

30-015-39692



Prepared For:

***Chesapeake Operating, Inc.***



**Ryan Directional Services, Inc.**

19510 Oil Center Blvd  
Houston, TX 77073  
Ph 281-443-1414  
Fx 281-443-1676

[www.ryanenergy.com](http://www.ryanenergy.com)



**Chesapeake Operating, Inc.**  
**Field: Eddy Co, NM NAD 83**  
**Site: PLU Pierce Canyon 20-24-30 USA 1H**  
**Well: 20-24-30 USA 1H**  
**Wellpath: OH**



Azimuths to Grid North  
 True North -0 23°  
 Magnetic North 7 44°  
 Magnetic Field  
 Strength 48545nT  
 Dip Angle 60 10°  
 Date 12/23/2011  
 Model IGRF2010

#### WELLPATH DETAILS

OH  
 Rig Patterson 62  
 Ref Datum SITE 3297 00ft  
 V Section  
 Angle  
 182 90°  
 Origin  
 +N/-S 0 00  
 Origin  
 +E/-W 0 00  
 Starting  
 From TVD 0 00

#### FIELD DETAILS

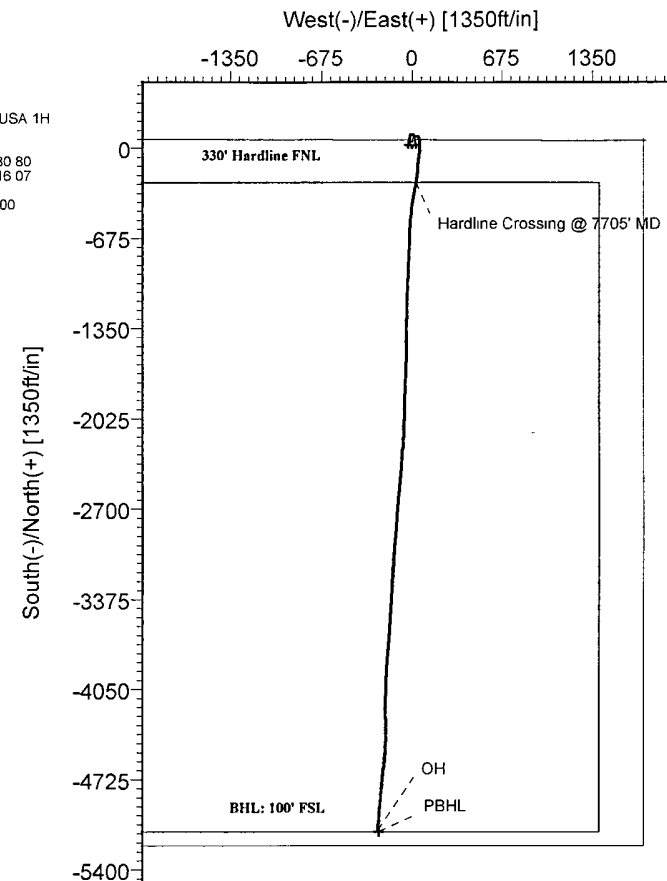
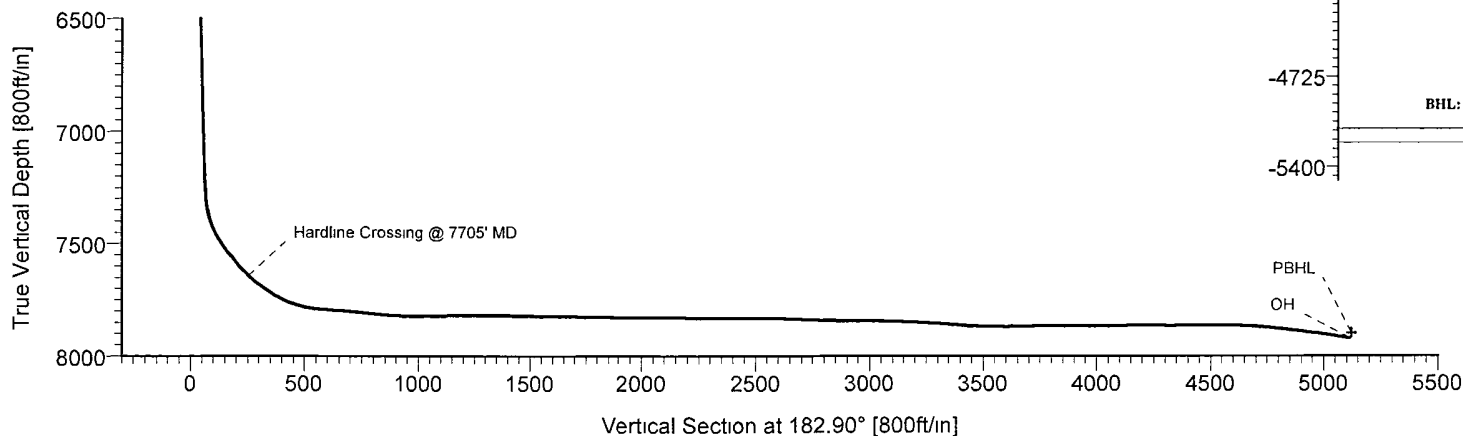
Eddy Co, NM NAD 83  
 USA  
 Geodetic System US State Plane Coordinate System 1983  
 Ellipsoid GRS 1980  
 Zone New Mexico, Eastern Zone  
 Magnetic Model IGRF2010  
 System Datum Mean Sea Level  
 Local North Grd North

#### SITE DETAILS

PLU Pierce Canyon 20-24-30 USA 1H  
 Eddy Co, NM  
 Site Centre Northing 440480 80  
 Easting 675216 07  
 Ground Level 3272 00  
 Positional Uncertainty 0 00  
 Convergence 0 23

#### TARGET DETAILS

| Name | TVD     | +N/-S    | +E/-W   | Northing  | Easting   | Latitude      | Longitude      | Shape |
|------|---------|----------|---------|-----------|-----------|---------------|----------------|-------|
| PBHL | 7899 40 | -5115 81 | -246 20 | 435364 99 | 674969 87 | 32°11'46 159N | 103°54'04 782W | Point |



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**RYAN DIRECTIONAL SERVICES, INC.**  
 A NABORS COMPANY

Wellpath: (20-24-30 USA 1HCH)  
 Created By Erik De La Fe Date 12/27/2012  
 Checked \_\_\_\_\_ Date \_\_\_\_\_  
 Reviewed \_\_\_\_\_ Date \_\_\_\_\_  
 Approved \_\_\_\_\_ Date \_\_\_\_\_



# Ryan Directional Services Survey Report



|                                         |                             |                                         |            |
|-----------------------------------------|-----------------------------|-----------------------------------------|------------|
| Company: Chesapeake Operating, Inc.     | Date: 1/27/2012             | Time: 10:02 36                          | Page: 1    |
| Field: Eddy Co, NM NAD 83               | Co-ordinate(N/E) Reference: | Site: PLU Pierce Canyon 20-24-30 USA 1H |            |
| Site: PLU Pierce Canyon 20-24-30 USA 1H | Vertical (TVD) Reference:   | SITE 3297.0                             |            |
| Well: 20-24-30 USA 1H                   | Section (VS) Reference:     | Well (0.00N 0.00E 182.90Azi)            |            |
| Wellpath: OH                            | Survey Calculation Method:  | Minimum Curvature                       | Db: Sybase |

Field: Eddy Co, NM NAD 83

USA

Map System: US State Plane Coordinate System 1983

Geo Datum: GRS 1980

Sys Datum: Mean Sea Level

Map Zone:

New Mexico, Eastern Zone

Coordinate System:

Site Centre

Geomagnetic Model:

IGRF2010

Site: PLU Pierce Canyon 20-24-30 USA 1H

Eddy Co, NM

|                       |            |              |                   |                |
|-----------------------|------------|--------------|-------------------|----------------|
| Site Position:        | Northing:  | 440480.80 ft | Latitude:         | 32 12 36.775 N |
| From: Map             | Easting:   | 675216.07 ft | Longitude:        | 103 54 1 678 W |
| Position Uncertainty: | 0 00 ft    |              | North Reference:  | Grid           |
| Ground Level:         | 3272 00 ft |              | Grid Convergence: | 0.23 deg       |

Well: 20-24-30 USA 1H

Slot Name:

|                       |         |         |           |              |            |                |
|-----------------------|---------|---------|-----------|--------------|------------|----------------|
| Well Position:        | +N/-S   | 0.00 ft | Northing: | 440480.80 ft | Latitude:  | 32 12 36.775 N |
|                       | +E/-W   | 0.00 ft | Easting:  | 675216.07 ft | Longitude: | 103 54 1 678 W |
| Position Uncertainty: | 0 00 ft |         |           |              |            |                |

Wellpath: OH

Drilled From:

Surface

Current Datum: SITE

Height 3297.00 ft

Tie-on Depth:

0 00 ft

Magnetic Data: 12/23/2011

Above System Datum:

Mean Sea Level

Field Strength: 48545 nT

Declination:

7.67 deg

Vertical Section: Depth From (TVD)

+N/-S

Mag Dip Angle:

60.10 deg

ft

ft

+E/-W

Direction

ft

ft

ft

deg

0.00

0.00

0.00

182.90

Survey Program for Definitive Wellpath

Date: 1/27/2012

Validated: No

Version: 0

Actual From To  
ft ft

Survey

Toolcode

Tool Name

|          |          |                               |            |            |
|----------|----------|-------------------------------|------------|------------|
| 200.00   | 3575.00  | Survey #1 (200 00-3575.00)    | Gyro       | Gyro       |
| 3731.00  | 12562.00 | Survey #2 (3731 00-12562.00)  | Ryan MWD   | Ryan MWD   |
| 12615.00 | 12615.00 | Survey #3 (12615 00-12615.00) | Projection | Projection |

Survey

| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | +N/-S<br>ft | +E/-W<br>ft | VS<br>ft | DLS<br>deg/100ft | Build<br>deg/100ft | Turn<br>deg/100ft | Tool/Comment |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------|
| 0 00     | 0 00        | 0 00        | 0 00      | 0 00        | 0 00        | 0 00     | 0 00             | 0 00               | 0 00              | TIE LINE     |
| 200 00   | 1 13        | 21 29       | 199 99    | 1 84        | 0 72        | -1 87    | 0 56             | 0 56               | 0 00              | Gyro         |
| 400 00   | 2 46        | 19 59       | 399 88    | 7 72        | 2 87        | -7 85    | 0 67             | 0 66               | -0 85             | Gyro         |
| 600 00   | 2 85        | 11 13       | 599 67    | 16 64       | 5 27        | -16 89   | 0 28             | 0 19               | -4 23             | Gyro         |
| 800 00   | 2 60        | 8 64        | 799 44    | 26 00       | 6 91        | -26 32   | 0 14             | -0 12              | -1 24             | Gyro         |
| 1000 00  | 2 49        | 14 25       | 999 25    | 34 70       | 8 66        | -35 09   | 0 14             | -0 05              | 2 80              | Gyro         |
| 1200 00  | 3 04        | 2 43        | 1199 01   | 44 21       | 9 96        | -44 66   | 0 39             | -0 27              | -5 91             | Gyro         |
| 1400 00  | 3 21        | 346 70      | 1398 72   | 54 96       | 8 89        | -55 34   | 0 44             | 0 08               | -7 87             | Gyro         |
| 1600 00  | 3 34        | 346 89      | 1598 39   | 66 08       | 6 28        | -66 32   | 0 07             | 0 06               | 0 09              | Gyro         |
| 1800 00  | 2 66        | 19 03       | 1798 13   | 76 14       | 6 48        | -76 37   | 0 89             | -0 34              | 16 07             | Gyro         |
| 2000 00  | 2 78        | 66 83       | 1997 93   | 82 44       | 12 45       | -82 96   | 1 10             | 0 06               | 23 90             | Gyro         |
| 2200 00  | 2 94        | 61 99       | 2197 68   | 86 76       | 21 44       | -87 73   | 0 14             | 0 08               | -2 42             | Gyro         |
| 2400 00  | 1 74        | 94 60       | 2397 52   | 88 92       | 28 99       | -90 28   | 0 87             | -0 60              | 16 30             | Gyro         |
| 2600 00  | 1 45        | 89 23       | 2597 44   | 88 71       | 34 55       | -90 35   | 0 16             | -0 14              | -2 68             | Gyro         |
| 2800 00  | 0 56        | 98 25       | 2797 41   | 88 61       | 38 05       | -90 42   | 0 45             | -0 44              | 4 51              | Gyro         |
| 3000 00  | 2 21        | 122 72      | 2997 35   | 86 38       | 42 26       | -88 41   | 0 86             | 0 82               | 12 23             | Gyro         |
| 3200 00  | 3 35        | 133 50      | 3197 11   | 80 28       | 49 74       | -82 69   | 0 62             | 0 57               | 5 39              | Gyro         |
| 3400 00  | 4 83        | 160 60      | 3396 61   | 68 31       | 56 78       | -71 09   | 1 20             | 0 74               | 13 55             | Gyro         |
| 3575 00  | 2 86        | 187 64      | 3571 22   | 57 03       | 58 64       | -59 93   | 1 50             | -1 13              | 15 45             | Gyro         |
| 3731 00  | 2 30        | 182 10      | 3727 06   | 50 05       | 58 01       | -52 92   | 0 39             | -0 36              | -3 55             | Ryan MWD     |
| 3826 00  | 2 40        | 180 00      | 3821 98   | 46 15       | 57 94       | -49 02   | 0 14             | 0 11               | -2 21             | Ryan MWD     |



# Ryan Directional Services Survey Report



Company: Chesapeake Operating, Inc Date: 1/27/2012 Time: 10:02:36 Page: 2  
Field: Eddy Co. NM NAD 83 Co-ordinate(NE) Reference: Site: PLU Pierce Canyon 20-24-30 USA 1H  
Site: PLU Pierce Canyon 20-24-30 USA 1H Vertical (TVD) Reference: SITE 3297.0  
Well: 20-24-30 USA 1H Section (VS) Reference: Well (0.00N,0.00E,182.90Azi)  
Wellpath: OH Survey Calculation Method: Minimum Curvature Db: Sybase

## Survey

| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | +N/-S<br>ft | +E/-W<br>ft | VS<br>ft | DLS<br>deg/100ft | Build<br>deg/100ft | Turn<br>deg/100ft | Tool/Comment             |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------------------|
| 4016.00  | 2.50        | 181.70      | 4011.81   | -38.03      | 57.82       | -40.91   | 0.07             | 0.05               | 0.89              | Ryan MWD                 |
| 4206.00  | 2.50        | 179.30      | 4201.63   | -29.75      | 57.75       | -32.63   | 0.06             | 0.00               | -1.26             | Ryan MWD                 |
| 4396.00  | 2.40        | 177.60      | 4391.46   | -21.63      | 57.96       | -24.53   | 0.07             | -0.05              | -0.89             | Ryan MWD                 |
| 4587.00  | 2.00        | 180.10      | 4582.32   | -14.30      | 58.13       | -17.22   | 0.22             | -0.21              | 1.31              | Ryan MWD                 |
| 4778.00  | 2.00        | 179.40      | 4773.20   | -7.63       | 58.15       | -10.57   | 0.01             | 0.00               | -0.37             | Ryan MWD                 |
| 4968.00  | 1.90        | 179.00      | 4963.09   | -1.17       | 58.24       | -4.11    | 0.05             | -0.05              | -0.21             | Ryan MWD                 |
| 5158.00  | 1.80        | 178.60      | 5152.99   | -4.96       | 58.37       | 2.00     | 0.05             | -0.05              | -0.21             | Ryan MWD                 |
| 5347.00  | 1.50        | 179.40      | 5341.91   | -10.40      | 58.47       | 7.43     | 0.16             | -0.16              | 0.42              | Ryan MWD                 |
| 5537.00  | 1.50        | 179.40      | 5531.85   | -15.38      | 58.52       | 12.40    | 0.00             | 0.00               | 0.00              | Ryan MWD                 |
| 5728.00  | 1.50        | 175.80      | 5722.78   | -20.37      | 58.73       | 17.37    | 0.05             | 0.00               | -1.88             | Ryan MWD                 |
| 5918.00  | 1.70        | 193.10      | 5912.71   | -25.60      | 58.28       | 22.61    | 0.27             | 0.11               | 9.11              | Ryan MWD                 |
| 6109.00  | 2.20        | 198.90      | 6103.60   | -31.82      | 56.45       | 28.93    | 0.28             | 0.26               | 3.04              | Ryan MWD                 |
| 6299.00  | 1.90        | 194.10      | 6293.48   | -38.33      | 54.50       | 35.52    | 0.18             | -0.16              | -2.53             | Ryan MWD                 |
| 6489.00  | 1.80        | 191.80      | 6483.38   | -44.30      | 53.12       | 41.56    | 0.07             | -0.05              | -1.21             | Ryan MWD                 |
| 6680.00  | 1.70        | 187.60      | 6674.29   | -50.05      | 52.13       | 47.35    | 0.09             | -0.05              | -2.20             | Ryan MWD                 |
| 6870.00  | 1.70        | 183.10      | 6864.20   | -55.66      | 51.61       | 52.97    | 0.07             | 0.00               | -2.37             | Ryan MWD                 |
| 7061.00  | 1.80        | 185.50      | 7055.11   | -61.47      | 51.17       | 58.80    | 0.06             | 0.05               | 1.26              | Ryan MWD                 |
| 7236.00  | 1.90        | 183.80      | 7230.02   | -67.10      | 50.71       | 64.45    | 0.07             | 0.06               | -0.97             | Ryan MWD                 |
| 7275.00  | 1.90        | 183.10      | 7269.00   | -68.39      | 50.63       | 65.74    | 0.06             | 0.00               | -1.79             | Ryan MWD                 |
| 7307.00  | 4.30        | 183.90      | 7300.95   | -70.12      | 50.52       | 67.47    | 7.50             | 7.50               | 2.50              | Ryan MWD                 |
| 7339.00  | 8.60        | 186.60      | 7332.74   | -73.70      | 50.17       | 71.06    | 13.47            | 13.44              | 8.44              | Ryan MWD                 |
| 7371.00  | 13.10       | 188.10      | 7364.16   | -79.67      | 49.38       | 77.07    | 14.09            | 14.06              | 4.69              | Ryan MWD                 |
| 7403.00  | 17.60       | 187.60      | 7395.01   | -88.06      | 48.23       | 85.50    | 14.07            | 14.06              | -1.56             | Ryan MWD                 |
| 7434.00  | 22.80       | 186.30      | 7424.10   | -98.68      | 46.95       | 96.18    | 16.84            | 16.77              | -4.19             | Ryan MWD                 |
| 7466.00  | 26.90       | 184.40      | 7453.13   | -112.06     | 45.71       | 109.61   | 13.05            | 12.81              | -5.94             | Ryan MWD                 |
| 7498.00  | 31.10       | 182.20      | 7481.11   | -127.55     | 44.84       | 125.12   | 13.54            | 13.12              | -6.87             | Ryan MWD                 |
| 7530.00  | 34.80       | 182.00      | 7507.96   | -144.94     | 44.20       | 142.52   | 11.57            | 11.56              | -0.62             | Ryan MWD                 |
| 7562.00  | 36.90       | 182.10      | 7533.89   | -163.67     | 43.53       | 161.25   | 6.57             | 6.56               | 0.31              | Ryan MWD                 |
| 7593.00  | 38.60       | 185.20      | 7558.41   | -182.60     | 42.31       | 180.23   | 8.22             | 5.48               | 10.00             | Ryan MWD                 |
| 7625.00  | 39.20       | 189.20      | 7583.32   | -202.53     | 39.79       | 200.25   | 8.07             | 1.87               | 12.50             | Ryan MWD                 |
| 7657.00  | 40.90       | 190.50      | 7607.81   | -222.81     | 36.27       | 220.69   | 5.92             | 5.31               | 4.06              | Ryan MWD                 |
| 7689.00  | 44.70       | 191.20      | 7631.29   | -244.16     | 32.17       | 242.22   | 11.97            | 11.87              | 2.19              | Ryan MWD                 |
| 7705.00  | 46.76       | 190.93      | 7642.45   | -255.40     | 29.97       | 253.56   | 12.96            | 12.90              | -1.66             | Hardline Crossing @ 7705 |
| 7720.00  | 48.70       | 190.70      | 7652.54   | -266.31     | 27.89       | 264.55   | 12.96            | 12.91              | -1.56             | Ryan MWD                 |
| 7752.00  | 52.10       | 191.10      | 7672.94   | -290.51     | 23.22       | 288.97   | 10.67            | 10.62              | 1.25              | Ryan MWD                 |
| 7784.00  | 54.00       | 191.00      | 7692.17   | -315.61     | 18.32       | 314.28   | 5.94             | 5.94               | -0.31             | Ryan MWD                 |
| 7816.00  | 55.80       | 189.20      | 7710.57   | -341.38     | 13.74       | 340.25   | 7.27             | 5.62               | -5.62             | Ryan MWD                 |
| 7847.00  | 58.80       | 187.70      | 7727.32   | -367.19     | 9.91        | 366.21   | 10.50            | 9.68               | -4.84             | Ryan MWD                 |
| 7879.00  | 62.60       | 186.70      | 7742.98   | -394.87     | 6.42        | 394.04   | 12.18            | 11.87              | -3.12             | Ryan MWD                 |
| 7911.00  | 66.70       | 187.30      | 7756.67   | -423.56     | 2.89        | 422.87   | 12.92            | 12.81              | 1.87              | Ryan MWD                 |
| 7943.00  | 70.70       | 187.10      | 7768.29   | -453.14     | -0.84       | 452.60   | 12.51            | 12.50              | -0.62             | Ryan MWD                 |
| 7975.00  | 75.30       | 185.90      | 7777.65   | -483.53     | -4.30       | 483.13   | 14.82            | 14.37              | -3.75             | Ryan MWD                 |
| 8006.00  | 79.10       | 185.90      | 7784.52   | -513.60     | -7.41       | 513.31   | 12.26            | 12.26              | 0.00              | Ryan MWD                 |
| 8038.00  | 83.40       | 183.90      | 7789.38   | -545.10     | -10.11      | 544.91   | 14.79            | 13.44              | -6.25             | Ryan MWD                 |
| 8069.00  | 85.60       | 183.40      | 7792.35   | -575.89     | -12.07      | 575.77   | 7.28             | 7.10               | -1.61             | Ryan MWD                 |
| 8133.00  | 85.00       | 183.30      | 7797.60   | -639.57     | -15.80      | 639.55   | 0.95             | -0.94              | -0.16             | Ryan MWD                 |
| 8228.00  | 85.10       | 183.10      | 7805.79   | -734.07     | -21.08      | 734.19   | 0.23             | -0.11              | -0.21             | Ryan MWD                 |
| 8323.00  | 84.00       | 182.30      | 7814.82   | -828.53     | -25.54      | 828.76   | 1.43             | -1.16              | -0.84             | Ryan MWD                 |
| 8418.00  | 88.80       | 182.10      | 7820.78   | -923.24     | -29.18      | 923.54   | 5.06             | 5.05               | -0.21             | Ryan MWD                 |
| 8513.00  | 90.20       | 182.60      | 7821.61   | -1018.16    | -33.07      | 1018.53  | 1.56             | 1.47               | 0.53              | Ryan MWD                 |
| 8608.00  | 90.70       | 181.70      | 7820.86   | -1113.09    | -36.63      | 1113.52  | 1.08             | 0.53               | -0.95             | Ryan MWD                 |
| 8704.00  | 91.40       | 181.20      | 7819.10   | -1209.04    | -39.06      | 1209.47  | 0.90             | 0.73               | -0.52             | Ryan MWD                 |
| 8799.00  | 89.30       | 180.90      | 7818.52   | -1304.02    | -40.80      | 1304.41  | 2.23             | -2.21              | -0.32             | Ryan MWD                 |
| 8894.00  | 88.60       | 180.80      | 7820.27   | -1398.99    | -42.21      | 1399.33  | 0.74             | -0.74              | -0.11             | Ryan MWD                 |



# Ryan Directional Services Survey Report



|           |                                   |                            |                                         |       |          |       |   |
|-----------|-----------------------------------|----------------------------|-----------------------------------------|-------|----------|-------|---|
| Company:  | Chesapeake Operating, Inc.        | Date:                      | 1/27/2012                               | Time: | 10:02:36 | Page: | 3 |
| Field:    | Eddy Co, NM NAD 83                | Co-ordinate(NE) Reference: | Site: PLU Pierce Canyon 20-24-30 USA 1H |       |          |       |   |
| Site:     | PLU Pierce Canyon 20-24-30 USA 1H | Vertical (TVD) Reference:  | SITE 3297.0                             |       |          |       |   |
| Well:     | 20-24-30 USA 1H                   | Section (VS) Reference:    | Well (0.00N,0.00E 182.90Azi)            |       |          |       |   |
| Wellpath: | OH                                | Survey Calculation Method: | Minimum Curvature                       | Db:   | Sybase   |       |   |

## Survey

| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | +N/-S<br>ft | +E/-W<br>ft | VS<br>ft | DLS<br>deg/100ft | Build<br>deg/100ft | Turn<br>deg/100ft | Tool/Comment    |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|-----------------|
| 8990.00  | 88.30       | 180.40      | 7822.86   | -1494.95    | -43.22      | 1495.22  | 0.52             | -0.31              | -0.42             | Ryan MWD        |
| 9085.00  | 89.70       | 181.30      | 7824.52   | -1589.92    | -44.63      | 1590.14  | 1.75             | 1.47               | 0.95              | Ryan MWD        |
| 9180.00  | 88.90       | 182.20      | 7825.68   | -1684.87    | -47.53      | 1685.11  | 1.27             | -0.84              | 0.95              | Ryan MWD        |
| 9275.00  | 89.00       | 182.30      | 7827.42   | -1779.78    | -51.26      | 1780.09  | 0.15             | 0.11               | 0.11              | Ryan MWD        |
| 9371.00  | 89.20       | 182.10      | 7828.93   | -1875.70    | -54.94      | 1876.07  | 0.29             | 0.21               | -0.21             | Ryan MWD        |
| 9466.00  | 88.80       | 180.70      | 7830.59   | -1970.65    | -57.26      | 1971.02  | 1.53             | -0.42              | -1.47             | Ryan MWD        |
| 9561.00  | 91.10       | 181.60      | 7830.67   | -2065.62    | -59.17      | 2065.97  | 2.60             | 2.42               | 0.95              | Ryan MWD        |
| 9656.00  | 88.80       | 182.30      | 7830.75   | -2160.56    | -62.40      | 2160.95  | 2.53             | -2.42              | -0.74             | Ryan MWD        |
| 9751.00  | 89.50       | 184.60      | 7832.16   | -2255.37    | -68.12      | 2255.93  | 2.53             | 0.74               | 2.42              | Ryan MWD        |
| 9846.00  | 89.80       | 184.60      | 7832.74   | -2350.06    | -75.74      | 2350.89  | 0.32             | -0.32              | 0.00              | Ryan MWD        |
| 9942.00  | 90.30       | 185.20      | 7832.66   | -2445.71    | -83.94      | 2446.83  | 0.81             | 0.52               | 0.62              | Ryan MWD        |
| 10037.00 | 88.40       | 185.10      | 7833.74   | -2540.32    | -92.46      | 2541.74  | 2.00             | -2.00              | -0.11             | Ryan MWD        |
| 10132.00 | 88.00       | 184.80      | 7836.72   | -2634.92    | -100.66     | 2636.64  | 0.53             | -0.42              | -0.32             | Ryan MWD        |
| 10227.00 | 87.60       | 184.20      | 7840.37   | -2729.55    | -108.10     | 2731.53  | 0.76             | -0.42              | -0.63             | Ryan MWD        |
| 10323.00 | 88.10       | 183.20      | 7843.97   | -2825.28    | -114.29     | 2827.45  | 1.16             | 0.52               | -1.04             | Ryan MWD        |
| 10418.00 | 90.20       | 185.90      | 7845.38   | -2919.96    | -121.83     | 2922.39  | 3.60             | 2.21               | 2.84              | Ryan MWD        |
| 10513.00 | 88.40       | 184.30      | 7846.54   | -3014.57    | -130.27     | 3017.30  | 2.53             | -1.89              | -1.68             | Ryan MWD        |
| 10609.00 | 88.50       | 184.40      | 7849.14   | -3110.26    | -137.55     | 3113.24  | 0.15             | 0.10               | 0.10              | Ryan MWD        |
| 10704.00 | 87.50       | 182.70      | 7852.45   | -3205.01    | -143.43     | 3208.17  | 2.08             | -1.05              | -1.79             | Ryan MWD        |
| 10799.00 | 86.40       | 182.20      | 7857.51   | -3299.79    | -147.49     | 3303.03  | 1.27             | -1.16              | -0.53             | Ryan MWD        |
| 10894.00 | 85.80       | 183.80      | 7863.97   | -3394.44    | -152.45     | 3397.80  | 1.80             | -0.63              | 1.68              | Ryan MWD        |
| 10990.00 | 87.90       | 183.00      | 7869.24   | -3490.12    | -158.13     | 3493.65  | 2.34             | 2.19               | -0.83             | Ryan MWD        |
| 11085.00 | 89.60       | 183.30      | 7871.32   | -3584.95    | -163.35     | 3588.62  | 1.82             | 1.79               | 0.32              | Ryan MWD        |
| 11180.00 | 92.10       | 184.40      | 7869.91   | -3679.71    | -169.73     | 3683.59  | 2.87             | 2.63               | 1.16              | Ryan MWD        |
| 11275.00 | 90.60       | 185.00      | 7867.67   | -3774.37    | -177.51     | 3778.51  | 1.70             | -1.58              | 0.63              | Ryan MWD        |
| 11371.00 | 90.20       | 183.50      | 7867.00   | -3870.10    | -184.62     | 3874.48  | 1.62             | -0.42              | -1.56             | Ryan MWD        |
| 11466.00 | 89.70       | 182.10      | 7867.08   | -3964.98    | -189.26     | 3969.48  | 1.56             | -0.53              | -1.47             | Ryan MWD        |
| 11561.00 | 90.70       | 184.40      | 7866.75   | -4059.82    | -194.65     | 4064.47  | 2.64             | 1.05               | 2.42              | Ryan MWD        |
| 11657.00 | 90.50       | 182.80      | 7865.74   | -4155.62    | -200.68     | 4160.45  | 1.68             | -0.21              | -1.67             | Ryan MWD        |
| 11752.00 | 89.50       | 175.20      | 7865.74   | -4250.54    | -199.02     | 4255.16  | 8.07             | -1.05              | -8.00             | Ryan MWD        |
| 11847.00 | 90.20       | 180.00      | 7865.99   | -4345.42    | -195.04     | 4349.73  | 5.11             | 0.74               | 5.05              | Ryan MWD        |
| 11942.00 | 90.90       | 182.00      | 7865.08   | -4440.40    | -196.70     | 4444.66  | 2.23             | 0.74               | 2.11              | Ryan MWD        |
| 12037.00 | 90.80       | 184.20      | 7863.67   | -4535.24    | -201.84     | 4539.65  | 2.32             | -0.11              | 2.32              | Ryan MWD        |
| 12133.00 | 86.30       | 185.90      | 7866.10   | -4630.81    | -210.28     | 4635.52  | 5.01             | 4.69               | 1.77              | Ryan MWD        |
| 12228.00 | 84.90       | 185.50      | 7873.39   | -4725.06    | -219.69     | 4730.13  | 1.53             | -1.47              | -0.42             | Ryan MWD        |
| 12323.00 | 83.80       | 185.10      | 7882.74   | -4819.20    | -228.42     | 4824.58  | 1.23             | -1.16              | -0.42             | Ryan MWD        |
| 12418.00 | 82.50       | 184.80      | 7894.07   | -4913.16    | -236.56     | 4918.84  | 1.40             | -1.37              | -0.32             | Ryan MWD        |
| 12514.00 | 81.80       | 184.60      | 7907.18   | -5007.94    | -244.35     | 5013.89  | 0.76             | -0.73              | -0.21             | Ryan MWD        |
| 12562.00 | 81.30       | 184.90      | 7914.24   | -5055.26    | -248.28     | 5061.35  | 1.21             | -1.04              | 0.62              | Ryan MWD        |
| 12615.00 | 81.30       | 184.90      | 7922.25   | -5107.46    | -252.76     | 5113.70  | 0.00             | 0.00               | 0.00              | PROJECTED to TD |

## Annotation

| MD<br>ft | TVD<br>ft |                              |
|----------|-----------|------------------------------|
| 7705.00  | 7642.45   | Hardline Crossing @ 7705' MD |



# Ryan Directional Services COMPLETION REPORT



Company: Chesapeake Operating, Inc. Date: 1/27/2012 Time: 10:01:01 Page: 1  
Field: Eddy Co, NM NAD 83 Co-ordinate(NE) Reference: Site: PLU Pierce Canyon 20-24-30 USA 1H  
Site: PLU Pierce Canyon 20-24-30 USA 1H Vertical (TVD) Reference: SITE 3297.0  
Well: 20-24-30 USA 1H Section (VS) Reference: Well (0 00N,0.00E,182 90Azi)  
Wellpath: OH Survey Calculation Method: Minimum Curvature Db: Sybase

Field: Eddy Co, NM NAD 83

USA

Map System: US State Plane Coordinate System 1983

Geo Datum: GRS 1980

Sys Datum: Mean Sea Level

Map Zone:

New Mexico, Eastern Zone

Coordinate System:

Site Centre

Geomagnetic Model:

IGRF2010

Site: PLU Pierce Canyon 20-24-30 USA 1H

Eddy Co., NM

Site Position: Northing: 440480.80 ft Latitude: 32 12 36.775 N  
From: Map Easting: 675216.07 ft Longitude: 103 54 1.678 W  
Position Uncertainty: 0.00 ft North Reference: Grid  
Ground Level: 3272.00 ft Grid Convergence: 0.23 deg

Well: 20-24-30 USA 1H

Slot Name:

Well Position: +N/-S 0.00 ft Northing: 440480.80 ft Latitude: 32 12 36.775 N  
+E/-W 0.00 ft Easting: 675216.07 ft Longitude: 103 54 1.678 W  
Position Uncertainty: 0.00 ft

Wellpath: OH

Current Datum: SITE Height 3297.00 ft Drilled From: Surface  
Magnetic Data: 12/23/2011 Tie-on Depth: 0.00 ft  
Field Strength: 48545 nT Above System Datum: Mean Sea Level  
Vertical Section: Depth From (TVD) +N/-S Declination: 7.67 deg  
ft ft ft +E/-W Mag Dip Angle: 60.10 deg  
Direction deg  
0.00 0.00 0.00 182.90

## Survey

| MD<br>ft | Incl<br>deg | TVD<br>ft | VS<br>ft | Azim<br>deg | N/S<br>ft | E/W<br>ft | Clsr Dist.<br>ft | Clsr Azi.<br>deg | DLS<br>deg/100ft | Tool     |
|----------|-------------|-----------|----------|-------------|-----------|-----------|------------------|------------------|------------------|----------|
| 0.00     | 0.00        | 0.00      | 0.00     | 0.00        | 0.00      | 0.00      | 0.00             | 0.00             | 0.00             | TIE LINE |
| 200.00   | 1.13        | 199.99    | -1.87    | 21.29       | 1.84      | 0.72      | 1.97             | 21.29            | 0.56             | Gyro     |
| 400.00   | 2.46        | 399.88    | -7.85    | 19.59       | 7.72      | 2.87      | 8.24             | 20.40            | 0.67             | Gyro     |
| 600.00   | 2.85        | 599.67    | -16.89   | 11.13       | 16.64     | 5.27      | 17.46            | 17.57            | 0.28             | Gyro     |
| 800.00   | 2.60        | 799.44    | -26.32   | 8.64        | 26.00     | 6.91      | 26.91            | 14.88            | 0.14             | Gyro     |
| 1000.00  | 2.49        | 999.25    | -35.09   | 14.25       | 34.70     | 8.66      | 35.77            | 14.02            | 0.14             | Gyro     |
| 1200.00  | 3.04        | 1199.01   | -44.66   | 2.43        | 44.21     | 9.96      | 45.32            | 12.69            | 0.39             | Gyro     |
| 1400.00  | 3.21        | 1398.72   | -55.34   | 346.70      | 54.96     | 8.89      | 55.67            | 9.19             | 0.44             | Gyro     |
| 1600.00  | 3.34        | 1598.39   | -66.32   | 346.89      | 66.08     | 6.28      | 66.38            | 5.43             | 0.07             | Gyro     |
| 1800.00  | 2.66        | 1798.13   | -76.37   | 19.03       | 76.14     | 6.48      | 76.42            | 4.86             | 0.89             | Gyro     |
| 2000.00  | 2.78        | 1997.93   | -82.96   | 66.83       | 82.44     | 12.45     | 83.38            | 8.59             | 1.10             | Gyro     |
| 2200.00  | 2.94        | 2197.68   | -87.73   | 61.99       | 86.76     | 21.44     | 89.37            | 13.88            | 0.14             | Gyro     |
| 2400.00  | 1.74        | 2397.52   | -90.28   | 94.60       | 88.92     | 28.99     | 93.53            | 18.06            | 0.87             | Gyro     |
| 2600.00  | 1.45        | 2597.44   | -90.35   | 89.23       | 88.71     | 34.55     | 95.20            | 21.28            | 0.16             | Gyro     |
| 2800.00  | 0.56        | 2797.41   | -90.42   | 98.25       | 88.61     | 38.05     | 96.43            | 23.24            | 0.45             | Gyro     |
| 3000.00  | 2.21        | 2997.35   | -88.41   | 122.72      | 86.38     | 42.26     | 96.16            | 26.07            | 0.86             | Gyro     |
| 3200.00  | 3.35        | 3197.11   | -82.69   | 133.50      | 80.28     | 49.74     | 94.44            | 31.78            | 0.62             | Gyro     |
| 3400.00  | 4.83        | 3396.61   | -71.09   | 160.60      | 68.31     | 56.78     | 88.82            | 39.73            | 1.20             | Gyro     |
| 3575.00  | 2.86        | 3571.22   | -59.93   | 187.64      | 57.03     | 58.64     | 81.80            | 45.80            | 1.50             | Gyro     |
| 3731.00  | 2.30        | 3727.06   | -52.92   | 182.10      | 50.05     | 58.01     | 76.62            | 49.22            | 0.39             | Ryan MWD |
| 3826.00  | 2.40        | 3821.98   | -49.02   | 180.00      | 46.15     | 57.94     | 74.08            | 51.46            | 0.14             | Ryan MWD |
| 4016.00  | 2.50        | 4011.81   | -40.91   | 181.70      | 38.03     | 57.82     | 69.21            | 56.66            | 0.07             | Ryan MWD |
| 4206.00  | 2.50        | 4201.63   | -32.63   | 179.30      | 29.75     | 57.75     | 64.96            | 62.75            | 0.06             | Ryan MWD |
| 4396.00  | 2.40        | 4391.46   | -24.53   | 177.60      | 21.63     | 57.96     | 61.87            | 69.54            | 0.07             | Ryan MWD |
| 4587.00  | 2.00        | 4582.32   | -17.22   | 180.10      | 14.30     | 58.13     | 59.86            | 76.18            | 0.22             | Ryan MWD |
| 4778.00  | 2.00        | 4773.20   | -10.57   | 179.40      | 7.63      | 58.15     | 58.65            | 82.52            | 0.01             | Ryan MWD |
| 4968.00  | 1.90        | 4963.09   | -4.11    | 179.00      | 1.17      | 58.24     | 58.26            | 88.85            | 0.05             | Ryan MWD |
| 5158.00  | 1.80        | 5152.99   | 2.00     | 178.60      | -4.96     | 58.37     | 58.58            | 94.86            | 0.05             | Ryan MWD |



# Ryan Directional Services COMPLETION REPORT

**RYAN DIRECTIONAL  
SERVICES**  
A NABORS COMPANY

|                                         |                            |                                         |            |
|-----------------------------------------|----------------------------|-----------------------------------------|------------|
| Company: Chesapeake Operating, Inc.     | Date: 1/27/2012            | Time: 10:01:01                          | Page: 2    |
| Field: Eddy Co. NM NAD 83               | Co-ordinate(NE) Reference: | Site: PLU Pierce Canyon 20-24-30 USA 1H |            |
| Site: PLU Pierce Canyon 20-24-30 USA 1H | Vertical (TVD) Reference:  | SITE 3297.0                             |            |
| Well: 20-24-30 USA 1H                   | Section (VS) Reference:    | Well (0.00N,0.00E,182.90Azi)            |            |
| Wellpath: OH                            | Survey Calculation Method: | Minimum Curvature                       | Db: Sybase |

## Survey

| MD<br>ft | Incl<br>deg | TVD<br>ft | VS<br>ft | Azim<br>deg | N/S<br>ft | E/W<br>ft | Clsr Dist.<br>ft | Clsr Azi<br>deg | DLS<br>deg/100ft | Tool       |
|----------|-------------|-----------|----------|-------------|-----------|-----------|------------------|-----------------|------------------|------------|
| 5347.00  | 1.50        | 5341.91   | 7.43     | 179.40      | -10.40    | 58.47     | 59.39            | 100.09          | 0.16             | Ryan MWD   |
| 5537.00  | 1.50        | 5531.85   | 12.40    | 179.40      | -15.38    | 58.52     | 60.51            | 104.72          | 0.00             | Ryan MWD   |
| 5728.00  | 1.50        | 5722.78   | 17.37    | 175.80      | -20.37    | 58.73     | 62.16            | 109.13          | 0.05             | Ryan MWD   |
| 5918.00  | 1.70        | 5912.71   | 22.61    | 193.10      | -25.60    | 58.28     | 63.65            | 113.71          | 0.27             | Ryan MWD   |
| 6109.00  | 2.20        | 6103.60   | 28.93    | 198.90      | -31.82    | 56.45     | 64.80            | 119.41          | 0.28             | Ryan MWD   |
| 6299.00  | 1.90        | 6293.48   | 35.52    | 194.10      | -38.33    | 54.50     | 66.63            | 125.12          | 0.18             | Ryan MWD   |
| 6489.00  | 1.80        | 6483.38   | 41.56    | 191.80      | -44.30    | 53.12     | 69.17            | 129.83          | 0.07             | Ryan MWD   |
| 6680.00  | 1.70        | 6674.29   | 47.35    | 187.60      | -50.05    | 52.13     | 72.27            | 133.83          | 0.09             | Ryan MWD   |
| 6870.00  | 1.70        | 6864.20   | 52.97    | 183.10      | -55.66    | 51.61     | 75.90            | 137.16          | 0.07             | Ryan MWD   |
| 7061.00  | 1.80        | 7055.11   | 58.80    | 185.50      | -61.47    | 51.17     | 79.98            | 140.23          | 0.06             | Ryan MWD   |
| 7236.00  | 1.90        | 7230.02   | 64.45    | 183.80      | -67.10    | 50.71     | 84.11            | 142.92          | 0.07             | Ryan MWD   |
| 7275.00  | 1.90        | 7269.00   | 65.74    | 183.10      | -68.39    | 50.63     | 85.10            | 143.49          | 0.06             | Ryan MWD   |
| 7307.00  | 4.30        | 7300.95   | 67.47    | 183.90      | -70.12    | 50.52     | 86.43            | 144.23          | 7.50             | Ryan MWD   |
| 7339.00  | 8.60        | 7332.74   | 71.06    | 186.60      | -73.70    | 50.17     | 89.15            | 145.76          | 13.47            | Ryan MWD   |
| 7371.00  | 13.10       | 7364.16   | 77.07    | 188.10      | -77.67    | 49.38     | 93.73            | 148.21          | 14.09            | Ryan MWD   |
| 7403.00  | 17.60       | 7395.01   | 85.50    | 187.60      | -88.06    | 48.23     | 100.40           | 151.29          | 14.07            | Ryan MWD   |
| 7434.00  | 22.80       | 7424.10   | 96.18    | 186.30      | -98.68    | 46.95     | 109.28           | 154.56          | 16.84            | Ryan MWD   |
| 7466.00  | 26.90       | 7453.13   | 109.61   | 184.40      | -112.06   | 45.71     | 121.03           | 157.81          | 13.05            | Ryan MWD   |
| 7498.00  | 31.10       | 7481.11   | 125.12   | 182.20      | -127.55   | 44.84     | 135.20           | 160.63          | 13.54            | Ryan MWD   |
| 7530.00  | 34.80       | 7507.96   | 142.52   | 182.00      | -144.94   | 44.20     | 151.53           | 163.04          | 11.57            | Ryan MWD   |
| 7562.00  | 36.90       | 7533.89   | 161.25   | 182.10      | -163.67   | 43.53     | 169.36           | 165.11          | 6.57             | Ryan MWD   |
| 7593.00  | 38.60       | 7558.41   | 180.23   | 185.20      | -182.60   | 42.31     | 187.44           | 166.95          | 8.22             | Ryan MWD   |
| 7625.00  | 39.20       | 7583.32   | 200.25   | 189.20      | -202.53   | 39.79     | 206.40           | 168.88          | 8.07             | Ryan MWD   |
| 7657.00  | 40.90       | 7607.81   | 220.69   | 190.50      | -222.81   | 36.27     | 225.74           | 170.76          | 5.92             | Ryan MWD   |
| 7689.00  | 44.70       | 7631.29   | 242.22   | 191.20      | -244.16   | 32.17     | 246.27           | 172.49          | 11.97            | Ryan MWD   |
| 7705.00  | 46.76       | 7642.45   | 253.56   | 190.93      | -255.40   | 29.97     | 257.16           | 173.31          | 12.96            | Hardline C |
| 7720.00  | 48.70       | 7652.54   | 264.55   | 190.70      | -266.31   | 27.89     | 267.76           | 174.02          | 12.96            | Ryan MWD   |
| 7752.00  | 52.10       | 7672.94   | 288.97   | 191.10      | -290.51   | 23.22     | 291.44           | 175.43          | 10.67            | Ryan MWD   |
| 7784.00  | 54.00       | 7692.17   | 314.28   | 191.00      | -315.61   | 18.32     | 316.14           | 176.68          | 5.94             | Ryan MWD   |
| 7816.00  | 55.80       | 7710.57   | 340.25   | 189.20      | -341.38   | 13.74     | 341.66           | 177.70          | 7.27             | Ryan MWD   |
| 7847.00  | 58.80       | 7727.32   | 366.21   | 187.70      | -367.19   | 9.91      | 367.32           | 178.45          | 10.50            | Ryan MWD   |
| 7879.00  | 62.60       | 7742.98   | 394.04   | 186.70      | -394.87   | 6.42      | 394.92           | 179.07          | 12.18            | Ryan MWD   |
| 7911.00  | 66.70       | 7756.67   | 422.87   | 187.30      | -423.56   | 2.89      | 423.57           | 179.61          | 12.92            | Ryan MWD   |
| 7943.00  | 70.70       | 7768.29   | 452.60   | 187.10      | -453.14   | -0.84     | 453.14           | 180.11          | 12.51            | Ryan MWD   |
| 7975.00  | 75.30       | 7777.65   | 483.13   | 185.90      | -483.53   | -4.30     | 483.55           | 180.51          | 14.82            | Ryan MWD   |
| 8006.00  | 79.10       | 7784.52   | 513.31   | 185.90      | -513.60   | -7.41     | 513.65           | 180.83          | 12.26            | Ryan MWD   |
| 8038.00  | 83.40       | 7789.38   | 544.91   | 183.90      | -545.10   | -10.11    | 545.19           | 181.06          | 14.79            | Ryan MWD   |
| 8069.00  | 85.60       | 7792.35   | 575.77   | 183.40      | -575.89   | -12.07    | 576.02           | 181.20          | 7.28             | Ryan MWD   |
| 8133.00  | 85.00       | 7797.60   | 639.55   | 183.30      | -639.57   | -15.80    | 639.76           | 181.42          | 0.95             | Ryan MWD   |
| 8228.00  | 85.10       | 7805.79   | 734.19   | 183.10      | -734.07   | -21.08    | 734.37           | 181.65          | 0.23             | Ryan MWD   |
| 8323.00  | 84.00       | 7814.82   | 828.76   | 182.30      | -828.53   | -25.54    | 828.92           | 181.77          | 1.43             | Ryan MWD   |
| 8418.00  | 88.80       | 7820.78   | 923.54   | 182.10      | -923.24   | -29.18    | 923.71           | 181.81          | 5.06             | Ryan MWD   |
| 8513.00  | 90.20       | 7821.61   | 1018.53  | 182.60      | -1018.16  | -33.07    | 1018.70          | 181.86          | 1.56             | Ryan MWD   |
| 8608.00  | 90.70       | 7820.86   | 1113.52  | 181.70      | -1113.09  | -36.63    | 1113.69          | 181.89          | 1.08             | Ryan MWD   |
| 8704.00  | 91.40       | 7819.10   | 1209.47  | 181.20      | -1209.04  | -39.06    | 1209.67          | 181.85          | 0.90             | Ryan MWD   |
| 8799.00  | 89.30       | 7818.52   | 1304.41  | 180.90      | -1304.02  | -40.80    | 1304.65          | 181.79          | 2.23             | Ryan MWD   |
| 8894.00  | 88.60       | 7820.27   | 1399.33  | 180.80      | -1398.99  | -42.21    | 1399.63          | 181.73          | 0.74             | Ryan MWD   |
| 8990.00  | 88.30       | 7822.86   | 1495.22  | 180.40      | -1494.95  | -43.22    | 1495.57          | 181.66          | 0.52             | Ryan MWD   |
| 9085.00  | 89.70       | 7824.52   | 1590.14  | 181.30      | -1589.92  | -44.63    | 1590.55          | 181.61          | 1.75             | Ryan MWD   |
| 9180.00  | 88.90       | 7825.68   | 1685.11  | 182.20      | -1684.87  | -47.53    | 1685.54          | 181.62          | 1.27             | Ryan MWD   |
| 9275.00  | 89.00       | 7827.42   | 1780.09  | 182.30      | -1779.78  | -51.26    | 1780.52          | 181.65          | 0.15             | Ryan MWD   |
| 9371.00  | 89.20       | 7828.93   | 1876.07  | 182.10      | -1875.70  | -54.94    | 1876.50          | 181.68          | 0.29             | Ryan MWD   |



# Ryan Directional Services COMPLETION REPORT

**RYAN DIRECTIONAL  
SERVICES**  
A NABORS COMPANY

|                                                |                                   |                                                |                   |
|------------------------------------------------|-----------------------------------|------------------------------------------------|-------------------|
| <b>Company:</b> Chesapeake Operating, Inc.     | <b>Date:</b> 1/27/2012            | <b>Time:</b> 10:01:01                          | <b>Page:</b> 3    |
| <b>Field:</b> Eddy Co. NM NAD 83               | <b>Co-ordinate(NE) Reference:</b> | <b>Site:</b> PLU Pierce Canyon 20-24-30 USA 1H |                   |
| <b>Site:</b> PLU Pierce Canyon 20-24-30 USA 1H | <b>Vertical (TVD) Reference:</b>  | <b>SITE:</b> 3297.0                            |                   |
| <b>Well:</b> 20-24-30 USA 1H                   | <b>Section (VS) Reference:</b>    | <b>Well:</b> (0.00N,0.00E,182.90Azi)           |                   |
| <b>Wellpath:</b> OH                            | <b>Survey Calculation Method:</b> | <b>Minimum Curvature</b>                       | <b>Db:</b> Sybase |

## Survey

| MD<br>ft | Incl<br>deg | TVD<br>ft | VS<br>ft | Azim<br>deg | N/S<br>ft | E/W<br>ft | Clsr Dist.<br>ft | Clsr Azi<br>deg | DLS<br>deg/100ft | Tool      |
|----------|-------------|-----------|----------|-------------|-----------|-----------|------------------|-----------------|------------------|-----------|
| 9466.00  | 88.80       | 7830.59   | 1971.02  | 180.70      | -1970.65  | -57.26    | 1971.48          | 181.66          | 1.53             | Ryan MWD  |
| 9561.00  | 91.10       | 7830.67   | 2065.97  | 181.60      | -2065.62  | -59.17    | 2066.47          | 181.64          | 2.60             | Ryan MWD  |
| 9656.00  | 88.80       | 7830.75   | 2160.95  | 182.30      | -2160.56  | -62.40    | 2161.46          | 181.65          | 2.53             | Ryan MWD  |
| 9751.00  | 89.50       | 7832.16   | 2255.93  | 184.60      | -2255.37  | -68.12    | 2256.40          | 181.73          | 2.53             | Ryan MWD  |
| 9846.00  | 89.80       | 7832.74   | 2350.89  | 184.60      | -2350.06  | -75.74    | 2351.28          | 181.85          | 0.32             | Ryan MWD  |
| 9942.00  | 90.30       | 7832.66   | 2446.83  | 185.20      | -2445.71  | -83.94    | 2447.15          | 181.97          | 0.81             | Ryan MWD  |
| 10037.00 | 88.40       | 7833.74   | 2541.74  | 185.10      | -2540.32  | -92.46    | 2542.00          | 182.08          | 2.00             | Ryan MWD  |
| 10132.00 | 88.00       | 7836.72   | 2636.64  | 184.80      | -2634.92  | -100.66   | 2636.84          | 182.19          | 0.53             | Ryan MWD  |
| 10227.00 | 87.60       | 7840.37   | 2731.53  | 184.20      | -2729.55  | -108.10   | 2731.69          | 182.27          | 0.76             | Ryan MWD  |
| 10323.00 | 88.10       | 7843.97   | 2827.45  | 183.20      | -2825.28  | -114.29   | 2827.60          | 182.32          | 1.16             | Ryan MWD  |
| 10418.00 | 90.20       | 7845.38   | 2922.39  | 185.90      | -2919.96  | -121.83   | 2922.50          | 182.39          | 3.60             | Ryan MWD  |
| 10513.00 | 88.40       | 7846.54   | 3017.30  | 184.30      | -3014.57  | -130.27   | 3017.38          | 182.47          | 2.53             | Ryan MWD  |
| 10609.00 | 88.50       | 7849.14   | 3113.24  | 184.40      | -3110.26  | -137.55   | 3113.30          | 182.53          | 0.15             | Ryan MWD  |
| 10704.00 | 87.50       | 7852.45   | 3208.17  | 182.70      | -3205.01  | -143.43   | 3208.22          | 182.56          | 2.08             | Ryan MWD  |
| 10799.00 | 86.40       | 7857.51   | 3303.03  | 182.20      | -3299.79  | -147.49   | 3303.09          | 182.56          | 1.27             | Ryan MWD  |
| 10894.00 | 85.80       | 7863.97   | 3397.80  | 183.80      | -3394.44  | -152.45   | 3397.86          | 182.57          | 1.80             | Ryan MWD  |
| 10990.00 | 87.90       | 7869.24   | 3493.65  | 183.00      | -3490.12  | -158.13   | 3493.70          | 182.59          | 2.34             | Ryan MWD  |
| 11085.00 | 89.60       | 7871.32   | 3588.62  | 183.30      | -3584.95  | -163.35   | 3588.67          | 182.61          | 1.82             | Ryan MWD  |
| 11180.00 | 92.10       | 7869.91   | 3683.59  | 184.40      | -3679.71  | -169.73   | 3683.63          | 182.64          | 2.87             | Ryan MWD  |
| 11275.00 | 90.60       | 7867.67   | 3778.51  | 185.00      | -3774.37  | -177.51   | 3778.54          | 182.69          | 1.70             | Ryan MWD  |
| 11371.00 | 90.20       | 7867.00   | 3874.48  | 183.50      | -3870.10  | -184.62   | 3874.50          | 182.73          | 1.62             | Ryan MWD  |
| 11466.00 | 89.70       | 7867.08   | 3969.48  | 182.10      | -3964.98  | -189.26   | 3969.49          | 182.73          | 1.56             | Ryan MWD  |
| 11561.00 | 90.70       | 7866.75   | 4064.47  | 184.40      | -4059.82  | -194.65   | 4064.48          | 182.74          | 2.64             | Ryan MWD  |
| 11657.00 | 90.50       | 7865.74   | 4160.45  | 182.80      | -4155.62  | -200.68   | 4160.46          | 182.76          | 1.68             | Ryan MWD  |
| 11752.00 | 89.50       | 7865.74   | 4255.16  | 175.20      | -4250.54  | -199.02   | 4255.19          | 182.68          | 8.07             | Ryan MWD  |
| 11847.00 | 90.20       | 7865.99   | 4349.73  | 180.00      | -4345.42  | -195.04   | 4349.80          | 182.57          | 5.11             | Ryan MWD  |
| 11942.00 | 90.90       | 7865.08   | 4444.66  | 182.00      | -4440.40  | -196.70   | 4444.75          | 182.54          | 2.23             | Ryan MWD  |
| 12037.00 | 90.80       | 7863.67   | 4539.65  | 184.20      | -4535.24  | -201.84   | 4539.73          | 182.55          | 2.32             | Ryan MWD  |
| 12133.00 | 86.30       | 7866.10   | 4635.52  | 185.90      | -4630.81  | -210.28   | 4635.59          | 182.60          | 5.01             | Ryan MWD  |
| 12228.00 | 84.90       | 7873.39   | 4730.13  | 185.50      | -4725.06  | -219.69   | 4730.17          | 182.66          | 1.53             | Ryan MWD  |
| 12323.00 | 83.80       | 7882.74   | 4824.58  | 185.10      | -4819.20  | -228.42   | 4824.61          | 182.71          | 1.23             | Ryan MWD  |
| 12418.00 | 82.50       | 7894.07   | 4918.84  | 184.80      | -4913.16  | -236.56   | 4918.85          | 182.76          | 1.40             | Ryan MWD  |
| 12514.00 | 81.80       | 7907.18   | 5013.89  | 184.60      | -5007.94  | -244.35   | 5013.90          | 182.79          | 0.76             | Ryan MWD  |
| 12562.00 | 81.30       | 7914.24   | 5061.35  | 184.90      | -5055.26  | -248.28   | 5061.35          | 182.81          | 1.21             | Ryan MWD  |
| 12615.00 | 81.30       | 7922.25   | 5113.70  | 184.90      | -5107.46  | -252.76   | 5113.71          | 182.83          | 0.00             | PROJECTED |