



**Total Directional**  
Services, LLC  
USA Operations

## **Final MWD Survey Certification**

Lea County, New Mexico

Client: DEVON

Well Name: North Thistle 15-10 State Com 5H

Total Job No: 2019-018-540

API No: 30-025-45396

Start Date: 01/19/2019

End Date: 02/04/2019

Measured Start Depth: 0 feet

Measured End Depth: 20065 feet

Vertical Section from well center at TD: 10072.48 feet

I, Alexander Delahoussaye, certify that; I am employed by Total Directional Services, LLC and we conducted or supervised the taking of these open hole MWD surveys at the request of this client. This data is true, correct, complete and within the limitations of the tool as set forth by Total Directional Services, LLC. I am authorized and qualified to make this report and have reviewed this report and find that it conforms to the principals and procedures as set forth by Total Directional Services, LLC.

Date: 02/04/19

Signed: *Alexander Delahoussaye*

# DIRECTIONAL SURVEY REPORT

Company name: Devon Energy

Start date: 01/16/2019

Well name: North Thistle 15-10 State Com 5H

End date: 02/04/2019

Field: New Mexico East

Proposed direction: 359.57

Rig: HP 540

Declination: 6.37

API/UWI: 30-025-45396

North Reference: Grid

State/Province: NM

Latitude/Longitude: 32.2987622 / -103.554

County/Parish: Lea County

KB: 3736

Location Lea County

| SVY   | Depth   | Inc  | Azm    | TVD     | NS     | EW      | VS     | CD     | CA     | DLS  | CL     |
|-------|---------|------|--------|---------|--------|---------|--------|--------|--------|------|--------|
| Tiein | 0.00    | 0.00 | 0.00   | 0.00    | 0.00   | 0.00    | 0.00   | 0.00   | 90.00  | 0.00 |        |
| 1     | 269.00  | 0.20 | 23.90  | 269.00  | 0.43   | 0.19    | 0.43   | 0.47   | 23.90  | 0.07 | 269.00 |
| 2     | 361.00  | 0.10 | 334.20 | 361.00  | 0.65   | 0.22    | 0.65   | 0.68   | 18.77  | 0.17 | 92.00  |
| 3     | 452.00  | 0.20 | 43.90  | 452.00  | 0.83   | 0.30    | 0.83   | 0.89   | 19.53  | 0.21 | 91.00  |
| 4     | 543.00  | 0.00 | 25.60  | 543.00  | 0.95   | 0.41    | 0.95   | 1.03   | 23.17  | 0.22 | 91.00  |
| 5     | 638.00  | 0.40 | 283.40 | 638.00  | 1.03   | 0.08    | 1.02   | 1.03   | 4.65   | 0.42 | 95.00  |
| 6     | 823.00  | 0.80 | 278.90 | 822.99  | 1.38   | -1.82   | 1.39   | 2.28   | 307.06 | 0.22 | 185.00 |
| 7     | 909.00  | 0.70 | 293.30 | 908.98  | 1.68   | -2.90   | 1.70   | 3.35   | 300.05 | 0.25 | 86.00  |
| 8     | 998.00  | 0.70 | 297.50 | 997.97  | 2.14   | -3.88   | 2.17   | 4.43   | 298.91 | 0.06 | 89.00  |
| 9     | 1088.00 | 0.70 | 297.80 | 1087.97 | 2.65   | -4.85   | 2.69   | 5.53   | 298.66 | 0.00 | 90.00  |
| 10    | 1178.00 | 0.50 | 296.90 | 1177.96 | 3.09   | -5.69   | 3.13   | 6.47   | 298.48 | 0.22 | 90.00  |
| 11    | 1268.00 | 0.60 | 291.60 | 1267.96 | 3.44   | -6.48   | 3.49   | 7.33   | 297.96 | 0.12 | 90.00  |
| 12    | 1354.00 | 0.60 | 288.60 | 1353.95 | 3.75   | -7.32   | 3.80   | 8.23   | 297.10 | 0.04 | 86.00  |
| 13    | 1503.00 | 0.48 | 291.22 | 1502.95 | 4.22   | -8.64   | 4.29   | 9.62   | 296.03 | 0.08 | 149.00 |
| 14    | 1597.00 | 0.48 | 280.50 | 1596.94 | 4.44   | -9.40   | 4.51   | 10.39  | 295.27 | 0.10 | 94.00  |
| 15    | 1691.00 | 0.44 | 293.42 | 1690.94 | 4.65   | -10.12  | 4.73   | 11.13  | 294.69 | 0.12 | 94.00  |
| 16    | 1786.00 | 0.44 | 286.04 | 1785.94 | 4.90   | -10.80  | 4.98   | 11.86  | 294.39 | 0.06 | 95.00  |
| 17    | 1880.00 | 0.35 | 280.94 | 1879.93 | 5.05   | -11.43  | 5.14   | 12.50  | 293.84 | 0.10 | 94.00  |
| 18    | 1974.00 | 0.35 | 272.59 | 1973.93 | 5.12   | -12.00  | 5.21   | 13.04  | 293.10 | 0.05 | 94.00  |
| 19    | 2068.00 | 1.01 | 225.48 | 2067.93 | 4.55   | -12.88  | 4.65   | 13.66  | 289.46 | 0.87 | 94.00  |
| 20    | 2162.00 | 2.02 | 224.16 | 2161.89 | 2.78   | -14.62  | 2.89   | 14.88  | 280.77 | 1.08 | 94.00  |
| 21    | 2256.00 | 3.16 | 225.66 | 2255.79 | -0.22  | -17.63  | -0.09  | 17.63  | 269.29 | 1.21 | 94.00  |
| 22    | 2350.00 | 4.04 | 226.62 | 2349.61 | -4.30  | -21.89  | -4.14  | 22.31  | 258.88 | 0.94 | 94.00  |
| 23    | 2444.00 | 4.70 | 228.38 | 2443.33 | -9.14  | -27.17  | -8.93  | 28.67  | 251.42 | 0.72 | 94.00  |
| 24    | 2538.00 | 5.54 | 229.26 | 2536.96 | -14.66 | -33.49  | -14.40 | 36.56  | 246.37 | 0.90 | 94.00  |
| 25    | 2633.00 | 6.24 | 226.18 | 2631.46 | -21.22 | -40.69  | -20.92 | 45.89  | 242.46 | 0.81 | 95.00  |
| 26    | 2727.00 | 6.20 | 224.25 | 2724.90 | -28.40 | -47.92  | -28.04 | 55.70  | 239.35 | 0.23 | 94.00  |
| 27    | 2821.00 | 6.07 | 224.34 | 2818.37 | -35.59 | -54.93  | -35.17 | 65.45  | 237.06 | 0.14 | 94.00  |
| 28    | 2915.00 | 5.80 | 224.16 | 2911.86 | -42.55 | -61.72  | -42.08 | 74.96  | 235.42 | 0.29 | 94.00  |
| 29    | 3009.00 | 6.33 | 225.04 | 3005.34 | -49.62 | -68.69  | -49.10 | 84.74  | 234.16 | 0.57 | 94.00  |
| 30    | 3103.00 | 6.37 | 227.06 | 3098.76 | -56.83 | -76.18  | -56.26 | 95.04  | 233.28 | 0.24 | 94.00  |
| 31    | 3198.00 | 6.07 | 231.02 | 3193.20 | -63.58 | -83.94  | -62.95 | 105.30 | 232.86 | 0.55 | 95.00  |
| 32    | 3292.00 | 6.02 | 231.11 | 3286.68 | -69.80 | -91.64  | -69.11 | 115.20 | 232.70 | 0.05 | 94.00  |
| 33    | 3386.00 | 6.02 | 230.75 | 3380.16 | -76.02 | -99.29  | -75.27 | 125.05 | 232.56 | 0.04 | 94.00  |
| 34    | 3480.00 | 5.89 | 230.58 | 3473.65 | -82.20 | -106.84 | -81.39 | 134.80 | 232.43 | 0.14 | 94.00  |

|    |         |      |        |         |         |         |         |        |        |      |        |
|----|---------|------|--------|---------|---------|---------|---------|--------|--------|------|--------|
| 35 | 3575.00 | 5.76 | 229.17 | 3568.16 | -88.41  | -114.21 | -87.55  | 144.43 | 232.26 | 0.20 | 95.00  |
| 36 | 3669.00 | 6.02 | 232.51 | 3661.66 | -94.49  | -121.69 | -93.58  | 154.07 | 232.17 | 0.46 | 94.00  |
| 37 | 3763.00 | 6.02 | 233.74 | 3755.15 | -100.41 | -129.57 | -99.43  | 163.92 | 232.23 | 0.14 | 94.00  |
| 38 | 3858.00 | 6.15 | 232.16 | 3849.61 | -106.48 | -137.61 | -105.44 | 173.99 | 232.27 | 0.22 | 95.00  |
| 39 | 3952.00 | 5.05 | 233.39 | 3943.16 | -112.03 | -144.91 | -110.94 | 183.17 | 232.29 | 1.18 | 94.00  |
| 40 | 4046.00 | 4.70 | 234.45 | 4036.82 | -116.74 | -151.36 | -115.60 | 191.15 | 232.36 | 0.38 | 94.00  |
| 41 | 4140.00 | 4.88 | 229.00 | 4130.49 | -121.60 | -157.51 | -120.42 | 198.99 | 232.33 | 0.52 | 94.00  |
| 42 | 4234.00 | 5.67 | 226.80 | 4224.09 | -127.40 | -163.92 | -126.17 | 207.60 | 232.14 | 0.87 | 94.00  |
| 43 | 4329.00 | 6.20 | 224.43 | 4318.58 | -134.28 | -170.93 | -132.99 | 217.36 | 231.85 | 0.61 | 95.00  |
| 44 | 4423.00 | 5.98 | 220.91 | 4412.05 | -141.60 | -177.69 | -140.27 | 227.21 | 231.45 | 0.46 | 94.00  |
| 45 | 4517.00 | 6.11 | 215.11 | 4505.53 | -149.40 | -183.77 | -148.01 | 236.84 | 230.89 | 0.66 | 94.00  |
| 46 | 4611.00 | 6.42 | 221.26 | 4598.97 | -157.44 | -190.11 | -156.01 | 246.84 | 230.37 | 0.79 | 94.00  |
| 47 | 4705.00 | 6.81 | 232.51 | 4692.35 | -164.78 | -198.00 | -163.29 | 257.60 | 230.23 | 1.44 | 94.00  |
| 48 | 4799.00 | 6.33 | 230.23 | 4785.73 | -171.49 | -206.41 | -169.94 | 268.35 | 230.28 | 0.58 | 94.00  |
| 49 | 4894.00 | 6.55 | 224.95 | 4880.13 | -178.68 | -214.26 | -177.06 | 278.99 | 230.17 | 0.66 | 95.00  |
| 50 | 4988.00 | 6.95 | 232.51 | 4973.48 | -185.93 | -222.56 | -184.26 | 290.01 | 230.12 | 1.04 | 94.00  |
| 51 | 5082.00 | 7.12 | 238.40 | 5066.78 | -192.44 | -232.04 | -190.70 | 301.46 | 230.33 | 0.79 | 94.00  |
| 52 | 5176.00 | 6.77 | 237.79 | 5160.09 | -198.45 | -241.69 | -196.63 | 312.72 | 230.61 | 0.38 | 94.00  |
| 53 | 5271.00 | 6.29 | 237.52 | 5254.47 | -204.23 | -250.81 | -202.34 | 323.45 | 230.85 | 0.51 | 95.00  |
| 54 | 5316.00 | 6.07 | 238.75 | 5299.21 | -206.79 | -254.93 | -204.87 | 328.25 | 230.95 | 0.57 | 45.00  |
| 55 | 5459.00 | 7.03 | 246.75 | 5441.28 | -214.16 | -269.43 | -212.14 | 344.18 | 231.52 | 0.92 | 143.00 |
| 56 | 5553.00 | 7.39 | 249.30 | 5534.53 | -218.57 | -280.37 | -216.46 | 355.50 | 232.06 | 0.51 | 94.00  |
| 57 | 5648.00 | 7.12 | 248.86 | 5628.77 | -222.86 | -291.58 | -220.66 | 366.99 | 232.61 | 0.29 | 95.00  |
| 58 | 5742.00 | 6.77 | 236.82 | 5722.09 | -227.99 | -301.65 | -225.72 | 378.12 | 232.92 | 1.59 | 94.00  |
| 59 | 5837.00 | 6.68 | 234.71 | 5816.44 | -234.25 | -310.85 | -231.91 | 389.23 | 233.00 | 0.28 | 95.00  |
| 60 | 5930.00 | 6.16 | 235.41 | 5908.85 | -240.20 | -319.37 | -237.80 | 399.62 | 233.05 | 0.57 | 93.00  |
| 61 | 6024.00 | 6.16 | 235.76 | 6002.31 | -245.90 | -327.69 | -243.44 | 409.69 | 233.11 | 0.04 | 94.00  |
| 62 | 6119.00 | 5.89 | 233.92 | 6096.78 | -251.64 | -335.84 | -249.11 | 419.66 | 233.16 | 0.35 | 95.00  |
| 63 | 6214.00 | 5.72 | 233.92 | 6191.30 | -257.30 | -343.61 | -254.71 | 429.27 | 233.17 | 0.18 | 95.00  |
| 64 | 6308.00 | 6.24 | 235.33 | 6284.79 | -262.97 | -351.60 | -260.32 | 439.06 | 233.21 | 0.57 | 94.00  |
| 65 | 6403.00 | 6.42 | 236.64 | 6379.21 | -268.82 | -360.28 | -266.11 | 449.52 | 233.27 | 0.24 | 95.00  |
| 66 | 6497.00 | 6.86 | 233.74 | 6472.58 | -275.03 | -369.19 | -272.26 | 460.38 | 233.32 | 0.59 | 94.00  |
| 67 | 6592.00 | 6.86 | 233.30 | 6566.90 | -281.78 | -378.32 | -278.93 | 471.73 | 233.32 | 0.06 | 95.00  |
| 68 | 6686.00 | 7.03 | 227.33 | 6660.21 | -289.03 | -387.05 | -286.12 | 483.06 | 233.25 | 0.79 | 94.00  |
| 69 | 6780.00 | 7.03 | 226.36 | 6753.50 | -296.90 | -395.44 | -293.93 | 494.49 | 233.10 | 0.13 | 94.00  |
| 70 | 6874.00 | 6.95 | 226.62 | 6846.80 | -304.78 | -403.74 | -301.74 | 505.86 | 232.95 | 0.09 | 94.00  |
| 71 | 6968.00 | 6.77 | 226.62 | 6940.13 | -312.49 | -411.90 | -309.39 | 517.02 | 232.81 | 0.19 | 94.00  |
| 72 | 7062.00 | 6.60 | 225.39 | 7033.49 | -320.09 | -419.77 | -316.93 | 527.89 | 232.67 | 0.24 | 94.00  |
| 73 | 7157.00 | 6.60 | 223.46 | 7127.86 | -327.89 | -427.41 | -324.67 | 538.69 | 232.51 | 0.23 | 95.00  |
| 74 | 7251.00 | 6.51 | 234.89 | 7221.25 | -334.87 | -435.49 | -331.59 | 549.35 | 232.44 | 1.39 | 94.00  |
| 75 | 7345.00 | 6.77 | 237.70 | 7314.62 | -340.90 | -444.53 | -337.55 | 560.20 | 232.52 | 0.44 | 94.00  |
| 76 | 7439.00 | 6.51 | 235.94 | 7407.99 | -346.84 | -453.63 | -343.43 | 571.03 | 232.60 | 0.35 | 94.00  |
| 77 | 7534.00 | 6.60 | 234.62 | 7502.37 | -353.02 | -462.54 | -349.54 | 581.87 | 232.65 | 0.18 | 95.00  |
| 78 | 7628.00 | 5.45 | 237.52 | 7595.85 | -358.54 | -470.71 | -355.00 | 591.71 | 232.70 | 1.27 | 94.00  |
| 79 | 7723.00 | 5.28 | 237.61 | 7690.43 | -363.31 | -478.21 | -359.71 | 600.56 | 232.78 | 0.18 | 95.00  |
| 80 | 7817.00 | 4.57 | 236.91 | 7784.08 | -367.67 | -485.00 | -364.02 | 608.61 | 232.83 | 0.76 | 94.00  |
| 81 | 7912.00 | 5.36 | 237.26 | 7878.73 | -372.14 | -491.90 | -368.43 | 616.81 | 232.89 | 0.83 | 95.00  |
| 82 | 8006.00 | 6.16 | 233.22 | 7972.25 | -377.53 | -499.63 | -373.77 | 626.23 | 232.92 | 0.95 | 94.00  |

|     |          |       |        |         |         |         |         |         |        |       |        |
|-----|----------|-------|--------|---------|---------|---------|---------|---------|--------|-------|--------|
| 83  | 8100.00  | 6.16  | 229.17 | 8065.71 | -383.85 | -507.49 | -380.03 | 636.31  | 232.90 | 0.46  | 94.00  |
| 84  | 8195.00  | 6.42  | 227.50 | 8160.14 | -390.77 | -515.26 | -386.89 | 646.68  | 232.82 | 0.33  | 95.00  |
| 85  | 8289.00  | 5.80  | 228.03 | 8253.60 | -397.50 | -522.67 | -393.56 | 656.65  | 232.75 | 0.66  | 94.00  |
| 86  | 8383.00  | 5.49  | 226.62 | 8347.15 | -403.76 | -529.47 | -399.78 | 665.85  | 232.67 | 0.36  | 94.00  |
| 87  | 8478.00  | 4.44  | 229.08 | 8441.79 | -409.29 | -535.55 | -405.26 | 674.04  | 232.61 | 1.13  | 95.00  |
| 88  | 8572.00  | 3.38  | 226.62 | 8535.57 | -413.58 | -540.31 | -409.51 | 680.43  | 232.57 | 1.14  | 94.00  |
| 89  | 8666.00  | 2.29  | 228.21 | 8629.45 | -416.73 | -543.73 | -412.64 | 685.06  | 232.53 | 1.16  | 94.00  |
| 90  | 8761.00  | 2.11  | 226.45 | 8724.38 | -419.20 | -546.41 | -415.09 | 688.69  | 232.50 | 0.20  | 95.00  |
| 91  | 8856.00  | 1.36  | 234.09 | 8819.34 | -421.07 | -548.59 | -416.94 | 691.56  | 232.49 | 0.82  | 95.00  |
| 92  | 8950.00  | 0.79  | 250.44 | 8913.32 | -421.94 | -550.10 | -417.80 | 693.29  | 232.51 | 0.68  | 94.00  |
| 93  | 9045.00  | 0.92  | 249.56 | 9008.31 | -422.42 | -551.44 | -418.27 | 694.64  | 232.55 | 0.14  | 95.00  |
| 94  | 9173.00  | 0.92  | 229.61 | 9136.30 | -423.45 | -553.18 | -419.29 | 696.65  | 232.57 | 0.25  | 128.00 |
| 95  | 9268.00  | 0.22  | 283.66 | 9231.29 | -423.90 | -553.94 | -419.73 | 697.53  | 232.58 | 0.85  | 95.00  |
| 96  | 9315.00  | 6.15  | 3.21   | 9278.20 | -421.36 | -553.89 | -417.19 | 695.94  | 232.74 | 13.01 | 47.00  |
| 97  | 9363.00  | 13.36 | 1.71   | 9325.47 | -413.24 | -553.58 | -409.08 | 690.81  | 233.26 | 15.03 | 48.00  |
| 98  | 9410.00  | 19.16 | 1.89   | 9370.58 | -400.09 | -553.16 | -395.93 | 682.69  | 234.12 | 12.34 | 47.00  |
| 99  | 9458.00  | 23.74 | 1.71   | 9415.24 | -382.55 | -552.61 | -378.40 | 672.11  | 235.31 | 9.54  | 48.00  |
| 100 | 9505.00  | 27.87 | 0.39   | 9457.54 | -362.10 | -552.25 | -357.95 | 660.38  | 236.75 | 8.87  | 47.00  |
| 101 | 9553.00  | 31.91 | 2.15   | 9499.15 | -338.20 | -551.70 | -334.05 | 647.11  | 238.49 | 8.61  | 48.00  |
| 102 | 9600.00  | 36.62 | 2.06   | 9537.98 | -311.76 | -550.73 | -307.62 | 632.85  | 240.49 | 10.02 | 47.00  |
| 103 | 9648.00  | 41.19 | 0.13   | 9575.33 | -281.63 | -550.18 | -277.49 | 618.07  | 242.89 | 9.85  | 48.00  |
| 104 | 9743.00  | 50.51 | 359.60 | 9641.43 | -213.54 | -550.37 | -209.41 | 590.34  | 248.79 | 9.82  | 95.00  |
| 105 | 9790.00  | 53.49 | 359.95 | 9670.36 | -176.51 | -550.51 | -172.37 | 578.11  | 252.22 | 6.37  | 47.00  |
| 106 | 9837.00  | 57.76 | 359.69 | 9696.89 | -137.73 | -550.63 | -133.59 | 567.60  | 255.96 | 9.10  | 47.00  |
| 107 | 9884.00  | 62.99 | 359.87 | 9720.11 | -96.89  | -550.79 | -92.75  | 559.25  | 260.02 | 11.13 | 47.00  |
| 108 | 9931.00  | 68.31 | 359.43 | 9739.49 | -54.08  | -551.05 | -49.95  | 553.70  | 264.39 | 11.35 | 47.00  |
| 109 | 9978.00  | 73.32 | 359.60 | 9754.93 | -9.71   | -551.43 | -5.57   | 551.51  | 268.99 | 10.67 | 47.00  |
| 110 | 10025.00 | 77.58 | 359.95 | 9766.73 | 35.77   | -551.61 | 39.91   | 552.76  | 273.71 | 9.09  | 47.00  |
| 111 | 10072.00 | 80.92 | 0.66   | 9775.50 | 81.94   | -551.36 | 86.08   | 557.41  | 278.45 | 7.26  | 47.00  |
| 112 | 10119.00 | 82.77 | 1.27   | 9782.16 | 128.46  | -550.57 | 132.58  | 565.36  | 283.13 | 4.14  | 47.00  |
| 113 | 10149.00 | 84.66 | 1.60   | 9785.45 | 158.26  | -549.83 | 162.39  | 572.15  | 286.06 | 6.39  | 30.00  |
| 114 | 10182.00 | 86.17 | 2.15   | 9788.08 | 191.14  | -548.75 | 195.25  | 581.09  | 289.20 | 4.87  | 33.00  |
| 115 | 10277.00 | 90.40 | 0.22   | 9790.93 | 286.05  | -546.79 | 290.15  | 617.09  | 297.62 | 4.89  | 95.00  |
| 116 | 10372.00 | 92.15 | 0.39   | 9788.81 | 381.02  | -546.28 | 385.11  | 666.04  | 304.90 | 1.85  | 95.00  |
| 117 | 10466.00 | 90.92 | 0.04   | 9786.30 | 474.99  | -545.93 | 479.07  | 723.64  | 311.02 | 1.36  | 94.00  |
| 118 | 10561.00 | 92.07 | 359.16 | 9783.82 | 569.95  | -546.59 | 574.04  | 789.69  | 316.20 | 1.52  | 95.00  |
| 119 | 10656.00 | 92.24 | 1.36   | 9780.24 | 664.88  | -546.16 | 668.96  | 860.44  | 320.60 | 2.32  | 95.00  |
| 120 | 10751.00 | 95.23 | 0.04   | 9774.06 | 759.65  | -545.00 | 763.72  | 934.93  | 324.34 | 3.44  | 95.00  |
| 121 | 10846.00 | 95.32 | 359.60 | 9765.32 | 854.25  | -545.30 | 858.32  | 1013.46 | 327.45 | 0.47  | 95.00  |
| 122 | 10941.00 | 95.14 | 358.20 | 9756.66 | 948.84  | -547.12 | 952.91  | 1095.27 | 330.03 | 1.48  | 95.00  |
| 123 | 11031.00 | 93.03 | 356.79 | 9750.25 | 1038.51 | -551.04 | 1042.62 | 1175.65 | 332.05 | 2.82  | 90.00  |
| 124 | 11121.00 | 91.01 | 357.23 | 9747.08 | 1128.33 | -555.73 | 1132.47 | 1257.76 | 333.78 | 2.30  | 90.00  |
| 125 | 11212.00 | 89.16 | 357.76 | 9746.94 | 1219.24 | -559.71 | 1223.40 | 1341.57 | 335.34 | 2.11  | 91.00  |
| 126 | 11304.00 | 89.25 | 357.49 | 9748.22 | 1311.15 | -563.52 | 1315.34 | 1427.12 | 336.74 | 0.31  | 92.00  |
| 127 | 11395.00 | 89.52 | 358.90 | 9749.20 | 1402.10 | -566.39 | 1406.31 | 1512.18 | 338.00 | 1.58  | 91.00  |
| 128 | 11487.00 | 89.60 | 357.93 | 9749.90 | 1494.06 | -568.93 | 1498.29 | 1598.72 | 339.15 | 1.06  | 92.00  |
| 129 | 11579.00 | 89.25 | 1.36   | 9750.83 | 1586.04 | -569.50 | 1590.27 | 1685.19 | 340.25 | 3.75  | 92.00  |
| 130 | 11668.00 | 88.81 | 1.18   | 9752.33 | 1675.00 | -567.53 | 1679.22 | 1768.54 | 341.28 | 0.53  | 89.00  |

|     |          |       |        |         |         |         |         |         |        |      |       |
|-----|----------|-------|--------|---------|---------|---------|---------|---------|--------|------|-------|
| 131 | 11759.00 | 90.75 | 359.87 | 9752.68 | 1765.99 | -566.70 | 1770.20 | 1854.69 | 342.21 | 2.57 | 91.00 |
| 132 | 11851.00 | 91.36 | 359.34 | 9750.99 | 1857.97 | -567.33 | 1862.18 | 1942.66 | 343.02 | 0.88 | 92.00 |
| 133 | 11942.00 | 92.42 | 358.99 | 9747.99 | 1948.91 | -568.66 | 1953.13 | 2030.18 | 343.73 | 1.23 | 91.00 |
| 134 | 12031.00 | 90.75 | 359.69 | 9745.53 | 2037.87 | -569.68 | 2042.09 | 2116.00 | 344.38 | 2.03 | 89.00 |
| 135 | 12121.00 | 90.92 | 359.25 | 9744.21 | 2127.86 | -570.51 | 2132.08 | 2203.01 | 344.99 | 0.52 | 90.00 |
| 136 | 12215.00 | 91.19 | 359.69 | 9742.48 | 2221.84 | -571.38 | 2226.06 | 2294.13 | 345.58 | 0.55 | 94.00 |
| 137 | 12310.00 | 89.78 | 0.13   | 9741.68 | 2316.83 | -571.53 | 2321.05 | 2386.28 | 346.14 | 1.55 | 95.00 |
| 138 | 12405.00 | 91.01 | 0.04   | 9741.03 | 2411.83 | -571.39 | 2416.05 | 2478.59 | 346.67 | 1.30 | 95.00 |
| 139 | 12499.00 | 88.46 | 359.08 | 9741.46 | 2505.81 | -572.11 | 2510.04 | 2570.29 | 347.14 | 2.90 | 94.00 |
| 140 | 12594.00 | 90.90 | 358.20 | 9741.99 | 2600.78 | -574.37 | 2605.01 | 2663.44 | 347.55 | 2.73 | 95.00 |
| 141 | 12688.00 | 89.80 | 359.95 | 9741.42 | 2694.76 | -575.88 | 2699.00 | 2755.61 | 347.94 | 2.20 | 94.00 |
| 142 | 12783.00 | 87.21 | 0.39   | 9743.89 | 2789.72 | -575.60 | 2793.96 | 2848.48 | 348.34 | 2.77 | 95.00 |
| 143 | 12877.00 | 86.99 | 0.66   | 9748.65 | 2883.59 | -574.74 | 2887.82 | 2940.31 | 348.73 | 0.37 | 94.00 |
| 144 | 12971.00 | 86.99 | 0.48   | 9753.59 | 2977.46 | -573.81 | 2981.68 | 3032.25 | 349.09 | 0.19 | 94.00 |
| 145 | 13066.00 | 87.96 | 0.13   | 9757.77 | 3072.36 | -573.30 | 3076.58 | 3125.39 | 349.43 | 1.09 | 95.00 |
| 146 | 13160.00 | 89.01 | 0.22   | 9760.26 | 3166.33 | -573.02 | 3170.54 | 3217.76 | 349.74 | 1.12 | 94.00 |
| 147 | 13254.00 | 89.58 | 359.69 | 9761.41 | 3260.32 | -573.09 | 3264.53 | 3310.31 | 350.03 | 0.83 | 94.00 |
| 148 | 13348.00 | 90.51 | 0.31   | 9761.34 | 3354.32 | -573.09 | 3358.53 | 3402.92 | 350.30 | 1.19 | 94.00 |
| 149 | 13442.00 | 88.75 | 358.81 | 9761.95 | 3448.31 | -573.81 | 3452.52 | 3495.72 | 350.55 | 2.46 | 94.00 |
| 150 | 13537.00 | 88.70 | 358.02 | 9764.06 | 3543.25 | -576.44 | 3547.47 | 3589.83 | 350.76 | 0.83 | 95.00 |
| 151 | 13631.00 | 88.75 | 358.90 | 9766.15 | 3637.19 | -578.96 | 3641.43 | 3682.98 | 350.96 | 0.94 | 94.00 |
| 152 | 13725.00 | 91.03 | 359.25 | 9766.33 | 3731.17 | -580.48 | 3735.42 | 3776.06 | 351.16 | 2.45 | 94.00 |
| 153 | 13819.00 | 91.34 | 359.08 | 9764.39 | 3825.14 | -581.85 | 3829.40 | 3869.14 | 351.35 | 0.38 | 94.00 |
| 154 | 13914.00 | 89.98 | 0.04   | 9763.29 | 3920.13 | -582.58 | 3924.39 | 3963.18 | 351.55 | 1.75 | 95.00 |
| 155 | 14008.00 | 90.11 | 359.51 | 9763.22 | 4014.13 | -582.95 | 4018.39 | 4056.24 | 351.74 | 0.58 | 94.00 |
| 156 | 14103.00 | 90.59 | 358.64 | 9762.64 | 4109.11 | -584.48 | 4113.38 | 4150.47 | 351.90 | 1.05 | 95.00 |
| 157 | 14198.00 | 89.76 | 359.60 | 9762.35 | 4204.10 | -585.94 | 4208.38 | 4244.73 | 352.07 | 1.34 | 95.00 |
| 158 | 14292.00 | 88.44 | 0.13   | 9763.83 | 4298.08 | -586.16 | 4302.36 | 4337.87 | 352.23 | 1.51 | 94.00 |
| 159 | 14387.00 | 88.53 | 0.04   | 9766.34 | 4393.05 | -586.02 | 4397.32 | 4431.96 | 352.40 | 0.13 | 95.00 |
| 160 | 14481.00 | 89.49 | 1.18   | 9767.96 | 4487.03 | -585.02 | 4491.29 | 4525.01 | 352.57 | 1.59 | 94.00 |
| 161 | 14575.00 | 89.85 | 1.27   | 9768.50 | 4581.00 | -583.01 | 4585.25 | 4617.96 | 352.75 | 0.39 | 94.00 |
| 162 | 14669.00 | 91.56 | 0.48   | 9767.35 | 4674.98 | -581.58 | 4679.22 | 4711.02 | 352.91 | 2.00 | 94.00 |
| 163 | 14763.00 | 91.82 | 359.78 | 9764.57 | 4768.94 | -581.36 | 4773.17 | 4804.25 | 353.05 | 0.79 | 94.00 |
| 164 | 14858.00 | 89.67 | 358.90 | 9763.34 | 4863.92 | -582.46 | 4868.15 | 4898.67 | 353.17 | 2.45 | 95.00 |
| 165 | 14952.00 | 89.14 | 358.20 | 9764.32 | 4957.88 | -584.84 | 4962.13 | 4992.26 | 353.27 | 0.93 | 94.00 |
| 166 | 15047.00 | 89.10 | 357.67 | 9765.77 | 5052.81 | -588.26 | 5057.08 | 5086.94 | 353.36 | 0.56 | 95.00 |
| 167 | 15141.00 | 91.03 | 358.11 | 9765.67 | 5146.74 | -591.72 | 5151.04 | 5180.65 | 353.44 | 2.11 | 94.00 |
| 168 | 15236.00 | 91.30 | 357.84 | 9763.74 | 5241.66 | -595.08 | 5245.98 | 5275.33 | 353.52 | 0.40 | 95.00 |
| 169 | 15330.00 | 90.90 | 357.14 | 9761.93 | 5335.55 | -599.19 | 5339.90 | 5369.09 | 353.59 | 0.86 | 94.00 |
| 170 | 15424.00 | 91.16 | 357.05 | 9760.24 | 5429.42 | -603.96 | 5433.80 | 5462.91 | 353.65 | 0.29 | 94.00 |
| 171 | 15518.00 | 90.77 | 356.17 | 9758.66 | 5523.24 | -609.51 | 5527.66 | 5556.77 | 353.70 | 1.02 | 94.00 |
| 172 | 15612.00 | 89.58 | 357.32 | 9758.37 | 5617.08 | -614.85 | 5621.54 | 5650.64 | 353.75 | 1.76 | 94.00 |
| 173 | 15706.00 | 90.68 | 1.01   | 9758.16 | 5711.06 | -616.22 | 5715.52 | 5744.21 | 353.84 | 4.10 | 94.00 |
| 174 | 15800.00 | 91.65 | 1.36   | 9756.25 | 5805.02 | -614.28 | 5809.46 | 5837.43 | 353.96 | 1.10 | 94.00 |
| 175 | 15895.00 | 91.87 | 0.83   | 9753.33 | 5899.95 | -612.46 | 5904.38 | 5931.66 | 354.07 | 0.60 | 95.00 |
| 176 | 15989.00 | 92.13 | 1.54   | 9750.05 | 5993.88 | -610.52 | 5998.29 | 6024.89 | 354.18 | 0.80 | 94.00 |
| 177 | 16083.00 | 91.25 | 1.36   | 9747.28 | 6087.80 | -608.14 | 6092.20 | 6118.10 | 354.30 | 0.96 | 94.00 |
| 178 | 16178.00 | 89.36 | 1.89   | 9746.77 | 6182.76 | -605.45 | 6187.13 | 6212.33 | 354.41 | 2.07 | 95.00 |

|     |          |       |        |         |          |         |          |          |        |      |       |
|-----|----------|-------|--------|---------|----------|---------|----------|----------|--------|------|-------|
| 179 | 16273.00 | 88.53 | 1.01   | 9748.52 | 6277.71  | -603.04 | 6282.06  | 6306.61  | 354.51 | 1.27 | 95.00 |
| 180 | 16368.00 | 89.93 | 0.48   | 9749.80 | 6372.69  | -601.81 | 6377.03  | 6401.04  | 354.61 | 1.58 | 95.00 |
| 181 | 16463.00 | 92.57 | 0.31   | 9747.72 | 6467.66  | -601.15 | 6471.99  | 6495.54  | 354.69 | 2.78 | 95.00 |
| 182 | 16558.00 | 89.89 | 358.99 | 9745.69 | 6562.62  | -601.74 | 6566.95  | 6590.15  | 354.76 | 3.14 | 95.00 |
| 183 | 16652.00 | 91.12 | 0.31   | 9744.86 | 6656.61  | -602.31 | 6660.95  | 6683.81  | 354.83 | 1.92 | 94.00 |
| 184 | 16746.00 | 92.31 | 0.66   | 9742.04 | 6750.57  | -601.51 | 6754.89  | 6777.31  | 354.91 | 1.32 | 94.00 |
| 185 | 16840.00 | 88.92 | 0.75   | 9741.04 | 6844.54  | -600.36 | 6848.85  | 6870.82  | 354.99 | 3.61 | 94.00 |
| 186 | 16934.00 | 90.51 | 2.33   | 9741.50 | 6938.50  | -597.83 | 6942.79  | 6964.21  | 355.08 | 2.38 | 94.00 |
| 187 | 17028.00 | 89.89 | 1.45   | 9741.17 | 7032.45  | -594.73 | 7036.71  | 7057.55  | 355.17 | 1.15 | 94.00 |
| 188 | 17123.00 | 89.85 | 1.45   | 9741.39 | 7127.42  | -592.33 | 7131.66  | 7151.99  | 355.25 | 0.04 | 95.00 |
| 189 | 17217.00 | 90.07 | 359.60 | 9741.46 | 7221.41  | -591.47 | 7225.64  | 7245.59  | 355.32 | 1.98 | 94.00 |
| 190 | 17311.00 | 90.59 | 357.93 | 9740.91 | 7315.38  | -593.49 | 7319.63  | 7339.42  | 355.36 | 1.86 | 94.00 |
| 191 | 17406.00 | 90.77 | 357.49 | 9739.79 | 7410.30  | -597.29 | 7414.57  | 7434.33  | 355.39 | 0.50 | 95.00 |
| 192 | 17500.00 | 91.47 | 358.11 | 9737.95 | 7504.21  | -600.90 | 7508.51  | 7528.23  | 355.42 | 0.99 | 94.00 |
| 193 | 17594.00 | 91.82 | 358.11 | 9735.25 | 7598.12  | -603.99 | 7602.44  | 7622.09  | 355.45 | 0.37 | 94.00 |
| 194 | 17688.00 | 90.33 | 358.02 | 9733.49 | 7692.05  | -607.17 | 7696.39  | 7715.97  | 355.49 | 1.59 | 94.00 |
| 195 | 17782.00 | 90.90 | 358.28 | 9732.48 | 7785.99  | -610.20 | 7790.35  | 7809.87  | 355.52 | 0.67 | 94.00 |
| 196 | 17877.00 | 90.95 | 358.64 | 9730.95 | 7880.95  | -612.76 | 7885.32  | 7904.73  | 355.55 | 0.38 | 95.00 |
| 197 | 17971.00 | 89.49 | 358.28 | 9730.58 | 7974.91  | -615.28 | 7979.30  | 7998.61  | 355.59 | 1.60 | 94.00 |
| 198 | 18066.00 | 90.15 | 358.46 | 9730.88 | 8069.87  | -617.98 | 8074.28  | 8093.50  | 355.62 | 0.72 | 95.00 |
| 199 | 18160.00 | 90.24 | 0.13   | 9730.56 | 8163.86  | -619.14 | 8168.27  | 8187.30  | 355.66 | 1.78 | 94.00 |
| 200 | 18254.00 | 90.73 | 359.43 | 9729.77 | 8257.85  | -619.50 | 8262.27  | 8281.06  | 355.71 | 0.91 | 94.00 |
| 201 | 18348.00 | 91.34 | 1.54   | 9728.07 | 8351.83  | -618.71 | 8356.24  | 8374.71  | 355.76 | 2.34 | 94.00 |
| 202 | 18443.00 | 88.40 | 3.12   | 9728.28 | 8446.74  | -614.84 | 8451.11  | 8469.08  | 355.84 | 3.51 | 95.00 |
| 203 | 18537.00 | 89.93 | 2.15   | 9729.65 | 8540.62  | -610.52 | 8544.96  | 8562.42  | 355.91 | 1.93 | 94.00 |
| 204 | 18631.00 | 89.76 | 359.69 | 9729.91 | 8634.60  | -609.01 | 8638.93  | 8656.05  | 355.97 | 2.62 | 94.00 |
| 205 | 18726.00 | 91.08 | 359.60 | 9729.21 | 8729.60  | -609.60 | 8733.93  | 8750.86  | 356.01 | 1.39 | 95.00 |
| 206 | 18820.00 | 92.00 | 359.95 | 9726.69 | 8823.56  | -609.97 | 8827.89  | 8844.62  | 356.05 | 1.05 | 94.00 |
| 207 | 18914.00 | 90.24 | 358.72 | 9724.85 | 8917.53  | -611.06 | 8921.87  | 8938.44  | 356.08 | 2.28 | 94.00 |
| 208 | 19009.00 | 89.67 | 358.99 | 9724.92 | 9012.51  | -612.96 | 9016.86  | 9033.33  | 356.11 | 0.66 | 95.00 |
| 209 | 19104.00 | 89.71 | 358.46 | 9725.44 | 9107.49  | -615.08 | 9111.85  | 9128.23  | 356.14 | 0.56 | 95.00 |
| 210 | 19198.00 | 89.10 | 358.20 | 9726.41 | 9201.44  | -617.81 | 9205.82  | 9222.16  | 356.16 | 0.71 | 94.00 |
| 211 | 19292.00 | 89.19 | 358.11 | 9727.82 | 9295.38  | -620.84 | 9299.78  | 9316.09  | 356.18 | 0.14 | 94.00 |
| 212 | 19386.00 | 88.97 | 359.34 | 9729.33 | 9389.34  | -622.93 | 9393.75  | 9409.99  | 356.20 | 1.33 | 94.00 |
| 213 | 19480.00 | 91.87 | 359.51 | 9728.64 | 9483.33  | -623.87 | 9487.74  | 9503.83  | 356.24 | 3.09 | 94.00 |
| 214 | 19574.00 | 92.35 | 358.64 | 9725.18 | 9577.25  | -625.39 | 9581.67  | 9597.65  | 356.26 | 1.06 | 94.00 |
| 215 | 19669.00 | 89.71 | 359.08 | 9723.47 | 9672.21  | -627.28 | 9676.64  | 9692.53  | 356.29 | 2.82 | 95.00 |
| 216 | 19763.00 | 89.98 | 358.37 | 9723.72 | 9766.18  | -629.37 | 9770.63  | 9786.44  | 356.31 | 0.81 | 94.00 |
| 217 | 19857.00 | 90.24 | 357.93 | 9723.54 | 9860.13  | -632.41 | 9864.60  | 9880.39  | 356.33 | 0.54 | 94.00 |
| 218 | 19951.00 | 90.59 | 357.76 | 9722.86 | 9954.06  | -635.94 | 9958.56  | 9974.36  | 356.34 | 0.41 | 94.00 |
| 219 | 20008.00 | 91.43 | 358.02 | 9721.86 | 10011.02 | -638.04 | 10015.52 | 10031.33 | 356.35 | 1.54 | 57.00 |
| 220 | 20065.00 | 91.43 | 358.02 | 9720.43 | 10067.96 | -640.01 | 10072.48 | 10088.29 | 356.36 | 0.00 | 57.00 |