | GYRO SURVEY |      |      |
| 105 | 9,984.38  | 2.32 | 182.23 | 9966.26  | -312.99 | -312.99 | -319.59 | 447.33 | 225.60 | 0.46     |         | GYRO SURVEY |      |      |
| 106 | 10,078.80 | 2.52 | 166.25 | 10060.60 | -316.92 | -316.92 | -319.18 | 449.79 | 225.20 | 0.74     |         | GYRO SURVEY |      |      |
| 107 | 10,173.22 | 2.60 | 161.24 | 10154.93 | -320.96 | -320.96 | -317.99 | 451.82 | 224.73 | 0.25     |         | GYRO SURVEY |      |      |

# MWD SURVEYS

Customer: TAPROCK  
Well: Cosmo K #213H  
Field/Block: Wolfcamp  
Co./Parish: Jal  
State: NM

PGS Job #: LNM5178818  
MWD Operator: Nabil Meridji  
Directional Driller: John Penny  
Date of First Survey: July 14, 2018  
Date of Last Survey:



Total Correction: 6.19    0    0

Vertical Section Plane: 359.42

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47963.6

| MD  | INC       | AZM   | T.V.D  | V. SECT  | +N/-S   | +E/-W   | DIST    | ANGLE  | DLS    | TEMP(F°) | SHK/MB | DATE  | TIME           | FLOW        |
|-----|-----------|-------|--------|----------|---------|---------|---------|--------|--------|----------|--------|-------|----------------|-------------|
| 108 | 10,267.64 | 1.30  | 188.79 | 10249.29 | -324.05 | -324.05 | -317.47 | 453.65 | 224.41 | 1.66     |        |       |                | GYRO SURVEY |
| 109 | 10,362.06 | 0.75  | 254.30 | 10343.70 | -325.28 | -325.28 | -318.23 | 455.05 | 224.37 | 1.27     |        |       |                | GYRO SURVEY |
| 110 | 10,456.48 | 1.92  | 323.11 | 10438.10 | -324.18 | -324.18 | -319.77 | 455.35 | 224.61 | 1.90     |        |       |                | GYRO SURVEY |
| 111 | 10,550.90 | 1.80  | 316.78 | 10532.47 | -321.83 | -321.83 | -321.73 | 455.07 | 224.99 | 0.25     |        |       |                | GYRO SURVEY |
| 112 | 10,645.32 | 1.06  | 299.29 | 10626.86 | -320.32 | -320.32 | -323.51 | 455.26 | 225.28 | 0.90     |        |       |                | GYRO SURVEY |
| 113 | 10,739.74 | 1.74  | 317.84 | 10721.25 | -318.83 | -318.83 | -325.23 | 455.45 | 225.57 | 0.86     |        |       |                | GYRO SURVEY |
| 114 | 10,834.16 | 1.54  | 326.24 | 10815.63 | -316.72 | -316.72 | -326.90 | 455.16 | 225.91 | 0.33     |        |       |                | GYRO SURVEY |
| 115 | 10,928.58 | 2.05  | 305.64 | 10910.00 | -314.68 | -314.68 | -328.98 | 455.24 | 226.27 | 0.86     |        |       |                | GYRO SURVEY |
| 116 | 11,023.00 | 2.30  | 282.91 | 11004.36 | -313.27 | -313.27 | -332.19 | 456.61 | 226.68 | 0.94     |        |       |                | GYRO SURVEY |
| 117 | 11,117.42 | 2.50  | 298.51 | 11098.70 | -311.87 | -311.87 | -335.85 | 458.31 | 227.12 | 0.72     |        |       |                | GYRO SURVEY |
| 118 | 11,211.84 | 1.39  | 275.50 | 11193.06 | -310.77 | -310.77 | -338.80 | 459.74 | 227.47 | 1.41     |        |       |                | GYRO SURVEY |
| 119 | 11,306.26 | 1.41  | 242.80 | 11287.45 | -311.20 | -311.20 | -340.98 | 461.64 | 227.61 | 0.83     |        |       |                | GYRO SURVEY |
| 120 | 11,400.68 | 1.77  | 239.62 | 11381.84 | -312.47 | -312.47 | -343.27 | 464.19 | 227.69 | 0.39     |        |       |                | GYRO SURVEY |
| 121 | 11,495.10 | 1.83  | 222.08 | 11476.21 | -314.32 | -314.32 | -345.54 | 467.12 | 227.71 | 0.58     |        |       |                | GYRO SURVEY |
| 122 | 11,590.00 | 1.01  | 240.57 | 11570.60 | -315.86 | -315.86 | -347.28 | 469.43 | 227.71 | 0.98     |        |       |                | GYRO SURVEY |
| 123 | 11,683.94 | 0.32  | 240.06 | 11665.02 | -316.40 | -316.40 | -348.24 | 470.51 | 227.74 | 0.73     |        |       |                | GYRO SURVEY |
| 124 | 11,744    | 0.50  | 214.50 | 11725.07 | -313.18 | -316.72 | -348.56 | 470.97 | 227.74 | 0.42     | 138 °F | Green | 09/09/18 23:10 | 303 (gpm)   |
| 125 | 11,858    | 0.40  | 189.10 | 11839.07 | -313.98 | -317.53 | -348.91 | 471.76 | 227.70 | 0.19     | 138 °F | Green | 09/09/18 16:59 | 303 (gpm)   |
| 126 | 11,952    | 3.80  | 7.20   | 11933.00 | -311.21 | -314.76 | -348.57 | 469.65 | 227.92 | 4.47     | 138 °F | Green | 09/09/18 20:00 | 303 (gpm)   |
| 127 | 11,999    | 10.90 | 11.30  | 11979.59 | -305.31 | -308.85 | -347.50 | 464.91 | 228.37 | 15.14    | 142 °F | Green | 09/09/18 21:42 | 303 (gpm)   |
| 128 | 12,046    | 18.50 | 9.10   | 12025.02 | -293.60 | -297.11 | -345.45 | 455.64 | 229.30 | 16.21    | 142 °F | Green | 09/10/18 00:36 | 303 (gpm)   |
| 129 | 12,093    | 25.20 | 10.20  | 12068.62 | -276.40 | -279.88 | -342.49 | 442.31 | 230.74 | 14.28    | 142 °F | Green | 09/10/18 02:25 | 303 (gpm)   |
| 130 | 12,141    | 30.20 | 10.60  | 12111.10 | -254.50 | -257.94 | -338.46 | 425.55 | 232.69 | 10.42    | 142 °F | Green | 09/10/18 04:03 | 303 (gpm)   |
| 131 | 12,188    | 35.70 | 10.60  | 12150.53 | -229.43 | -232.82 | -333.76 | 406.94 | 235.10 | 11.70    | 144 °F | Green | 09/10/18 05:32 | 303 (gpm)   |
| 132 | 12,236    | 40.10 | 11.40  | 12188.39 | -200.56 | -203.89 | -328.12 | 386.31 | 238.14 | 9.22     | 144 °F | Green | 09/10/18 06:37 | 303 (gpm)   |
| 133 | 12,283    | 42.40 | 10.30  | 12223.73 | -170.19 | -173.46 | -322.30 | 366.01 | 241.71 | 5.13     | 145 °F | Green | 09/10/18 07:35 | 303 (gpm)   |
| 134 | 12,330    | 44.00 | 8.60   | 12257.99 | -138.51 | -141.72 | -317.02 | 347.26 | 245.91 | 4.21     | 145 °F | Green | 09/10/18 08:36 | 303 (gpm)   |

# MWD SURVEYS

Customer: TAPROCK  
Well: Cosmo K #213H  
Field/Block: Wolfcamp  
Co./Parish: Jal  
State: NM

PGS Job #: LNM5178818  
MWD Operator: Nabil Meridji  
Directional Driller: John Penny  
Date of First Survey: July 14, 2018  
Date of Last Survey:



Total Correction: 6.19    0    0

Vertical Section Plane: 359.42

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47963.6

| MD  | INC    | AZM   | T.V.D  | V. SECT  | +N / -S | +E / -W  | DIST    | ANGLE    | DLS    | TEMP(F°) | SHK/VIB | DATE  | TIME     | FLOW  |           |
|-----|--------|-------|--------|----------|---------|----------|---------|----------|--------|----------|---------|-------|----------|-------|-----------|
| 135 | 12,377 | 48.60 | 6.00   | 12290.45 | -104.86 | -108.03  | -312.74 | 330.87   | 250.94 | 10.57    | 145 °F  | Green | 09/10/18 | 09:27 | 303 (gpm) |
| 136 | 12,425 | 56.80 | 2.00   | 12319.52 | -66.84  | -69.98   | -310.15 | 317.95   | 257.29 | 18.32    | 147 °F  | Green | 09/10/18 | 10:19 | 303 (gpm) |
| 137 | 12,472 | 59.80 | 0.50   | 12344.22 | -26.88  | -30.01   | -309.29 | 310.74   | 264.46 | 6.94     | 147 °F  | Green | 09/10/18 | 11:15 | 303 (gpm) |
| 138 | 12,519 | 60.00 | 359.90 | 12367.79 | 13.78   | 10.65    | -309.14 | 309.33   | 271.97 | 1.18     | 149 °F  | Green | 09/10/18 | 12:53 | 303 (gpm) |
| 139 | 12,566 | 57.80 | 358.60 | 12392.07 | 54.02   | 50.89    | -309.67 | 313.82   | 279.33 | 5.25     | 149 °F  | Green | 09/10/18 | 13:33 | 303 (gpm) |
| 140 | 12,614 | 57.40 | 358.60 | 12417.79 | 94.55   | 91.41    | -310.66 | 323.82   | 286.40 | 0.83     | 151 °F  | Green | 09/10/18 | 14:19 | 303 (gpm) |
| 141 | 12,709 | 59.10 | 359.30 | 12467.78 | 175.32  | 172.17   | -312.13 | 356.47   | 298.88 | 1.90     | 151 °F  | Green | 09/10/18 | 15:51 | 303 (gpm) |
| 142 | 12,756 | 66.40 | 0.60   | 12489.28 | 217.08  | 213.93   | -312.15 | 378.42   | 304.42 | 15.72    | 151 °F  | Green | 09/10/18 | 16:45 | 303 (gpm) |
| 143 | 12,803 | 71.30 | 358.70 | 12506.24 | 260.89  | 257.74   | -312.43 | 405.03   | 309.52 | 11.09    | 151 °F  | Green | 09/10/18 | 17:44 | 303 (gpm) |
| 144 | 12,850 | 76.30 | 357.80 | 12519.35 | 306.00  | 302.84   | -313.81 | 436.11   | 313.98 | 10.80    | 151 °F  | Green | 09/10/18 | 18:35 | 303 (gpm) |
| 145 | 12,897 | 85.00 | 358.00 | 12526.97 | 352.32  | 349.14   | -315.51 | 470.58   | 317.90 | 18.52    | 154 °F  | Green | 09/10/18 | 20:04 | 303 (gpm) |
| 146 | 12,944 | 89.40 | 357.70 | 12529.27 | 399.23  | 396.04   | -317.27 | 507.45   | 321.30 | 9.38     | 154 °F  | Green | 09/10/18 | 21:51 | 303 (gpm) |
| 147 | 12,992 | 92.40 | 358.50 | 12528.52 | 447.21  | 444.00   | -318.86 | 546.64   | 324.32 | 6.47     | 154 °F  | Green | 09/10/18 | 22:29 | 303 (gpm) |
| 148 | 13,087 | 88.80 | 358.00 | 12527.52 | 542.17  | 538.94   | -321.76 | 627.68   | 329.16 | 3.83     | 154 °F  | Green | 09/11/18 | 00:37 | 303 (gpm) |
| 149 | 13,208 | 89.80 | 356.20 | 12529.00 | 663.05  | 659.77   | -327.88 | 736.75   | 333.57 | 1.70     | 156 °F  | Green | 09/11/18 | 23:37 | 303 (gpm) |
| 150 | 13,302 | 91.30 | 354.40 | 12528.10 | 756.80  | 753.44   | -335.59 | 824.80   | 335.99 | 2.49     | 162 °F  | Green | 09/12/18 | 00:36 | 303 (gpm) |
| 151 | 13,396 | 93.10 | 357.20 | 12524.49 | 850.53  | 847.11   | -342.47 | 913.71   | 337.99 | 3.54     | 163 °F  | Green | 09/12/18 | 02:32 | 303 (gpm) |
| 152 | 13,490 | 93.10 | 359.50 | 12519.40 | 944.37  | 940.92   | -345.17 | 1,002.24 | 339.85 | 2.44     | 163 °F  | Green | 09/12/18 | 04:22 | 303 (gpm) |
| 153 | 13,585 | 90.80 | 2.30   | 12516.17 | 1039.27 | 1,035.84 | -343.68 | 1,091.37 | 341.64 | 3.81     | 163 °F  | Green | 09/12/18 | 06:19 | 303 (gpm) |
| 154 | 13,678 | 90.90 | 0.50   | 12514.79 | 1132.20 | 1,128.80 | -341.40 | 1,179.30 | 343.17 | 1.94     | 163 °F  | Green | 09/12/18 | 07:16 | 303 (gpm) |
| 155 | 13,773 | 88.90 | 358.50 | 12514.96 | 1227.19 | 1,223.78 | -342.23 | 1,270.74 | 344.38 | 2.98     | 169 °F  | Green | 09/12/18 | 08:18 | 303 (gpm) |
| 156 | 13,868 | 91.40 | 357.90 | 12514.71 | 1322.16 | 1,318.73 | -345.22 | 1,363.17 | 345.33 | 2.71     | 169 °F  | Green | 09/12/18 | 09:27 | 303 (gpm) |
| 157 | 13,962 | 89.10 | 354.20 | 12514.30 | 1415.97 | 1,412.48 | -351.69 | 1,455.61 | 346.02 | 4.63     | 172 °F  | Green | 09/12/18 | 10:38 | 303 (gpm) |
| 158 | 14,056 | 93.10 | 355.20 | 12512.49 | 1509.61 | 1,506.04 | -360.37 | 1,548.56 | 346.54 | 4.39     | 172 °F  | Green | 09/12/18 | 12:31 | 306 (gpm) |
| 159 | 14,151 | 95.90 | 356.30 | 12505.04 | 1604.12 | 1,600.48 | -367.39 | 1,642.11 | 347.07 | 3.17     | 172 °F  | Green | 09/12/18 | 14:14 | 306 (gpm) |
| 160 | 14,245 | 96.50 | 359.10 | 12494.89 | 1697.51 | 1,693.84 | -371.14 | 1,734.03 | 347.64 | 3.03     | 172 °F  | Green | 09/12/18 | 17:19 | 306 (gpm) |
| 161 | 14,339 | 96.10 | 5.60   | 12484.56 | 1790.77 | 1,787.15 | -367.31 | 1,824.50 | 348.39 | 6.89     | 174 °F  | Green | 09/12/18 | 20:04 | 306 (gpm) |

# MWD SURVEYS

Customer: TAPROCK  
Well: Cosmo K #213H  
Field/Block: Wolfcamp  
Co./Parish: Jal  
State: NM

PGS Job #: LNM5178818  
MWD Operator: Nabil Meridji  
Directional Driller: John Penny  
Date of First Survey: July 14, 2018  
Date of Last Survey:



Total Correction: 6.19    0    0

Vertical Section Plane: 359.42

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47963.6

|  | MD  | INC    | AZM   | T.V.D  | V. SECT  | +N/-S   | +E/-W    | DIST    | ANGLE    | DLS    | TEMP(F°) | SHK/VIB | DATE  | TIME     | FLOW  |           |
|--|-----|--------|-------|--------|----------|---------|----------|---------|----------|--------|----------|---------|-------|----------|-------|-----------|
|  | 162 | 14,433 | 90.60 | 10.90  | 12479.07 | 1883.43 | 1,879.94 | -353.84 | 1,912.95 | 349.34 | 8.12     | 174 °F  | Green | 09/13/18 | 00:00 | 306 (gpm) |
|  | 163 | 14,528 | 89.50 | 11.20  | 12478.98 | 1976.48 | 1,973.18 | -335.63 | 2,001.52 | 350.35 | 1.20     | 174 °F  | Green | 09/13/18 | 01:51 | 306 (gpm) |
|  | 164 | 14,622 | 84.10 | 9.90   | 12484.23 | 2068.53 | 2,065.41 | -318.45 | 2,089.82 | 351.23 | 5.91     | 174 °F  | Green | 09/13/18 | 04:57 | 306 (gpm) |
|  | 165 | 14,717 | 79.00 | 2.80   | 12498.20 | 2161.71 | 2,158.71 | -308.03 | 2,180.57 | 351.88 | 9.13     | 172 °F  | Green | 09/13/18 | 07:38 | 306 (gpm) |
|  | 166 | 14,812 | 83.90 | 356.70 | 12512.33 | 2255.58 | 2,252.57 | -308.48 | 2,273.60 | 352.20 | 8.18     | 172 °F  | Green | 09/13/18 | 11:32 | 306 (gpm) |
|  | 167 | 14,906 | 87.60 | 354.90 | 12519.30 | 2349.12 | 2,346.04 | -315.34 | 2,367.14 | 352.34 | 4.37     | 172 °F  | Green | 09/13/18 | 13:14 | 306 (gpm) |
|  | 168 | 15,000 | 86.90 | 353.50 | 12523.81 | 2442.62 | 2,439.45 | -324.83 | 2,460.98 | 352.42 | 1.66     | 172 °F  | Green | 09/13/18 | 15:29 | 306 (gpm) |
|  | 169 | 15,094 | 92.50 | 353.50 | 12524.30 | 2536.08 | 2,532.81 | -335.47 | 2,554.93 | 352.46 | 5.96     | 172 °F  | Green | 09/13/18 | 16:55 | 306 (gpm) |
|  | 170 | 15,189 | 92.80 | 356.40 | 12519.91 | 2630.67 | 2,627.33 | -343.82 | 2,649.73 | 352.54 | 3.07     | 174 °F  | Green | 09/13/18 | 18:54 | 306 (gpm) |
|  | 171 | 15,272 | 94.00 | 357.30 | 12514.99 | 2713.44 | 2,710.06 | -348.37 | 2,732.36 | 352.67 | 1.81     | 174 °F  | Green | 09/13/18 | 23:32 | 350 (gpm) |
|  | 172 | 15,377 | 91.90 | 357.50 | 12509.58 | 2818.23 | 2,814.80 | -353.13 | 2,836.87 | 352.85 | 2.01     | 176 °F  | Green | 09/15/18 | 21:03 | 288 (gpm) |
|  | 173 | 15,471 | 91.90 | 357.20 | 12506.47 | 2912.12 | 2,908.65 | -357.47 | 2,930.53 | 352.99 | 0.32     | 181 °F  | Green | 09/15/18 | 22:07 | 288 (gpm) |
|  | 174 | 15,565 | 92.10 | 359.70 | 12503.18 | 3006.04 | 3,002.55 | -360.01 | 3,024.06 | 353.16 | 2.67     | 183 °F  | Green | 09/15/18 | 23:27 | 288 (gpm) |
|  | 175 | 15,659 | 91.70 | 2.20   | 12500.07 | 3099.95 | 3,096.48 | -358.46 | 3,117.16 | 353.40 | 2.69     | 183 °F  | Green | 09/16/18 | 00:46 | 288 (gpm) |
|  | 176 | 15,754 | 89.70 | 2.30   | 12498.91 | 3194.82 | 3,191.39 | -354.73 | 3,211.05 | 353.66 | 2.11     | 183 °F  | Green | 09/16/18 | 03:00 | 288 (gpm) |
|  | 177 | 15,848 | 89.40 | 2.90   | 12499.65 | 3288.67 | 3,285.29 | -350.46 | 3,303.93 | 353.91 | 0.71     | 183 °F  | Green | 09/16/18 | 05:51 | 288 (gpm) |
|  | 178 | 15,937 | 90.30 | 4.40   | 12499.88 | 3377.43 | 3,374.11 | -344.80 | 3,391.68 | 354.17 | 1.97     | 192 °F  | Green | 09/18/18 | 08:14 | 285 (gpm) |
|  | 179 | 16,031 | 90.60 | 4.20   | 12499.14 | 3471.08 | 3,467.84 | -337.75 | 3,484.25 | 354.44 | 0.38     | 196 °F  | Green | 09/18/18 | 09:48 | 285 (gpm) |
|  | 180 | 16,125 | 90.70 | 3.90   | 12498.07 | 3564.77 | 3,561.60 | -331.11 | 3,576.96 | 354.69 | 0.34     | 196 °F  | Green | 09/18/18 | 11:24 | 285 (gpm) |
|  | 181 | 16,219 | 89.50 | 3.90   | 12497.91 | 3658.48 | 3,655.38 | -324.72 | 3,669.78 | 354.92 | 1.28     | 196 °F  | Green | 09/18/18 | 13:02 | 285 (gpm) |
|  | 182 | 16,313 | 89.50 | 2.20   | 12498.73 | 3752.29 | 3,749.24 | -319.72 | 3,762.85 | 355.13 | 1.81     | 198 °F  | Green | 09/18/18 | 14:41 | 285 (gpm) |
|  | 183 | 16,408 | 89.80 | 0.40   | 12499.31 | 3847.23 | 3,844.21 | -317.56 | 3,857.30 | 355.28 | 1.92     | 198 °F  | Green | 09/18/18 | 16:32 | 285 (gpm) |
|  | 184 | 16,502 | 89.70 | 359.50 | 12499.72 | 3941.22 | 3,938.21 | -317.64 | 3,951.00 | 355.39 | 0.96     | 198 °F  | Green | 09/18/18 | 18:09 | 285 (gpm) |
|  | 185 | 16,579 | 92.80 | 0.60   | 12498.04 | 4018.19 | 4,015.18 | -317.58 | 4,027.72 | 355.48 | 4.27     | 198 °F  | Green | 09/18/18 | 21:33 | 285 (gpm) |
|  | 186 | 16,690 | 93.00 | 0.60   | 12492.43 | 4129.02 | 4,126.03 | -316.42 | 4,138.15 | 355.61 | 0.18     | 189 °F  | Green | 09/19/18 | 22:27 | 292 (gpm) |
|  | 187 | 16,784 | 92.50 | 0.20   | 12487.92 | 4222.90 | 4,219.92 | -315.76 | 4,231.72 | 355.72 | 0.68     | 189 °F  | Green | 09/20/18 | 00:38 | 292 (gpm) |
|  | 188 | 16,879 | 91.00 | 358.60 | 12485.01 | 4317.85 | 4,314.87 | -316.76 | 4,326.48 | 355.80 | 2.31     | 189 °F  | Green | 09/20/18 | 03:14 | 292 (gpm) |



# MWD SURVEYS

Customer: TAPROCK  
Well: Cosmo K #213H  
Field/Block: Wolfcamp  
Co./Parish: Jal  
State: NM

PGS Job #: LNM5178818  
MWD Operator: Nabil Meridji  
Directional Driller: John Penny  
Date of First Survey: July 14, 2018  
Date of Last Survey:



Total Correction: 6.19    0    0

Vertical Section Plane: 359.42

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47963.6

| MD  | INC    | AZM   | T.V.D  | V. SECT  | +N / -S | +E / -W  | DIST    | ANGLE    | DLS    | TEMP(F°) | SHK/VIB | DATE  | TIME     | FLOW  |           |
|-----|--------|-------|--------|----------|---------|----------|---------|----------|--------|----------|---------|-------|----------|-------|-----------|
| 189 | 16,973 | 90.60 | 358.70 | 12483.70 | 4411.83 | 4,408.83 | -318.97 | 4,420.35 | 355.86 | 0.44     | 192 °F  | Green | 09/20/18 | 05:36 | 292 (gpm) |
| 190 | 17,068 | 90.20 | 358.50 | 12483.04 | 4506.82 | 4,503.80 | -321.29 | 4,515.24 | 355.92 | 0.47     | 194 °F  | Green | 09/20/18 | 08:08 | 292 (gpm) |
| 191 | 17,163 | 91.90 | 359.70 | 12481.30 | 4601.80 | 4,598.77 | -322.78 | 4,610.08 | 355.99 | 2.19     | 196 °F  | Green | 09/20/18 | 11:04 | 292 (gpm) |
| 192 | 17,257 | 89.80 | 358.70 | 12479.90 | 4695.78 | 4,692.74 | -324.10 | 4,703.92 | 356.05 | 2.47     | 198 °F  | Green | 09/20/18 | 13:35 | 292 (gpm) |
| 193 | 17,351 | 94.10 | 0.70   | 12476.71 | 4789.70 | 4,786.66 | -324.59 | 4,797.65 | 356.12 | 5.04     | 198 °F  | Green | 09/20/18 | 16:09 | 292 (gpm) |
| 194 | 17,445 | 92.40 | 0.10   | 12471.38 | 4883.53 | 4,880.50 | -323.93 | 4,891.24 | 356.20 | 1.92     | 198 °F  | Green | 09/20/18 | 20:09 | 305 (gpm) |
| 195 | 17,540 | 90.50 | 359.70 | 12468.97 | 4978.49 | 4,975.47 | -324.10 | 4,986.01 | 356.27 | 2.04     | 198 °F  | Green | 09/22/18 | 00:53 | 305 (gpm) |
| 196 | 17,634 | 90.30 | 1.40   | 12468.32 | 5072.47 | 5,069.45 | -323.20 | 5,079.75 | 356.35 | 1.82     | 199 °F  | Green | 09/22/18 | 05:23 | 305 (gpm) |
| 197 | 17,729 | 91.80 | 0.60   | 12466.58 | 5167.41 | 5,164.42 | -321.54 | 5,174.42 | 356.44 | 1.79     | 180 °F  | Green | 09/22/18 | 6:00  | 305 (gpm) |
| 198 | 17,823 | 91.50 | 358.30 | 12463.87 | 5261.37 | 5,258.37 | -322.44 | 5,268.25 | 356.49 | 2.47     | 201 °F  | Green | 09/22/18 | 7:21  | 305 (gpm) |
| 199 | 17,917 | 91.70 | 356.90 | 12461.24 | 5355.28 | 5,352.25 | -326.38 | 5,362.19 | 356.51 | 1.50     | 203 °F  | Green | 09/22/18 | 8:47  | 305 (gpm) |
| 200 | 18,012 | 92.00 | 355.50 | 12458.18 | 5450.08 | 5,446.99 | -332.67 | 5,457.14 | 356.51 | 1.51     | 203 °F  | Green | 09/22/18 | 10:36 | 305 (gpm) |
| 201 | 18,106 | 90.40 | 354.20 | 12456.21 | 5543.75 | 5,540.58 | -341.11 | 5,551.07 | 356.48 | 2.19     | 203 °F  | Green | 09/22/18 | 12:35 | 305 (gpm) |
| 202 | 18,201 | 91.10 | 353.00 | 12454.96 | 5638.25 | 5,634.98 | -351.69 | 5,645.95 | 356.43 | 1.46     | 203 °F  | Green | 09/22/18 | 14:26 | 305 (gpm) |
| 203 | 18,295 | 88.20 | 351.00 | 12455.54 | 5731.45 | 5,728.05 | -364.77 | 5,739.65 | 356.36 | 3.75     | 181 °F  | Green | 09/22/18 | 16:25 | 305 (gpm) |
| 204 | 18,390 | 89.80 | 350.40 | 12457.20 | 5825.33 | 5,821.78 | -380.12 | 5,834.18 | 356.26 | 1.80     | 181 °F  | Green | 09/22/18 | 18:31 | 305 (gpm) |
| 205 | 18,484 | 88.20 | 349.60 | 12458.84 | 5918.05 | 5,914.34 | -396.44 | 5,927.61 | 356.17 | 1.90     | 181 °F  | Green | 09/22/18 | 20:08 | 305 (gpm) |
| 206 | 18,578 | 87.80 | 349.00 | 12462.12 | 6010.53 | 6,006.65 | -413.88 | 6,020.89 | 356.06 | 0.77     | 181 °F  | Green | 09/22/18 | 21:43 | 305 (gpm) |
| 207 | 18,673 | 89.90 | 350.10 | 12464.02 | 6104.10 | 6,100.05 | -431.11 | 6,115.26 | 355.96 | 2.50     | 181 °F  | Green | 09/22/18 | 23:27 | 305 (gpm) |
| 208 | 18,767 | 90.90 | 350.40 | 12463.37 | 6196.89 | 6,192.68 | -447.03 | 6,208.80 | 355.87 | 1.11     | 181 °F  | Green | 09/23/18 | 1:54  | 305 (gpm) |
| 209 | 18,778 | 90.20 | 349.90 | 12463.26 | 6207.75 | 6,203.52 | -448.91 | 6,219.74 | 355.86 | 7.82     | 181 °F  | Green | 09/23/18 | 2:52  | 305 (gpm) |
| PTB | 18,823 | 90.20 | 349.90 | 12463.11 | 6252.13 | 6,247.82 | -456.80 | 6,264.50 | 355.82 | 0.00     | 181 °F  | Green | 09/23/18 | 2:52  | 305 (gpm) |

# MWD SURVEYS

Customer: TAPROCK  
Well: Cosmo K #213H  
Field/Block: Wolfcamp  
Co./Parish: Jal  
State: NM

PGS Job #: LNM5178818  
MWD Operator: Nabil Meridji  
Directional Driller: John Penny  
Date of First Survey: July 14, 2018  
Date of Last Survey:



Total Correction: 6.19 0 0

Vertical Section Plane: 359.42

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47963.6

| <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> |
|-----------|------------|------------|--------------|----------------|----------------|----------------|-------------|--------------|------------|-----------------|----------------|-------------|-------------|-------------|
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|----|-----|-----|-------|---------|-------|-------|------|-------|-----|----------|---------|------|------|------|
|----|-----|-----|-------|---------|-------|-------|------|-------|-----|----------|---------|------|------|------|

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|----|-----|-----|-------|---------|-------|-------|------|-------|-----|----------|---------|------|------|------|
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|----|-----|-----|-------|---------|-------|-------|------|-------|-----|----------|---------|------|------|------|
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|----|-----|-----|-------|---------|-------|-------|------|-------|-----|----------|---------|------|------|------|
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|----|-----|-----|-------|---------|---------|---------|------|-------|-----|----------|---------|------|------|------|
|----|-----|-----|-------|---------|---------|---------|------|-------|-----|----------|---------|------|------|------|

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Co./Parish: Ja  
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|----|-----|-----|-------|---------|---------|---------|------|-------|-----|----------|---------|------|------|------|
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|-----------|------------|------------|--------------|----------------|----------------|----------------|-------------|--------------|------------|-----------------|----------------|-------------|-------------|-------------|
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Vertical Section Plane: 359.42

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47963.6

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# MWD SURVEYS

Customer: TAPROCK  
Well: Cosmo K #213H  
Field/Block: Wolfcamp  
Co./Parish: Jal  
State: NM

PGS Job #: LNM5178818  
MWD Operator: Nabil Meridji  
Directional Driller: John Penny  
Date of First Survey: July 14, 2018  
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