



Alan H Degarmo BRK 205H
 Brooke Co, WV
 SDC 40
Plan vs Actual

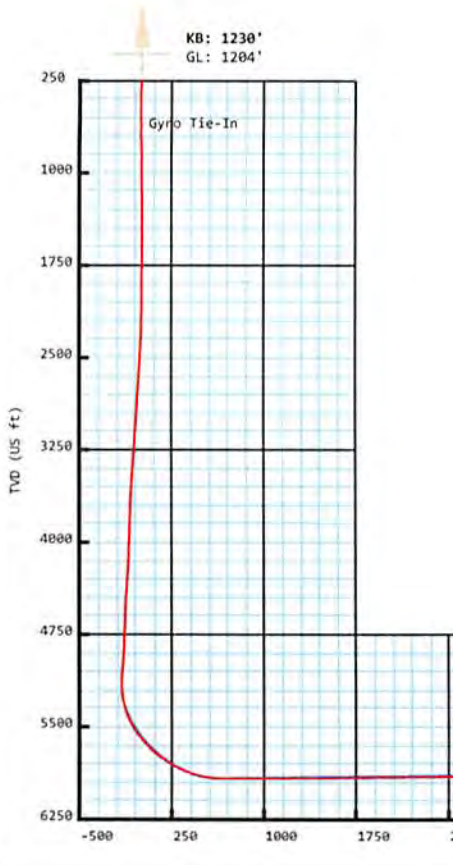
Plan Data for Alan H Degarmo BRK 205H

Plan Point Information:
 Dogleg Severity Unit: $\frac{\circ}{100.00ft}$ Position offsets from Slot centre

| MD | Inc | Az | TVD | +N/-S | +E/-W | VSec | DLS | Toolface | Comments |
|----------|-------------|-------------|---------|---------|----------|---------|--------|-------------|---------------------------|
| (USft) | (\circ) | (\circ) | (USft) | (USft) | (USft) | (USft) | (DLSU) | (\circ) | (\circ) |
| 5321.00 | 22.62 | 77.08 | 5114.29 | 185.78 | 1143.39 | -155.23 | 4.49 | 242.0 | Last WFT SVY |
| 5416.00 | 22.45 | 65.93 | 5202.08 | 197.27 | 1177.78 | -154.26 | 4.50 | 262.6 | PTB |
| 5420.07 | 22.45 | 65.93 | 5205.85 | 197.90 | 1179.20 | -154.06 | 0.00 | 0.0 | Curve KOP 9.5 \circ DLS |
| 5645.81 | 30.00 | 18.99 | 5410.30 | 269.68 | 1237.60 | -102.40 | 9.50 | 267.6 | Build/Turn 7 \circ DLS |
| 6369.94 | 70.00 | 334.88 | 5878.65 | 782.82 | 1146.04 | 415.17 | 7.00 | 302.3 | Build 9 \circ DLS |
| 6599.11 | 90.63 | 334.88 | 5917.00 | 986.26 | 1050.66 | 637.56 | 9.00 | 0.0 | Landing Point |
| 15672.05 | 90.63 | 334.88 | 5818.00 | 9200.61 | -2800.67 | 9617.43 | 0.00 | 0.0 | PBHL AHD205H |

Target Set Information:
 Name: Alan H Degarmo BRK 205H
 Position offsets from Slot centre

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Lat | Long |
|--------------|---------|---------|----------|-------------|------------|-------------|-------------|
| (USft) | (USft) | (USft) | (USft) | (USft) | (USft) | (\circ) | (\circ) |
| LP AHD205H | 5917.00 | 798.39 | 1138.74 | 14617559.39 | 1760974.57 | 40.248614 | -80.567944 |
| PBHL AHD205H | 5818.00 | 9200.61 | -2800.67 | 14625961.61 | 1757035.16 | 40.271738 | -80.581920 |



Plan Data for Alan H Degarmo BRK 205H

Field: SOUTHWESTERN_BROOKE CO, WV UTM NAD 83 (17N)
 Map Unit: USft Vertical Reference Datum (VRD):
 Projected Coordinate System: NAD83 / UTM zone 17N

Site: Alan H Degarmo Pad
 Unit: USFeet TVD Reference:
 Company Name: SOUTHWESTERN ENERGY

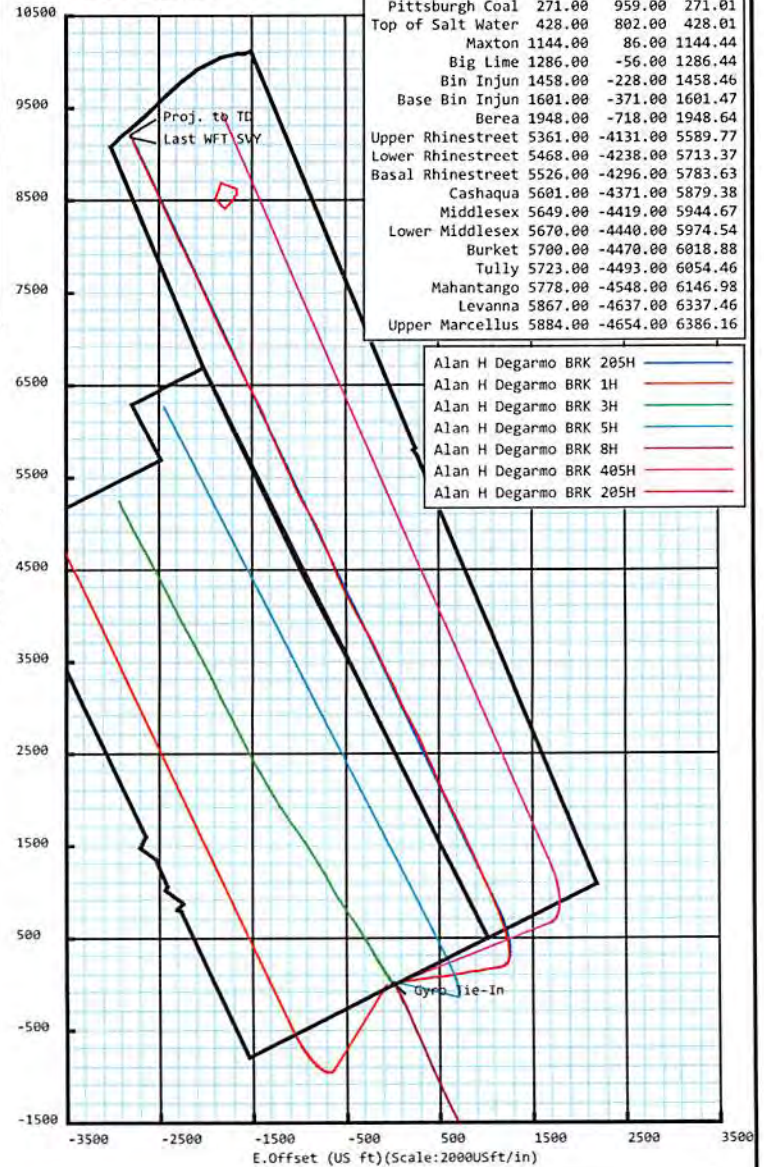
Position:
 Northing: 14616754.85USft Latitude: 40.246420 \circ
 Easting: 1759766.13USft Longitude: -80.572289 \circ
 North Reference: Grid Grid Convergence: 0.28 \circ
 Elevation Above VRD: 1204.00USft

Slot: Alan H Degarmo BRK 205H
 Position:
 Offset is from Site centre
 +N/-S: 6.15USft Northing: 14616761.00USft Latitude: 40.246436 \circ
 +E/-W: 69.70USft Easting: 1759835.83USft Longitude: -80.572039 \circ
 Elevation Above VRD: 1204.00USft

Well: Alan H Degarmo BRK 205H
 Type: Main-Well
 File Number:

Plan Folder: P2 Plan: P2:V1
 Vertical Section: Position offset of origin from Slot centre:
 +N/-S: 0.00USft Azimuth: 343.07 \circ
 +E/-W: -0.00USft
 Magnetic Parameters:
 Model: Field Strength Declination: Dip: Date:
 HDGM 52611(nT) -8.42 \circ 67.70 \circ 2017-10-30

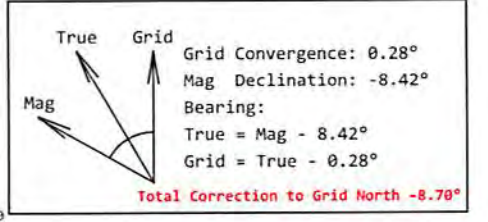
Drawing By: Gary Rhodes Date: 9 November 2017
 Office Name: MidCon DS
 Address: 7725 W. Reno Ave, Ste. #220
 Oklahoma City, OK 73127
 Phone: +1.405.720.4257



Plan Data for Alan H Degarmo BRK 205H

Formation Point Information:

| Name | TVD | SS | MD |
|-------------------|---------|----------|---------|
| (USft) | (USft) | (USft) | (USft) |
| Pittsburgh Coal | 271.00 | 959.00 | 271.01 |
| Top of Salt Water | 428.00 | 802.00 | 428.01 |
| Maxton | 1144.00 | 86.00 | 1144.44 |
| Big Lime | 1286.00 | -56.00 | 1286.44 |
| Bin Injun | 1458.00 | -228.00 | 1458.46 |
| Base Bin Injun | 1601.00 | -371.00 | 1601.47 |
| Berea | 1948.00 | -718.00 | 1948.64 |
| Upper Rhinestreet | 5361.00 | -4131.00 | 5589.77 |
| Lower Rhinestreet | 5468.00 | -4238.00 | 5713.37 |
| Basal Rhinestreet | 5526.00 | -4296.00 | 5783.63 |
| Cashaqua | 5601.00 | -4371.00 | 5879.38 |
| Middlesex | 5649.00 | -4419.00 | 5944.67 |
| Lower Middlesex | 5670.00 | -4440.00 | 5974.54 |
| Burket | 5700.00 | -4470.00 | 6018.88 |
| Tully | 5723.00 | -4493.00 | 6054.46 |
| Mahantango | 5778.00 | -4548.00 | 6146.98 |
| Levanna | 5867.00 | -4637.00 | 6337.46 |
| Upper Marcellus | 5884.00 | -4654.00 | 6386.16 |



VS (US ft) (Bearing: 343.07° Scale: 1500USft/in)

**5D Survey Report**

SOUTHWESTERN ENERGY

Field Name: *SOUTHWESTERN_BROOKE CO, WV UTM NAD 83
(17N)*

Site Name: *Alan H Degarmo Pad*

Well Name: *Alan H Degarmo BRK 205H*

Survey: *Definitive survey*

19 November 2017

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Alan H Degarmo BRK 205H

| | |
|---|--|
| Map Units: US ft | Company Name: SOUTHWESTERN ENERGY |
| Field Name: | Vertical Reference Datum (VRD): |
| SOUTHWESTER N_BROOKE CO, WV UTM NAD 83 (17N) | Projected Coordinate System: NAD83 / UTM zone 17N |
| | Comment: |

| | | | |
|-----------------------|---|------------------------------------|--------------------------------|
| Site: | Units: US ft | North Reference: Grid | Convergence Angle: 0.28 |
| Alan H Degarmo Pad | Position: | Northing: 14616754.85 US ft | Latitude: 40.246420 |
| | | Easting: 1759766.13 US ft | Longitude: -80.572289 |
| | Elevation above Field Reference: 1204.00 US ft | | |
| | Comment: | | |

| | | | |
|----------------------------|---|------------------------------------|------------------------------|
| Slot: | Position (Relative to Site Centre) | | |
| Alan H Degarmo BRK 205H | +N/-S: 6.15 US ft | Northing: 14616761.00 US ft | Latitude: 40.246436 |
| | +E/-W: 69.70 US ft | Easting: 1759835.83 US ft | Longitude: -80.572039 |
| | Elevation above Field Reference: 1204.00 US ft | | |
| | Comment: | | |

| | | | |
|----------------------------|---|---------------------------------|--------------------|
| Well: | Type: Main well | UWI: | |
| Alan H Degarmo BRK 205H | File Number: | Comment: | |
| | Closure Distance: 9616.86 US ft | Closure Azimuth: 343.05° | |
| | Vertical Section: Position of Origin (Relative to Slot centre) | | |
| | +N/-S: 0.00 US ft | +E/-W: -0.00 US ft | Az: 343.07° |

| | | | |
|--|---|---------------------------|-----------------------|
| Drill floor: Survey Name: Definitive Survey | | | |
| Rig Height (Drill Floor): 26.00 US ft | Elevation above Field Reference: 1230.00 US ft | Inclination: 0.00° | Azimuth: 0.00° |

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| | | | |
|---------------------------------------|---|-----------------|-----------------|
| Survey Name: Definitive Survey | | | |
| Date: 13/Oct/2017 | Survey Tool: See Survey Tool Ranges below. | Comment: | Company: |

| | | | | |
|-------------------------|--------------------------|-----------------------------------|----------------------------|--------------------|
| Magnetic Model: | | | | |
| Model Name: HDGM | Date: 30/Oct/2017 | Field Strength: 52611.0 nT | Declination: -8.42° | Dip: 67.70° |

| | | | | | |
|-----------------------|---------------------------|-----------------------|------------------------|---------------------------------|---------------------------------|
| Tie Point: | | | | | |
| MD: 0.00 US ft | Inclination: 0.00° | Azimuth: 0.00° | TVD: 0.00 US ft | North Offset: 0.00 US ft | East Offset: -0.00 US ft |

| Survey Tool Ranges: | | | |
|----------------------------|----------------|--------------|---------------|
| Name | Start MD(usft) | End MD(usft) | Source Survey |
| GYRO_GC_WIR+DPIPE_GYD | 0.00 | 628.00 | Gyro_01 |
| MFAC_US_V2 | 628.00 | 779.00 | WFT MFAC_01-1 |
| MWD | 779.00 | 872.00 | WFT MWD_01-1 |
| MFAC_US_V2 | 872.00 | 964.00 | WFT MFAC_01-2 |
| MWD | 964.00 | 1057.00 | WFT MWD_01-2 |
| MFAC_US_V2 | 1057.00 | 1635.00 | WFT MFAC_01-3 |
| MFAC_US_V2 | 1635.00 | 1890.00 | WFT MFAC_02-1 |
| MWD | 1890.00 | 5321.00 | WFT MWD_02-1 |
| MWD | 5321.00 | 5629.00 | WFT MWD_03 |

50 Survey Report

| Survey Tool Ranges: | | | |
|---------------------|----------------|--------------|---------------|
| Name | Start MD(USFt) | End MD(USFt) | Source Survey |
| MWD | 5629.00 | 15675.00 | WFT MWD_04 |

Wellpath created using minimum curvature.

| Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor) | | | | | | | | | | |
|---|---------|--------|-------------|------------|------------------|------------------|------------------|-------------------|------------------|---------------------|
| MD (US ft) | Inc (°) | Az (°) | TVD (US ft) | VS (US ft) | N.Offset (US ft) | E.Offset (US ft) | Latitude (° ' ") | Longitude (° ' ") | DLS (°/100US ft) | Comment |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.00 | 40.246436 | -80.572039 | 0.00 | |
| 100.00 | 0.77 | 228.02 | 100.00 | -0.28 | -0.45 | -0.50 | 40.246435 | -80.572041 | 0.77 | |
| 200.00 | 0.59 | 245.12 | 199.99 | -0.64 | -1.12 | -1.47 | 40.246433 | -80.572044 | 0.27 | |
| 237.00 | 0.41 | 224.78 | 236.99 | -0.73 | -1.29 | -1.73 | 40.246433 | -80.572045 | 0.68 | |
| 264.00 | 0.32 | 226.66 | 263.99 | -0.81 | -1.41 | -1.86 | 40.246433 | -80.572045 | 0.34 | |
| 271.01 | 0.29 | 224.74 | 271.00 | -0.83 | -1.44 | -1.88 | 40.246432 | -80.572046 | 0.42 | Pittsburgh Coal : |
| 357.00 | 0.14 | 114.57 | 356.99 | -1.00 | -1.64 | -1.94 | 40.246432 | -80.572046 | 0.42 | |
| 428.01 | 0.84 | 79.29 | 428.00 | -1.11 | -1.57 | -1.35 | 40.246432 | -80.572044 | 1.03 | Top of Salt Water : |
| 447.00 | 1.04 | 78.10 | 446.98 | -1.14 | -1.51 | -1.04 | 40.246432 | -80.572043 | 1.03 | |
| 538.00 | 1.89 | 63.93 | 537.95 | -0.98 | -0.68 | 1.11 | 40.246434 | -80.572035 | 1.01 | |
| 628.00 | 3.06 | 53.21 | 627.87 | 0.07 | 1.41 | 4.37 | 40.246440 | -80.572023 | 1.39 | Gyro Tie-In |
| 686.00 | 3.30 | 51.38 | 685.78 | 1.22 | 3.38 | 6.92 | 40.246446 | -80.572014 | 0.45 | |
| 779.00 | 2.77 | 38.73 | 778.65 | 3.47 | 6.80 | 10.41 | 40.246455 | -80.572001 | 0.92 | |
| 872.00 | 1.63 | 34.92 | 871.58 | 5.56 | 9.64 | 12.58 | 40.246463 | -80.571994 | 1.24 | |
| 964.00 | 0.53 | 47.60 | 963.56 | 6.55 | 11.00 | 13.64 | 40.246466 | -80.571990 | 1.22 | |
| 1057.00 | 0.16 | 354.93 | 1056.56 | 6.86 | 11.42 | 13.95 | 40.246468 | -80.571989 | 0.49 | |
| 1104.00 | 0.10 | 308.33 | 1103.56 | 6.96 | 11.51 | 13.91 | 40.246468 | -80.571989 | 0.25 | |
| 1144.44 | 0.17 | 281.59 | 1144.00 | 7.02 | 11.54 | 13.82 | 40.246468 | -80.571989 | 0.22 | Maxton : |
| 1196.00 | 0.27 | 269.32 | 1195.56 | 7.09 | 11.56 | 13.63 | 40.246468 | -80.571990 | 0.22 | |
| 1243.00 | 0.47 | 276.25 | 1242.56 | 7.19 | 11.58 | 13.33 | 40.246468 | -80.571991 | 0.44 | |
| 1286.44 | 0.52 | 291.30 | 1286.00 | 7.38 | 11.67 | 12.97 | 40.246468 | -80.571992 | 0.32 | Big Lime : |
| 1289.00 | 0.52 | 292.09 | 1288.55 | 7.40 | 11.67 | 12.94 | 40.246468 | -80.571992 | 0.32 | |
| 1382.00 | 0.86 | 259.82 | 1381.55 | 7.75 | 11.71 | 11.87 | 40.246468 | -80.571996 | 0.54 | |
| 1428.00 | 0.71 | 255.05 | 1427.54 | 7.80 | 11.58 | 11.25 | 40.246468 | -80.571998 | 0.36 | |
| 1458.46 | 0.70 | 251.96 | 1458.00 | 7.80 | 11.47 | 10.89 | 40.246468 | -80.572000 | 0.13 | Bin Injun : |
| 1521.00 | 0.69 | 245.41 | 1520.54 | 7.74 | 11.19 | 10.19 | 40.246467 | -80.572002 | 0.13 | |
| 1601.47 | 0.71 | 243.83 | 1601.00 | 7.60 | 10.77 | 9.30 | 40.246466 | -80.572005 | 0.03 | Base Bin Injun : |
| 1614.00 | 0.71 | 243.59 | 1613.53 | 7.57 | 10.70 | 9.16 | 40.246466 | -80.572006 | 0.03 | |
| 1635.00 | 0.58 | 244.34 | 1634.53 | 7.54 | 10.60 | 8.95 | 40.246465 | -80.572007 | 0.62 | |
| 1765.00 | 0.56 | 220.43 | 1764.52 | 7.09 | 9.83 | 7.94 | 40.246463 | -80.572010 | 0.18 | |
| 1797.00 | 0.73 | 217.64 | 1796.52 | 6.89 | 9.55 | 7.72 | 40.246462 | -80.572011 | 0.54 | |
| 1890.00 | 2.01 | 77.71 | 1889.50 | 6.41 | 9.43 | 8.95 | 40.246462 | -80.572007 | 2.81 | |
| 1948.64 | 5.69 | 77.43 | 1948.00 | 6.11 | 10.28 | 12.79 | 40.246464 | -80.571993 | 6.27 | |
| 1983.00 | 7.84 | 77.39 | 1982.12 | 5.80 | 11.16 | 16.74 | 40.246467 | -80.571979 | 6.27 | |
| 2076.00 | 11.48 | 75.64 | 2073.79 | 4.91 | 14.84 | 31.90 | 40.246477 | -80.571924 | 3.93 | |
| 2168.00 | 13.20 | 75.07 | 2163.66 | 4.13 | 19.82 | 50.92 | 40.246490 | -80.571856 | 1.87 | |
| 2261.00 | 15.19 | 76.23 | 2253.81 | 3.09 | 25.46 | 73.02 | 40.246505 | -80.571777 | 2.16 | |
| 2354.00 | 17.63 | 80.69 | 2343.02 | 0.55 | 30.64 | 98.75 | 40.246519 | -80.571684 | 2.95 | |
| 2446.00 | 20.13 | 82.93 | 2430.07 | -4.01 | 34.84 | 128.22 | 40.246530 | -80.571579 | 2.83 | |
| 2539.00 | 21.55 | 81.70 | 2516.98 | -9.31 | 39.28 | 161.00 | 40.246542 | -80.571461 | 1.60 | |
| 2632.00 | 22.06 | 81.46 | 2603.33 | -14.42 | 44.33 | 195.17 | 40.246556 | -80.571339 | 0.56 | |
| 2725.00 | 22.67 | 82.44 | 2689.33 | -19.89 | 49.29 | 230.21 | 40.246569 | -80.571213 | 0.77 | |
| 2817.00 | 22.89 | 83.53 | 2774.16 | -26.02 | 53.64 | 265.56 | 40.246580 | -80.571086 | 0.52 | |
| 2910.00 | 21.37 | 82.01 | 2860.30 | -31.94 | 58.03 | 300.32 | 40.246592 | -80.570962 | 1.75 | |
| 3003.00 | 21.30 | 79.09 | 2946.93 | -36.34 | 63.58 | 333.68 | 40.246607 | -80.570842 | 1.14 | |
| 3095.00 | 21.60 | 81.32 | 3032.56 | -40.53 | 69.30 | 366.83 | 40.246622 | -80.570723 | 0.94 | |
| 3188.00 | 20.18 | 82.77 | 3119.45 | -45.69 | 73.90 | 399.67 | 40.246634 | -80.570605 | 1.62 | |
| 3281.00 | 20.31 | 84.43 | 3206.70 | -51.57 | 77.49 | 431.65 | 40.246643 | -80.570491 | 0.63 | |
| 3374.00 | 19.57 | 86.32 | 3294.13 | -58.32 | 80.05 | 463.26 | 40.246650 | -80.570377 | 1.06 | |
| 3467.00 | 19.67 | 87.05 | 3381.73 | -65.67 | 81.86 | 494.43 | 40.246655 | -80.570266 | 0.28 | |

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SD Survey Report

| Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor) | | | | | | | | | | |
|---|------------|-----------|----------------|---------------|----------------------|----------------------|---------------------|----------------------|---------------------|------------------------|
| MD (US ft) | Inc (°) | Az (°) | TVD (US ft) | VS (US ft) | N. Offset (US ft) | E. Offset (US ft) | Latitude (° ' ") | Longitude (° ' ") | DLS (%/100US ft) | Comment |
| 3559.00 | 18.94 | 83.89 | 3468.56 | -72.21 | 84.24 | 524.74 | 40.246661 | -80.570157 | 1.39 | |
| 3652.00 | 18.89 | 80.92 | 3556.54 | -77.10 | 88.23 | 554.61 | 40.246671 | -80.570050 | 1.04 | |
| 3745.00 | 19.09 | 82.80 | 3644.48 | -81.73 | 92.51 | 584.57 | 40.246683 | -80.569942 | 0.69 | |
| 3838.00 | 19.57 | 78.34 | 3732.24 | -85.73 | 97.56 | 614.91 | 40.246696 | -80.569834 | 1.67 | |
| 3930.00 | 20.26 | 76.45 | 3818.74 | -88.08 | 104.41 | 645.49 | 40.246714 | -80.569724 | 1.03 | |
| 4023.00 | 20.51 | 79.92 | 3905.91 | -90.98 | 111.03 | 677.18 | 40.246732 | -80.569610 | 1.33 | |
| 4115.00 | 20.68 | 81.18 | 3992.04 | -95.19 | 116.35 | 709.11 | 40.246746 | -80.569496 | 0.52 | |
| 4208.00 | 20.93 | 77.21 | 4078.98 | -98.71 | 122.54 | 741.53 | 40.246763 | -80.569379 | 1.54 | |
| 4301.00 | 20.61 | 78.10 | 4165.93 | -101.34 | 129.59 | 773.75 | 40.246782 | -80.569264 | 0.48 | |
| 4394.00 | 21.17 | 81.89 | 4252.82 | -105.35 | 135.34 | 806.39 | 40.246797 | -80.569147 | 1.57 | |
| 4486.00 | 21.20 | 85.06 | 4338.61 | -111.35 | 139.11 | 839.41 | 40.246807 | -80.569028 | 1.25 | |
| 4579.00 | 19.76 | 84.72 | 4425.73 | -118.02 | 142.01 | 871.82 | 40.246815 | -80.568912 | 1.55 | |
| 4672.00 | 19.69 | 82.49 | 4513.27 | -123.76 | 145.50 | 903.01 | 40.246824 | -80.568800 | 0.81 | |
| 4764.00 | 19.97 | 78.93 | 4599.82 | -127.90 | 150.55 | 933.79 | 40.246837 | -80.568690 | 1.35 | |
| 4857.00 | 19.96 | 76.83 | 4687.23 | -130.56 | 157.21 | 964.84 | 40.246855 | -80.568579 | 0.77 | |
| 4950.00 | 21.11 | 79.82 | 4774.32 | -133.57 | 163.79 | 996.78 | 40.246873 | -80.568464 | 1.67 | |
| 5043.00 | 22.74 | 80.48 | 4860.59 | -137.86 | 169.72 | 1030.99 | 40.246889 | -80.568341 | 1.77 | |
| 5135.00 | 24.51 | 81.10 | 4944.88 | -142.82 | 175.62 | 1067.38 | 40.246904 | -80.568211 | 1.94 | |
| 5182.00 | 25.22 | 83.44 | 4987.52 | -145.98 | 178.27 | 1086.96 | 40.246911 | -80.568140 | 2.58 | |
| 5228.00 | 25.18 | 84.84 | 5029.15 | -149.74 | 180.27 | 1106.45 | 40.246917 | -80.568071 | 1.30 | |
| 5274.00 | 23.54 | 81.93 | 5071.05 | -153.16 | 182.44 | 1125.29 | 40.246922 | -80.568003 | 4.42 | |
| 5321.00 | 22.62 | 77.08 | 5114.29 | -155.23 | 185.78 | 1143.39 | 40.246931 | -80.567938 | 4.49 | |
| 5351.00 | 22.80 | 73.10 | 5141.97 | -155.64 | 188.76 | 1154.58 | 40.246939 | -80.567898 | 5.16 | |
| 5397.00 | 24.07 | 67.29 | 5184.18 | -154.70 | 194.97 | 1171.76 | 40.246956 | -80.567836 | 5.73 | |
| 5444.00 | 23.21 | 60.62 | 5227.24 | -151.74 | 203.22 | 1188.68 | 40.246979 | -80.567776 | 5.97 | |
| 5490.00 | 22.21 | 50.47 | 5269.69 | -146.44 | 213.20 | 1203.29 | 40.247006 | -80.567723 | 8.78 | |
| 5537.00 | 22.00 | 40.06 | 5313.25 | -138.23 | 225.60 | 1215.81 | 40.247040 | -80.567678 | 8.34 | |
| 5583.00 | 24.25 | 31.84 | 5355.57 | -127.30 | 240.22 | 1226.34 | 40.247080 | -80.567640 | 8.54 | |
| 5588.96 | 24.44 | 30.38 | 5361.00 | -125.66 | 242.33 | 1227.61 | 40.247085 | -80.567635 | 10.59 | Upper Rhinestreet : |
| 5629.00 | 26.09 | 21.21 | 5397.22 | -113.11 | 257.69 | 1234.99 | 40.247128 | -80.567609 | 10.59 | |
| 5671.00 | 28.53 | 10.85 | 5434.56 | -96.96 | 276.16 | 1240.22 | 40.247178 | -80.567590 | 12.70 | |
| 5707.00 | 30.07 | 5.69 | 5465.95 | -81.03 | 293.58 | 1242.74 | 40.247226 | -80.567580 | 8.21 | |
| 5709.37 | 30.24 | 5.48 | 5468.00 | -79.93 | 294.77 | 1242.85 | 40.247229 | -80.567580 | 8.40 | Lower Rhinestreet : |
| 5753.00 | 33.39 | 1.93 | 5505.08 | -58.40 | 317.71 | 1244.31 | 40.247292 | -80.567574 | 8.40 | |
| 5778.32 | 35.16 | 0.08 | 5526.00 | -44.84 | 331.97 | 1244.55 | 40.247331 | -80.567573 | 8.12 | Basal Rhinestreet : |
| 5800.00 | 36.70 | 358.62 | 5543.55 | -32.63 | 344.69 | 1244.40 | 40.247366 | -80.567573 | 8.12 | |
| 5846.00 | 39.37 | 355.36 | 5579.79 | -5.12 | 372.98 | 1242.89 | 40.247444 | -80.567578 | 7.26 | |
| 5873.62 | 40.25 | 354.32 | 5601.00 | 12.19 | 390.59 | 1241.30 | 40.247492 | -80.567584 | 3.98 | Cashaqua : |
| 5893.00 | 40.87 | 353.62 | 5615.73 | 24.56 | 403.12 | 1239.98 | 40.247527 | -80.567588 | 3.98 | |
| 5937.84 | 43.34 | 350.94 | 5649.00 | 54.24 | 432.90 | 1235.92 | 40.247609 | -80.567602 | 6.81 | Middlesex : |
| 5939.00 | 43.40 | 350.87 | 5649.84 | 55.02 | 433.69 | 1235.80 | 40.247611 | -80.567603 | 6.81 | |
| 5967.18 | 45.26 | 349.26 | 5670.00 | 74.57 | 453.08 | 1232.40 | 40.247664 | -80.567615 | 7.71 | Lower Middlesex : |
| 5985.00 | 46.45 | 348.30 | 5682.41 | 87.29 | 465.62 | 1229.91 | 40.247699 | -80.567623 | 7.71 | |
| 6011.01 | 48.43 | 347.04 | 5700.00 | 106.39 | 484.34 | 1225.81 | 40.247750 | -80.567638 | 8.42 | Burket : |
| 6032.00 | 50.04 | 346.07 | 5713.70 | 122.25 | 499.80 | 1222.11 | 40.247793 | -80.567651 | 8.42 | |
| 6046.61 | 50.96 | 345.48 | 5723.00 | 133.52 | 510.73 | 1219.34 | 40.247823 | -80.567660 | 7.05 | |
| 6078.00 | 52.96 | 344.26 | 5742.34 | 158.22 | 534.59 | 1212.89 | 40.247888 | -80.567683 | 7.05 | |
| 6124.00 | 55.50 | 342.79 | 5769.22 | 195.54 | 570.37 | 1202.30 | 40.247987 | -80.567720 | 6.10 | |
| 6139.70 | 56.56 | 342.58 | 5778.00 | 208.56 | 582.80 | 1198.42 | 40.248021 | -80.567734 | 6.81 | Mahantango : |
| 6171.00 | 58.66 | 342.17 | 5794.76 | 234.99 | 607.99 | 1190.42 | 40.248090 | -80.567762 | 6.81 | |
| 6217.00 | 61.76 | 341.67 | 5817.62 | 274.90 | 645.93 | 1178.03 | 40.248194 | -80.567806 | 6.80 | |
| 6263.00 | 65.08 | 341.30 | 5838.20 | 316.01 | 684.94 | 1164.96 | 40.248302 | -80.567852 | 7.25 | |
| 6309.00 | 68.11 | 340.39 | 5856.47 | 358.19 | 724.81 | 1151.11 | 40.248411 | -80.567901 | 6.83 | |
| 6338.61 | 70.22 | 340.00 | 5867.00 | 385.83 | 750.84 | 1141.73 | 40.248483 | -80.567934 | 7.23 | Levanna : |
| 6356.00 | 71.46 | 339.77 | 5872.70 | 402.23 | 766.27 | 1136.08 | 40.248525 | -80.567954 | 7.23 | |

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Survey Report

| Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor) | | | | | | | | | | |
|---|------------|-----------|----------------|---------------|---------------------|---------------------|---------------------|----------------------|---------------------|----------------------|
| MD (US ft) | Inc (°) | Az (°) | TVD (US ft) | VS (US ft) | N.Offset (US ft) | E.Offset (US ft) | Latitude (° ' ") | Longitude (° ' ") | DLS (°/100US ft) | Comment |
| 6393.69 | 73.67 | 339.22 | 5884.00 | 438.12 | 799.95 | 1123.49 | 40.248618 | -80.567999 | 6.03 | Upper Marcellus : |
| 6402.00 | 74.16 | 339.10 | 5886.30 | 446.08 | 807.41 | 1120.65 | 40.248639 | -80.568009 | 6.03 | |
| 6449.00 | 77.14 | 338.09 | 5897.95 | 491.47 | 849.79 | 1104.03 | 40.248755 | -80.568068 | 6.67 | |
| 6495.00 | 80.41 | 337.97 | 5906.90 | 536.41 | 891.63 | 1087.15 | 40.248870 | -80.568127 | 7.11 | |
| 6541.00 | 84.39 | 336.87 | 5912.98 | 581.77 | 933.72 | 1069.64 | 40.248986 | -80.568189 | 8.97 | |
| 6588.00 | 87.78 | 335.85 | 5916.19 | 628.33 | 976.67 | 1050.84 | 40.249104 | -80.568256 | 7.53 | |
| 6680.00 | 90.37 | 334.62 | 5917.68 | 719.45 | 1060.19 | 1012.31 | 40.249334 | -80.568393 | 3.12 | |
| 6773.00 | 90.12 | 336.84 | 5917.28 | 811.68 | 1144.96 | 974.09 | 40.249567 | -80.568528 | 2.40 | |
| 6866.00 | 90.00 | 336.65 | 5917.18 | 904.12 | 1230.41 | 937.37 | 40.249803 | -80.568658 | 0.24 | |
| 6959.00 | 90.00 | 336.99 | 5917.18 | 996.57 | 1315.90 | 900.76 | 40.250038 | -80.568788 | 0.37 | |
| 7051.00 | 90.25 | 336.13 | 5916.98 | 1087.97 | 1400.31 | 864.17 | 40.250270 | -80.568918 | 0.97 | |
| 7144.00 | 90.43 | 335.48 | 5916.43 | 1180.22 | 1485.14 | 826.05 | 40.250504 | -80.569053 | 0.73 | |
| 7237.00 | 90.43 | 336.04 | 5915.73 | 1272.46 | 1569.93 | 787.87 | 40.250737 | -80.569188 | 0.60 | |
| 7329.00 | 90.31 | 334.85 | 5915.14 | 1363.65 | 1653.61 | 749.64 | 40.250967 | -80.569324 | 1.30 | |
| 7422.00 | 90.43 | 334.34 | 5914.54 | 1455.63 | 1737.62 | 709.75 | 40.251198 | -80.569465 | 0.56 | |
| 7515.00 | 90.55 | 334.45 | 5913.74 | 1547.56 | 1821.48 | 669.56 | 40.251429 | -80.569608 | 0.18 | |
| 7607.00 | 90.55 | 333.94 | 5912.86 | 1638.46 | 1904.30 | 629.51 | 40.251657 | -80.569750 | 0.55 | |
| 7700.00 | 90.43 | 334.09 | 5912.06 | 1730.29 | 1987.90 | 588.76 | 40.251887 | -80.569894 | 0.21 | |
| 7793.00 | 90.43 | 334.84 | 5911.36 | 1822.24 | 2071.81 | 548.68 | 40.252118 | -80.570037 | 0.81 | |
| 7886.00 | 90.43 | 337.07 | 5910.67 | 1914.52 | 2156.73 | 510.79 | 40.252352 | -80.570171 | 2.40 | |
| 7979.00 | 90.49 | 336.38 | 5909.92 | 2006.95 | 2242.16 | 474.04 | 40.252587 | -80.570301 | 0.74 | |
| 8071.00 | 90.55 | 336.92 | 5909.08 | 2098.36 | 2326.62 | 437.58 | 40.252819 | -80.570430 | 0.59 | |
| 8164.00 | 90.49 | 336.38 | 5908.24 | 2190.78 | 2412.00 | 400.72 | 40.253054 | -80.570561 | 0.58 | |
| 8257.00 | 90.49 | 336.54 | 5907.44 | 2283.16 | 2497.26 | 363.58 | 40.253289 | -80.570693 | 0.17 | |
| 8349.00 | 90.55 | 336.47 | 5906.61 | 2374.55 | 2581.63 | 326.90 | 40.253521 | -80.570823 | 0.10 | |
| 8442.00 | 90.49 | 335.20 | 5905.77 | 2466.80 | 2666.47 | 288.83 | 40.253755 | -80.570958 | 1.37 | |
| 8534.00 | 90.43 | 331.81 | 5905.03 | 2557.51 | 2748.80 | 247.80 | 40.253981 | -80.571103 | 3.69 | |
| 8627.00 | 90.43 | 331.55 | 5904.33 | 2648.67 | 2830.66 | 203.68 | 40.254207 | -80.571260 | 0.28 | |
| 8720.00 | 90.31 | 331.79 | 5903.73 | 2739.84 | 2912.52 | 159.55 | 40.254432 | -80.571417 | 0.29 | |
| 8812.00 | 90.74 | 334.54 | 5902.89 | 2830.45 | 2994.60 | 118.02 | 40.254658 | -80.571564 | 3.03 | |
| 8905.00 | 90.62 | 336.36 | 5901.78 | 2922.62 | 3079.19 | 79.39 | 40.254891 | -80.571701 | 1.96 | |
| 8998.00 | 90.74 | 336.72 | 5900.68 | 3015.01 | 3164.49 | 42.36 | 40.255125 | -80.571832 | 0.41 | |
| 9090.00 | 90.74 | 334.67 | 5899.49 | 3106.24 | 3248.33 | 4.50 | 40.255356 | -80.571966 | 2.23 | |
| 9183.00 | 90.74 | 331.61 | 5898.29 | 3197.83 | 3331.28 | -37.51 | 40.255585 | -80.572116 | 3.29 | |
| 9276.00 | 90.92 | 334.23 | 5896.94 | 3289.35 | 3414.06 | -79.84 | 40.255812 | -80.572266 | 2.82 | |
| 9369.00 | 90.62 | 334.45 | 5895.69 | 3381.27 | 3497.89 | -120.10 | 40.256043 | -80.572409 | 0.40 | |
| 9462.00 | 90.74 | 335.79 | 5894.59 | 3473.36 | 3582.25 | -159.23 | 40.256275 | -80.572548 | 1.45 | |
| 9554.00 | 90.92 | 335.12 | 5893.25 | 3564.54 | 3665.92 | -197.44 | 40.256506 | -80.572683 | 0.75 | |
| 9647.00 | 90.74 | 331.38 | 5891.91 | 3656.15 | 3748.95 | -239.29 | 40.256734 | -80.572832 | 4.03 | |
| 9740.00 | 90.74 | 330.06 | 5890.71 | 3746.99 | 3830.06 | -284.77 | 40.256957 | -80.572993 | 1.42 | |
| 9832.00 | 91.05 | 331.38 | 5889.27 | 3836.85 | 3910.29 | -329.76 | 40.257178 | -80.573153 | 1.47 | |
| 9925.00 | 90.99 | 332.45 | 5887.61 | 3928.08 | 3992.33 | -373.53 | 40.257404 | -80.573309 | 1.15 | |
| 10018.00 | 90.43 | 333.66 | 5886.46 | 4019.65 | 4075.22 | -415.67 | 40.257632 | -80.573458 | 1.43 | |
| 10111.00 | 90.37 | 332.54 | 5885.81 | 4111.24 | 4158.16 | -457.74 | 40.257861 | -80.573608 | 1.21 | |
| 10203.00 | 90.37 | 334.60 | 5885.22 | 4201.97 | 4240.53 | -498.69 | 40.258087 | -80.573753 | 2.24 | |
| 10296.00 | 90.49 | 334.85 | 5884.52 | 4293.99 | 4324.63 | -538.40 | 40.258319 | -80.573894 | 0.30 | |
| 10389.00 | 90.80 | 337.59 | 5883.47 | 4386.31 | 4409.72 | -575.89 | 40.258553 | -80.574027 | 2.96 | |
| 10482.00 | 90.86 | 340.51 | 5882.12 | 4479.06 | 4496.55 | -609.14 | 40.258792 | -80.574144 | 3.14 | |
| 10574.00 | 90.68 | 337.28 | 5880.89 | 4570.80 | 4582.36 | -642.26 | 40.259028 | -80.574262 | 3.52 | |
| 10667.00 | 90.86 | 338.74 | 5879.64 | 4663.42 | 4668.59 | -677.07 | 40.259265 | -80.574385 | 1.58 | |
| 10760.00 | 90.86 | 335.44 | 5878.24 | 4755.89 | 4754.23 | -713.27 | 40.259501 | -80.574513 | 3.55 | |
| 10852.00 | 90.68 | 337.76 | 5877.01 | 4847.29 | 4838.65 | -749.80 | 40.259733 | -80.574643 | 2.53 | |
| 10945.00 | 90.86 | 336.62 | 5875.76 | 4939.79 | 4924.37 | -785.85 | 40.259969 | -80.574770 | 1.24 | |
| 11038.00 | 90.55 | 332.15 | 5874.61 | 5031.70 | 5008.20 | -826.04 | 40.260200 | -80.574913 | 4.82 | |
| 11130.00 | 90.55 | 330.39 | 5873.73 | 5121.74 | 5088.87 | -870.26 | 40.260422 | -80.575070 | 1.91 | |
| 11223.00 | 90.49 | 330.14 | 5872.88 | 5212.43 | 5169.62 | -916.39 | 40.260644 | -80.575234 | 0.28 | |
| 11316.00 | 90.49 | 329.91 | 5872.09 | 5303.02 | 5250.17 | -962.85 | 40.260866 | -80.575399 | 0.25 | |
| 11408.00 | 90.68 | 333.71 | 5871.15 | 5393.23 | 5331.24 | -1006.30 | 40.261089 | -80.575554 | 4.14 | |

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3D Survey Report

| Survey Points- (Relative to Slot centre)(TVD relative to Drill Floor) | | | | | | | | | | |
|---|------------|-----------|----------------|---------------|---------------------|---------------------|---------------------|----------------------|---------------------|---------|
| MD (US ft) | Inc (°) | Az (°) | TVD (US ft) | VS (US ft) | N.Offset (US ft) | E.Offset (US ft) | Latitude (° ' ") | Longitude (° ' ") | DLS (°/100US ft) | Comment |
| 11501.00 | 90.49 | 336.59 | 5870.20 | 5485.33 | 5415.62 | -1045.38 | 40.261321 | -80.575692 | 3.10 | |
| 11594.00 | 90.68 | 336.35 | 5869.25 | 5577.71 | 5500.88 | -1082.50 | 40.261556 | -80.575824 | 0.33 | |
| 11686.00 | 90.80 | 336.84 | 5868.06 | 5669.11 | 5585.30 | -1119.05 | 40.261788 | -80.575953 | 0.55 | |
| 11779.00 | 90.68 | 334.97 | 5866.86 | 5761.38 | 5670.19 | -1157.01 | 40.262022 | -80.576088 | 2.01 | |
| 11872.00 | 90.12 | 335.82 | 5866.21 | 5853.54 | 5754.74 | -1195.73 | 40.262255 | -80.576225 | 1.09 | |
| 11964.00 | 90.25 | 335.61 | 5865.91 | 5944.78 | 5838.60 | -1233.57 | 40.262485 | -80.576359 | 0.27 | |
| 12057.00 | 90.74 | 335.87 | 5865.11 | 6037.02 | 5923.39 | -1271.78 | 40.262719 | -80.576495 | 0.60 | |
| 12150.00 | 89.51 | 336.58 | 5864.91 | 6129.35 | 6008.49 | -1309.27 | 40.262953 | -80.576628 | 1.53 | |
| 12243.00 | 90.25 | 340.05 | 5865.10 | 6222.02 | 6094.89 | -1343.63 | 40.263191 | -80.576750 | 3.82 | |
| 12335.00 | 90.12 | 338.04 | 5864.80 | 6313.79 | 6180.81 | -1376.53 | 40.263427 | -80.576866 | 2.19 | |
| 12428.00 | 90.06 | 333.91 | 5864.66 | 6406.05 | 6265.73 | -1414.38 | 40.263661 | -80.577000 | 4.44 | |
| 12520.00 | 90.06 | 332.09 | 5864.56 | 6496.63 | 6347.70 | -1456.15 | 40.263886 | -80.577149 | 1.98 | |
| 12613.00 | 90.06 | 331.98 | 5864.46 | 6587.91 | 6429.84 | -1499.76 | 40.264112 | -80.577303 | 0.12 | |
| 12706.00 | 90.18 | 333.92 | 5864.27 | 6679.46 | 6512.66 | -1542.05 | 40.264340 | -80.577454 | 2.09 | |
| 12798.00 | 92.09 | 333.19 | 5862.45 | 6770.17 | 6595.02 | -1583.01 | 40.264567 | -80.577599 | 2.22 | |
| 12891.00 | 94.81 | 334.26 | 5856.85 | 6861.76 | 6678.25 | -1624.10 | 40.264796 | -80.577745 | 3.14 | |
| 12984.00 | 90.12 | 334.26 | 5852.85 | 6953.55 | 6761.92 | -1664.44 | 40.265026 | -80.577888 | 5.04 | |
| 13077.00 | 90.99 | 333.16 | 5851.95 | 7045.31 | 6845.29 | -1705.63 | 40.265256 | -80.578034 | 1.51 | |
| 13169.00 | 89.82 | 332.26 | 5851.30 | 7135.80 | 6927.05 | -1747.81 | 40.265481 | -80.578184 | 1.60 | |
| 13262.00 | 87.84 | 333.90 | 5853.20 | 7227.37 | 7009.95 | -1789.90 | 40.265709 | -80.578334 | 2.76 | |
| 13355.00 | 88.46 | 334.41 | 5856.20 | 7319.20 | 7093.60 | -1830.42 | 40.265939 | -80.578477 | 0.86 | |
| 13448.00 | 88.89 | 335.64 | 5858.35 | 7411.25 | 7177.88 | -1869.68 | 40.266171 | -80.578617 | 1.40 | |
| 13541.00 | 89.88 | 334.42 | 5859.35 | 7503.33 | 7262.18 | -1908.93 | 40.266403 | -80.578756 | 1.69 | |
| 13633.00 | 91.05 | 337.10 | 5858.61 | 7594.57 | 7346.05 | -1946.70 | 40.266634 | -80.578890 | 3.18 | |
| 13726.00 | 90.62 | 336.16 | 5857.25 | 7686.97 | 7431.41 | -1983.59 | 40.266869 | -80.579021 | 1.11 | |
| 13819.00 | 90.74 | 335.03 | 5856.15 | 7779.17 | 7516.10 | -2022.01 | 40.267102 | -80.579157 | 1.22 | |
| 13912.00 | 90.74 | 334.25 | 5854.94 | 7871.16 | 7600.13 | -2061.84 | 40.267333 | -80.579298 | 0.84 | |
| 14004.00 | 90.62 | 335.06 | 5853.85 | 7962.16 | 7683.27 | -2101.22 | 40.267562 | -80.579438 | 0.89 | |
| 14097.00 | 90.62 | 334.46 | 5852.85 | 8054.18 | 7767.38 | -2140.87 | 40.267794 | -80.579579 | 0.65 | |
| 14190.00 | 90.71 | 334.55 | 5851.77 | 8146.14 | 7851.32 | -2180.90 | 40.268025 | -80.579721 | 0.14 | |
| 14282.00 | 90.86 | 334.57 | 5850.51 | 8237.12 | 7934.39 | -2220.41 | 40.268253 | -80.579861 | 0.16 | |
| 14375.00 | 90.49 | 333.79 | 5849.41 | 8328.99 | 8018.10 | -2260.92 | 40.268484 | -80.580005 | 0.93 | |
| 14468.00 | 90.62 | 333.92 | 5848.51 | 8420.79 | 8101.58 | -2301.89 | 40.268713 | -80.580150 | 0.20 | |
| 14561.00 | 90.49 | 334.90 | 5847.61 | 8512.72 | 8185.45 | -2342.06 | 40.268944 | -80.580293 | 1.06 | |
| 14653.00 | 90.49 | 336.03 | 5846.82 | 8603.91 | 8269.14 | -2380.26 | 40.269175 | -80.580428 | 1.23 | |
| 14746.00 | 90.31 | 335.40 | 5846.17 | 8696.14 | 8353.91 | -2418.51 | 40.269408 | -80.580564 | 0.70 | |
| 14839.00 | 90.86 | 335.21 | 5845.22 | 8788.28 | 8438.40 | -2457.36 | 40.269640 | -80.580702 | 0.63 | |
| 14932.00 | 90.80 | 336.55 | 5843.88 | 8880.54 | 8523.27 | -2495.36 | 40.269874 | -80.580837 | 1.44 | |
| 15025.00 | 90.97 | 336.14 | 5842.44 | 8972.89 | 8608.45 | -2532.67 | 40.270108 | -80.580969 | 0.48 | |
| 15117.00 | 90.37 | 334.10 | 5841.36 | 9063.99 | 8691.90 | -2571.37 | 40.270338 | -80.581106 | 2.31 | |
| 15210.00 | 90.25 | 334.99 | 5840.86 | 9155.96 | 8775.87 | -2611.34 | 40.270569 | -80.581248 | 0.97 | |
| 15303.00 | 90.00 | 335.02 | 5840.66 | 9248.04 | 8860.16 | -2650.64 | 40.270801 | -80.581388 | 0.27 | |
| 15396.00 | 90.06 | 335.06 | 5840.61 | 9340.13 | 8944.47 | -2689.88 | 40.271033 | -80.581527 | 0.08 | |
| 15488.00 | 90.43 | 335.57 | 5840.22 | 9431.29 | 9028.06 | -2728.30 | 40.271263 | -80.581663 | 0.68 | |
| 15581.00 | 90.62 | 336.13 | 5839.36 | 9523.55 | 9112.92 | -2766.35 | 40.271497 | -80.581798 | 0.64 | |
| 15652.00 | 90.92 | 336.23 | 5838.41 | 9594.03 | 9177.86 | -2795.02 | 40.271675 | -80.581900 | 0.45 | |
| 15675.00 | 90.92 | 336.23 | 5838.04 | 9616.86 | 9198.91 | -2804.29 | 40.271733 | -80.581933 | 0.00 | |

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