

EXTRACTION OIL & GAS

Adams County

Sec 29-T1-R66W

PC 1S-66-2928-13NH

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

12 September, 2017



Project: Adams County
Site: Sec 29-T1-R66W
Well: PC 1S-66-2928-13NH
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL 1



Azimuths to True North
Magnetic North: 8.17°

Magnetic Field
Strength: 52115.9nT
Dip Angle: 66.47°
Date: 9/11/2017
Model: IGRF2015

WELL DETAILS: PC 1S-66-2928-13NH

| +N/-S | +E/-W | Northing | Easting | 5066.00 | Latitude | Longitude | Slot |
|-------|-------|------------|------------|-----------------|-------------------|-----------|------|
| 0.00 | 0.00 | 1219446.49 | 3195118.49 | 39° 56' 1.176 N | 104° 48' 15.120 W | | |

SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | Vsect | Target |
|-----|----------|-------|--------|---------|--------|----------|-------|--------|----------|--------------|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2 | 1200.00 | 0.00 | 0.00 | 1200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3 | 1933.40 | 14.67 | 280.34 | 1925.41 | 16.75 | -91.85 | 2.00 | 280.34 | -91.39 | |
| 4 | 6422.37 | 14.67 | 280.34 | 6268.09 | 220.70 | -1204.07 | 0.00 | 0.00 | -1204.07 | |
| 5 | 7155.77 | 0.00 | 0.00 | 6993.50 | 237.45 | -1301.94 | 2.00 | 180.00 | -1295.46 | |
| 6 | 7185.77 | 0.00 | 0.00 | 7023.50 | 237.45 | -1301.94 | 0.00 | 0.00 | -1295.46 | |
| 7 | 7935.82 | 90.00 | 90.08 | 7501.00 | 236.79 | -824.44 | 12.00 | 90.08 | -818.14 | PC 13NH LP |
| 8 | 17534.73 | 90.00 | 90.08 | 7501.00 | 223.76 | 8774.45 | 0.00 | 0.00 | 8777.31 | PC 13NH PBHL |

ANNOTATIONS

| MD | Inc | Azi | TVD | +N/-S | +E/-W | Vsect | Departure | Annotation |
|----------|-------|--------|---------|--------|----------|----------|-----------|-------------------------------|
| 1200.00 | 0.00 | 0.00 | 1200.00 | 0.00 | 0.00 | 0.00 | 0.00 | BUILD 2°/100' |
| 1933.40 | 14.67 | 280.34 | 1925.41 | 16.75 | -91.85 | -91.39 | 93.37 | HOLD 14.67° INC |
| 6422.37 | 14.67 | 280.34 | 6268.09 | 220.70 | -1210.09 | -1204.07 | 1230.05 | DROP 2°/100' |
| 7155.77 | 0.00 | 0.00 | 6993.50 | 237.45 | -1301.94 | -1295.46 | 1323.42 | HOLD VERTICAL |
| 7185.77 | 0.00 | 0.00 | 7023.50 | 237.45 | -1301.94 | -1295.46 | 1323.42 | KOP, BUILD 12°/100' |
| 7935.82 | 90.00 | 90.08 | 7501.00 | 236.79 | -824.44 | -818.14 | 1800.91 | LP @ 90° INC, 90.08° AZM HOLD |
| 17534.73 | 90.00 | 90.08 | 7501.00 | 223.76 | 8774.45 | 8777.31 | 11399.82 | TD at 17534.73' MD |

DESIGN TARGET DETAILS

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Shape |
|---------------------------|---------|--------|---------|------------|------------|-----------------|-------------------|-------|
| PC 13NH LP | 7501.00 | 236.79 | -824.44 | 1219676.81 | 3194292.21 | 39° 56' 3.516 N | 104° 48' 25.704 W | Point |
| - plan hits target center | | | | | | | | |
| PC 13NH PBHL | 7501.00 | 223.76 | 8774.45 | 1219739.09 | 3203890.92 | 39° 56' 3.372 N | 104° 46' 22.476 W | Point |
| - plan hits target center | | | | | | | | |

FORMATION TOP DETAILS

| TVDPath | MDPath | Formation |
|---------|---------|--------------|
| 4188.00 | 4272.21 | PARKMAN |
| 4892.00 | 4999.92 | SUSSEX |
| 5437.00 | 5563.28 | SHANNON |
| 7342.00 | 7534.44 | NIOBRARA |
| 7491.00 | 7837.93 | NIO B TARGET |

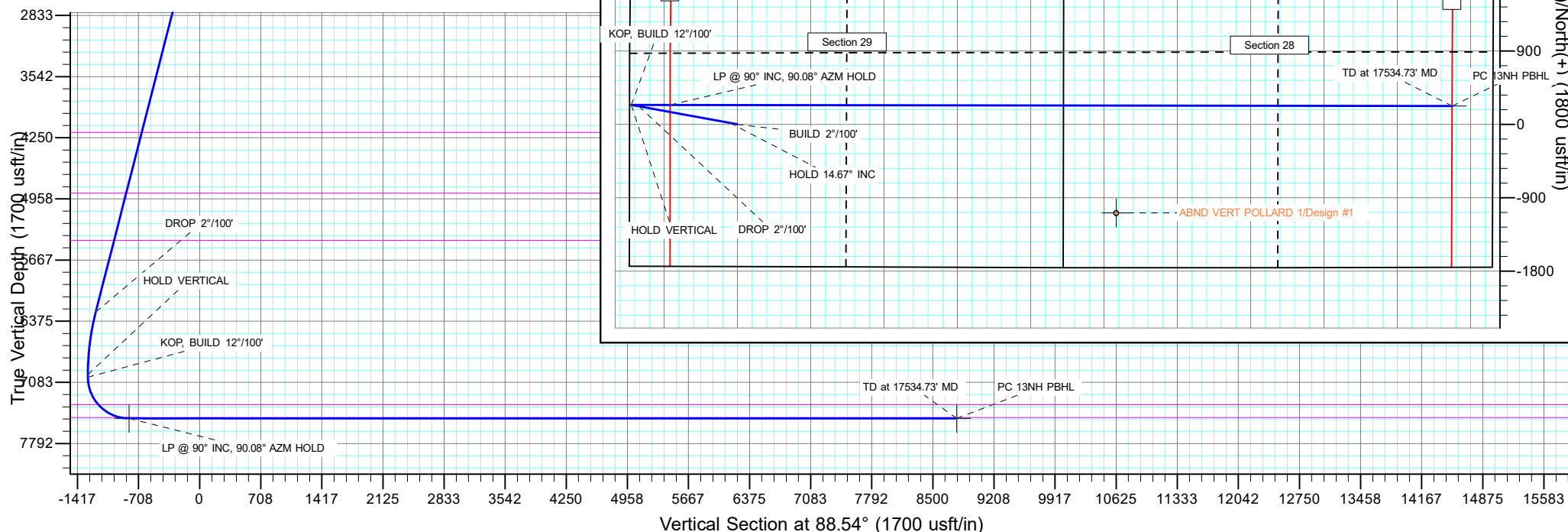
PROJECT DETAILS: Adams County

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

SHL:
1747' FSL, 1325' FWL
Sec 29-T1S-R66W

LP:
1980' FSL, 500' FWL
Sec 29-T1S-R66W

BHL:
1980' FSL, 500' FEL
Sec 28-T1S-R66W



Planning Report

| | | | |
|------------------|----------------------|-------------------------------------|-------------------------|
| Database: | EDT_32Bit_ODBC | Local Co-ordinate Reference: | Well PC 1S-66-2928-13NH |
| Company: | EXTRACTION OIL & GAS | TVD Reference: | KB 25' @ 5091.00usft |
| Project: | Adams County | MD Reference: | KB 25' @ 5091.00usft |
| Site: | Sec 29-T1-R66W | North Reference: | True |
| Well: | PC 1S-66-2928-13NH | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | ORIGINAL WELLBORE | | |
| Design: | PROPOSAL 1 | | |

| | | | |
|--------------------|---------------------------|----------------------|----------------|
| Project | Adams County | | |
| Map System: | US State Plane 1983 | System Datum: | Mean Sea Level |
| Geo Datum: | North American Datum 1983 | | |
| Map Zone: | Colorado Northern Zone | | |

| | | | | | |
|-----------------------|-----------|----------------|-------------------|-------------------|-------------------|
| Site | | Sec 29-T1-R66W | | | |
| Site Position: | | Northing: | 1,217,694.95 usft | Latitude: | 39° 55' 43.968 N |
| From: | Lat/Long | Easting: | 3,193,805.68 usft | Longitude: | 104° 48' 32.148 W |
| Position Uncertainty: | 0.00 usft | Slot Radius: | 13.200 in | Grid Convergence: | 0.45 ° |

| | | | | | | |
|----------------------|--------------------|---------------|---------------------|-------------------|---------------|-------------------|
| Well | PC 1S-66-2928-13NH | | | | | |
| Well Position | +N/-S | 1,741.25 usft | Northing: | 1,219,446.48 usft | Latitude: | 39° 56' 1.176 N |
| | +E/-W | 1,326.42 usft | Easting: | 3,195,118.49 usft | Longitude: | 104° 48' 15.120 W |
| Position Uncertainty | | 0.00 usft | Wellhead Elevation: | | Ground Level: | 5,066.00 usft |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | ORIGINAL WELLBORE | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2015 | 9/11/2017 | 8.17 | 66.47 | 52,115.86418891 |

| | | | | |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|
| Design | PROPOSAL 1 | | | |
| Audit Notes: | | | | |
| Version: | Phase: | PROTOTYPE | Tie On Depth: | 0.00 |
| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
| | 0.00 | 0.00 | 0.00 | 88.54 |

| | | | | |
|---------------------------------|------------------------|--------------------------|---------------------------|----------------|
| Plan Survey Tool Program | Date | 9/12/2017 | | |
| Depth From (usft) | Depth To (usft) | Survey (Wellbore) | Tool Name | Remarks |
| 1 | 0.00 | 17,534.73 | PROPOSAL 1 (ORIGINAL WELL | MWD OWSG |
| | | | OWSG MWD - Standard | |

| | | | | | | | | | | |
|------------------------------|------------------------|--------------------|------------------------------|---------------------|---------------------|------------------------------|-----------------------------|----------------------------|----------------|---------------|
| Plan Sections | | | | | | | | | | |
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,200.00 | 0.00 | 0.00 | 1,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,933.40 | 14.67 | 280.34 | 1,925.41 | 16.75 | -91.85 | 2.00 | 2.00 | 0.00 | 280.34 | |
| 6,422.37 | 14.67 | 280.34 | 6,268.09 | 220.70 | -1,210.09 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 7,155.77 | 0.00 | 0.00 | 6,993.50 | 237.45 | -1,301.94 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 7,185.77 | 0.00 | 0.00 | 7,023.50 | 237.45 | -1,301.94 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 7,935.82 | 90.00 | 90.08 | 7,501.00 | 236.79 | -824.44 | 12.00 | 12.00 | 12.01 | 90.08 | PC 13NH LP |
| 17,534.73 | 90.00 | 90.08 | 7,501.00 | 223.76 | 8,774.45 | 0.00 | 0.00 | 0.00 | 0.00 | PC 13NH PBHL |

Planning Report

| | | | |
|------------------|----------------------|-------------------------------------|-------------------------|
| Database: | EDT_32Bit_ODBC | Local Co-ordinate Reference: | Well PC 1S-66-2928-13NH |
| Company: | EXTRACTION OIL & GAS | TVD Reference: | KB 25' @ 5091.00usft |
| Project: | Adams County | MD Reference: | KB 25' @ 5091.00usft |
| Site: | Sec 29-T1-R66W | North Reference: | True |
| Well: | PC 1S-66-2928-13NH | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | ORIGINAL WELLBORE | | |
| Design: | PROPOSAL 1 | | |

| Planned Survey | | | | | | | | | |
|------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-----------------------|----------------------|---------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 400.00 | 0.00 | 0.00 | 400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 500.00 | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 600.00 | 0.00 | 0.00 | 600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 700.00 | 0.00 | 0.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 800.00 | 0.00 | 0.00 | 800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 900.00 | 0.00 | 0.00 | 900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,000.00 | 0.00 | 0.00 | 1,000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,100.00 | 0.00 | 0.00 | 1,100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1,200.00 | 0.00 | 0.00 | 1,200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BUILD 2°/100' | | | | | | | | | |
| 1,300.00 | 2.00 | 280.34 | 1,299.98 | 0.31 | -1.72 | -1.71 | 2.00 | 2.00 | 0.00 |
| 1,400.00 | 4.00 | 280.34 | 1,399.84 | 1.25 | -6.87 | -6.83 | 2.00 | 2.00 | 0.00 |
| 1,500.00 | 6.00 | 280.34 | 1,499.45 | 2.82 | -15.44 | -15.36 | 2.00 | 2.00 | 0.00 |
| 1,600.00 | 8.00 | 280.34 | 1,598.70 | 5.00 | -27.43 | -27.29 | 2.00 | 2.00 | 0.00 |
| 1,700.00 | 10.00 | 280.34 | 1,697.47 | 7.81 | -42.82 | -42.60 | 2.00 | 2.00 | 0.00 |
| 1,800.00 | 12.00 | 280.34 | 1,795.62 | 11.23 | -61.59 | -61.28 | 2.00 | 2.00 | 0.00 |
| 1,900.00 | 14.00 | 280.34 | 1,893.06 | 15.27 | -83.72 | -83.30 | 2.00 | 2.00 | 0.00 |
| 1,933.40 | 14.67 | 280.34 | 1,925.41 | 16.75 | -91.85 | -91.39 | 2.00 | 2.00 | 0.00 |
| HOLD 14.67° INC | | | | | | | | | |
| 2,000.00 | 14.67 | 280.34 | 1,989.84 | 19.78 | -108.44 | -107.90 | 0.00 | 0.00 | 0.00 |
| 2,100.00 | 14.67 | 280.34 | 2,086.59 | 24.32 | -133.35 | -132.69 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 14.67 | 280.34 | 2,183.33 | 28.86 | -158.26 | -157.48 | 0.00 | 0.00 | 0.00 |
| 2,300.00 | 14.67 | 280.34 | 2,280.07 | 33.41 | -183.17 | -182.26 | 0.00 | 0.00 | 0.00 |
| 2,400.00 | 14.67 | 280.34 | 2,376.81 | 37.95 | -208.08 | -207.05 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 14.67 | 280.34 | 2,473.55 | 42.49 | -233.00 | -231.84 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 14.67 | 280.34 | 2,570.29 | 47.04 | -257.91 | -256.62 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 14.67 | 280.34 | 2,667.03 | 51.58 | -282.82 | -281.41 | 0.00 | 0.00 | 0.00 |
| 2,800.00 | 14.67 | 280.34 | 2,763.77 | 56.12 | -307.73 | -306.20 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 14.67 | 280.34 | 2,860.51 | 60.67 | -332.64 | -330.98 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 14.67 | 280.34 | 2,957.25 | 65.21 | -357.55 | -355.77 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 14.67 | 280.34 | 3,054.00 | 69.75 | -382.46 | -380.56 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 14.67 | 280.34 | 3,150.74 | 74.30 | -407.37 | -405.34 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 14.67 | 280.34 | 3,247.48 | 78.84 | -432.28 | -430.13 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 14.67 | 280.34 | 3,344.22 | 83.38 | -457.19 | -454.92 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 14.67 | 280.34 | 3,440.96 | 87.93 | -482.10 | -479.71 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 14.67 | 280.34 | 3,537.70 | 92.47 | -507.01 | -504.49 | 0.00 | 0.00 | 0.00 |
| 3,700.00 | 14.67 | 280.34 | 3,634.44 | 97.01 | -531.93 | -529.28 | 0.00 | 0.00 | 0.00 |
| 3,800.00 | 14.67 | 280.34 | 3,731.18 | 101.56 | -556.84 | -554.07 | 0.00 | 0.00 | 0.00 |
| 3,900.00 | 14.67 | 280.34 | 3,827.92 | 106.10 | -581.75 | -578.85 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 14.67 | 280.34 | 3,924.66 | 110.64 | -606.66 | -603.64 | 0.00 | 0.00 | 0.00 |
| 4,100.00 | 14.67 | 280.34 | 4,021.40 | 115.19 | -631.57 | -628.43 | 0.00 | 0.00 | 0.00 |
| 4,200.00 | 14.67 | 280.34 | 4,118.15 | 119.73 | -656.48 | -653.21 | 0.00 | 0.00 | 0.00 |
| 4,272.21 | 14.67 | 280.34 | 4,188.00 | 123.01 | -674.47 | -671.11 | 0.00 | 0.00 | 0.00 |
| PARKMAN | | | | | | | | | |
| 4,300.00 | 14.67 | 280.34 | 4,214.89 | 124.27 | -681.39 | -678.00 | 0.00 | 0.00 | 0.00 |
| 4,400.00 | 14.67 | 280.34 | 4,311.63 | 128.82 | -706.30 | -702.79 | 0.00 | 0.00 | 0.00 |
| 4,500.00 | 14.67 | 280.34 | 4,408.37 | 133.36 | -731.21 | -727.57 | 0.00 | 0.00 | 0.00 |
| 4,600.00 | 14.67 | 280.34 | 4,505.11 | 137.90 | -756.12 | -752.36 | 0.00 | 0.00 | 0.00 |
| 4,700.00 | 14.67 | 280.34 | 4,601.85 | 142.45 | -781.03 | -777.15 | 0.00 | 0.00 | 0.00 |

Planning Report

| | | | |
|------------------|----------------------|-------------------------------------|-------------------------|
| Database: | EDT_32Bit_ODBC | Local Co-ordinate Reference: | Well PC 1S-66-2928-13NH |
| Company: | EXTRACTION OIL & GAS | TVD Reference: | KB 25' @ 5091.00usft |
| Project: | Adams County | MD Reference: | KB 25' @ 5091.00usft |
| Site: | Sec 29-T1-R66W | North Reference: | True |
| Well: | PC 1S-66-2928-13NH | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | ORIGINAL WELLBORE | | |
| Design: | PROPOSAL 1 | | |

| Planned Survey | | | | | | | | | |
|----------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-----------------------|----------------------|---------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
| 4,800.00 | 14.67 | 280.34 | 4,698.59 | 146.99 | -805.94 | -801.94 | 0.00 | 0.00 | 0.00 |
| 4,900.00 | 14.67 | 280.34 | 4,795.33 | 151.53 | -830.86 | -826.72 | 0.00 | 0.00 | 0.00 |
| 4,999.92 | 14.67 | 280.34 | 4,892.00 | 156.07 | -855.75 | -851.49 | 0.00 | 0.00 | 0.00 |
| SUSSEX | | | | | | | | | |
| 5,000.00 | 14.67 | 280.34 | 4,892.07 | 156.08 | -855.77 | -851.51 | 0.00 | 0.00 | 0.00 |
| 5,100.00 | 14.67 | 280.34 | 4,988.81 | 160.62 | -880.68 | -876.30 | 0.00 | 0.00 | 0.00 |
| 5,200.00 | 14.67 | 280.34 | 5,085.55 | 165.16 | -905.59 | -901.08 | 0.00 | 0.00 | 0.00 |
| 5,300.00 | 14.67 | 280.34 | 5,182.30 | 169.71 | -930.50 | -925.87 | 0.00 | 0.00 | 0.00 |
| 5,400.00 | 14.67 | 280.34 | 5,279.04 | 174.25 | -955.41 | -950.66 | 0.00 | 0.00 | 0.00 |
| 5,500.00 | 14.67 | 280.34 | 5,375.78 | 178.79 | -980.32 | -975.44 | 0.00 | 0.00 | 0.00 |
| 5,563.29 | 14.67 | 280.34 | 5,437.00 | 181.67 | -996.08 | -991.13 | 0.00 | 0.00 | 0.00 |
| SHANNON | | | | | | | | | |
| 5,600.00 | 14.67 | 280.34 | 5,472.52 | 183.34 | -1,005.23 | -1,000.23 | 0.00 | 0.00 | 0.00 |
| 5,700.00 | 14.67 | 280.34 | 5,569.26 | 187.88 | -1,030.14 | -1,025.02 | 0.00 | 0.00 | 0.00 |
| 5,800.00 | 14.67 | 280.34 | 5,666.00 | 192.42 | -1,055.05 | -1,049.80 | 0.00 | 0.00 | 0.00 |
| 5,900.00 | 14.67 | 280.34 | 5,762.74 | 196.97 | -1,079.96 | -1,074.59 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 14.67 | 280.34 | 5,859.48 | 201.51 | -1,104.87 | -1,099.38 | 0.00 | 0.00 | 0.00 |
| 6,100.00 | 14.67 | 280.34 | 5,956.22 | 206.05 | -1,129.79 | -1,124.17 | 0.00 | 0.00 | 0.00 |
| 6,200.00 | 14.67 | 280.34 | 6,052.96 | 210.60 | -1,154.70 | -1,148.95 | 0.00 | 0.00 | 0.00 |
| 6,300.00 | 14.67 | 280.34 | 6,149.71 | 215.14 | -1,179.61 | -1,173.74 | 0.00 | 0.00 | 0.00 |
| 6,400.00 | 14.67 | 280.34 | 6,246.45 | 219.68 | -1,204.52 | -1,198.53 | 0.00 | 0.00 | 0.00 |
| 6,422.37 | 14.67 | 280.34 | 6,268.09 | 220.70 | -1,210.09 | -1,204.07 | 0.00 | 0.00 | 0.00 |
| DROP 2°/100' | | | | | | | | | |
| 6,500.00 | 13.12 | 280.34 | 6,343.44 | 224.04 | -1,228.43 | -1,222.31 | 2.00 | -2.00 | 0.00 |
| 6,600.00 | 11.12 | 280.34 | 6,441.21 | 227.81 | -1,249.07 | -1,242.86 | 2.00 | -2.00 | 0.00 |
| 6,700.00 | 9.12 | 280.34 | 6,539.65 | 230.96 | -1,266.35 | -1,260.05 | 2.00 | -2.00 | 0.00 |
| 6,800.00 | 7.12 | 280.34 | 6,638.65 | 233.49 | -1,280.24 | -1,273.87 | 2.00 | -2.00 | 0.00 |
| 6,900.00 | 5.12 | 280.34 | 6,738.07 | 235.40 | -1,290.72 | -1,284.29 | 2.00 | -2.00 | 0.00 |
| 7,000.00 | 3.12 | 280.34 | 6,837.81 | 236.69 | -1,297.77 | -1,291.32 | 2.00 | -2.00 | 0.00 |
| 7,100.00 | 1.12 | 280.34 | 6,937.74 | 237.35 | -1,301.41 | -1,294.93 | 2.00 | -2.00 | 0.00 |
| 7,155.77 | 0.00 | 0.00 | 6,993.50 | 237.45 | -1,301.94 | -1,295.46 | 2.00 | -2.00 | 0.00 |
| HOLD VERTICAL | | | | | | | | | |
| 7,185.77 | 0.00 | 0.00 | 7,023.50 | 237.45 | -1,301.94 | -1,295.46 | 0.00 | 0.00 | 0.00 |
| KOP, BUILD 12°/100' | | | | | | | | | |
| 7,200.00 | 1.71 | 90.08 | 7,037.73 | 237.45 | -1,301.73 | -1,295.25 | 12.00 | 12.00 | 0.00 |
| 7,225.00 | 4.71 | 90.08 | 7,062.69 | 237.45 | -1,300.33 | -1,293.85 | 12.00 | 12.00 | 0.00 |
| 7,250.00 | 7.71 | 90.08 | 7,087.54 | 237.44 | -1,297.63 | -1,291.15 | 12.00 | 12.00 | 0.00 |
| 7,275.00 | 10.71 | 90.08 | 7,112.21 | 237.44 | -1,293.63 | -1,287.15 | 12.00 | 12.00 | 0.00 |
| 7,300.00 | 13.71 | 90.08 | 7,136.65 | 237.43 | -1,288.34 | -1,281.87 | 12.00 | 12.00 | 0.00 |
| 7,325.00 | 16.71 | 90.08 | 7,160.77 | 237.42 | -1,281.78 | -1,275.32 | 12.00 | 12.00 | 0.00 |
| 7,350.00 | 19.71 | 90.08 | 7,184.51 | 237.41 | -1,273.97 | -1,267.51 | 12.00 | 12.00 | 0.00 |
| 7,375.00 | 22.71 | 90.08 | 7,207.82 | 237.40 | -1,264.93 | -1,258.47 | 12.00 | 12.00 | 0.00 |
| 7,400.00 | 25.71 | 90.08 | 7,230.62 | 237.39 | -1,254.68 | -1,248.22 | 12.00 | 12.00 | 0.00 |
| 7,425.00 | 28.71 | 90.08 | 7,252.85 | 237.37 | -1,243.25 | -1,236.80 | 12.00 | 12.00 | 0.00 |
| 7,450.00 | 31.71 | 90.08 | 7,274.45 | 237.35 | -1,230.68 | -1,224.23 | 12.00 | 12.00 | 0.00 |
| 7,475.00 | 34.71 | 90.08 | 7,295.37 | 237.33 | -1,216.99 | -1,210.54 | 12.00 | 12.00 | 0.00 |
| 7,500.00 | 37.71 | 90.08 | 7,315.54 | 237.31 | -1,202.22 | -1,195.78 | 12.00 | 12.00 | 0.00 |
| 7,525.00 | 40.70 | 90.08 | 7,334.91 | 237.29 | -1,186.42 | -1,179.99 | 12.00 | 12.00 | 0.00 |
| 7,534.44 | 41.84 | 90.08 | 7,342.00 | 237.28 | -1,180.20 | -1,173.77 | 12.00 | 12.00 | 0.00 |
| NIOBRARA | | | | | | | | | |
| 7,550.00 | 43.70 | 90.08 | 7,353.42 | 237.27 | -1,169.63 | -1,163.20 | 12.00 | 12.00 | 0.00 |
| 7,575.00 | 46.70 | 90.08 | 7,371.04 | 237.24 | -1,151.89 | -1,145.47 | 12.00 | 12.00 | 0.00 |
| 7,600.00 | 49.70 | 90.08 | 7,387.70 | 237.22 | -1,133.26 | -1,126.84 | 12.00 | 12.00 | 0.00 |

Planning Report

| | | | |
|------------------|----------------------|-------------------------------------|-------------------------|
| Database: | EDT_32Bit_ODBC | Local Co-ordinate Reference: | Well PC 1S-66-2928-13NH |
| Company: | EXTRACTION OIL & GAS | TVD Reference: | KB 25' @ 5091.00usft |
| Project: | Adams County | MD Reference: | KB 25' @ 5091.00usft |
| Site: | Sec 29-T1-R66W | North Reference: | True |
| Well: | PC 1S-66-2928-13NH | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | ORIGINAL WELLBORE | | |
| Design: | PROPOSAL 1 | | |

| Planned Survey | | | | | | | | | | |
|-------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-----------------------|----------------------|---------------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | |
| 7,625.00 | 52.70 | 90.08 | 7,403.36 | 237.19 | -1,113.77 | -1,107.36 | 12.00 | 12.00 | 0.00 | |
| 7,650.00 | 55.70 | 90.08 | 7,417.98 | 237.16 | -1,093.50 | -1,087.10 | 12.00 | 12.00 | 0.00 | |
| 7,675.00 | 58.70 | 90.08 | 7,431.52 | 237.14 | -1,072.49 | -1,066.09 | 12.00 | 12.00 | 0.00 | |
| 7,700.00 | 61.70 | 90.08 | 7,443.94 | 237.11 | -1,050.79 | -1,044.41 | 12.00 | 12.00 | 0.00 | |
| 7,725.00 | 64.70 | 90.08 | 7,455.21 | 237.07 | -1,028.48 | -1,022.10 | 12.00 | 12.00 | 0.00 | |
| 7,750.00 | 67.70 | 90.08 | 7,465.30 | 237.04 | -1,005.61 | -999.24 | 12.00 | 12.00 | 0.00 | |
| 7,775.00 | 70.70 | 90.08 | 7,474.17 | 237.01 | -982.24 | -975.88 | 12.00 | 12.00 | 0.00 | |
| 7,800.00 | 73.70 | 90.08 | 7,481.81 | 236.98 | -958.44 | -952.09 | 12.00 | 12.00 | 0.00 | |
| 7,825.00 | 76.70 | 90.08 | 7,488.20 | 236.95 | -934.27 | -927.93 | 12.00 | 12.00 | 0.00 | |
| 7,837.93 | 78.25 | 90.08 | 7,491.00 | 236.93 | -921.65 | -915.31 | 12.00 | 12.00 | 0.00 | |
| NIO B TARGET | | | | | | | | | | |
| 7,850.00 | 79.70 | 90.08 | 7,493.31 | 236.91 | -909.80 | -903.47 | 12.00 | 12.00 | 0.00 | |
| 7,875.00 | 82.70 | 90.08 | 7,497.13 | 236.88 | -885.10 | -878.77 | 12.00 | 12.00 | 0.00 | |
| 7,900.00 | 85.70 | 90.08 | 7,499.66 | 236.84 | -860.23 | -853.91 | 12.00 | 12.00 | 0.00 | |
| 7,925.00 | 88.70 | 90.08 | 7,500.88 | 236.81 | -835.26 | -828.95 | 12.00 | 12.00 | 0.00 | |
| 7,935.82 | 90.00 | 90.08 | 7,501.00 | 236.79 | -824.44 | -818.14 | 12.00 | 12.00 | 0.00 | |
| LP @ 90° INC, 90.08° AZM HOLD | | | | | | | | | | |
| 8,000.00 | 90.00 | 90.08 | 7,501.00 | 236.71 | -760.26 | -753.98 | 0.00 | 0.00 | 0.00 | |
| 8,100.00 | 90.00 | 90.08 | 7,501.00 | 236.57 | -660.26 | -654.02 | 0.00 | 0.00 | 0.00 | |
| 8,200.00 | 90.00 | 90.08 | 7,501.00 | 236.43 | -560.26 | -554.05 | 0.00 | 0.00 | 0.00 | |
| 8,300.00 | 90.00 | 90.08 | 7,501.00 | 236.29 | -460.26 | -454.09 | 0.00 | 0.00 | 0.00 | |
| 8,400.00 | 90.00 | 90.08 | 7,501.00 | 236.16 | -360.26 | -354.13 | 0.00 | 0.00 | 0.00 | |
| 8,500.00 | 90.00 | 90.08 | 7,501.01 | 236.02 | -260.26 | -254.16 | 0.00 | 0.00 | 0.00 | |
| 8,600.00 | 90.00 | 90.08 | 7,501.01 | 235.88 | -160.26 | -154.20 | 0.00 | 0.00 | 0.00 | |
| 8,700.00 | 90.00 | 90.08 | 7,501.01 | 235.75 | -60.26 | -54.23 | 0.00 | 0.00 | 0.00 | |
| 8,800.00 | 90.00 | 90.08 | 7,501.01 | 235.61 | 39.74 | 45.73 | 0.00 | 0.00 | 0.00 | |
| 8,900.00 | 90.00 | 90.08 | 7,501.01 | 235.47 | 139.74 | 145.69 | 0.00 | 0.00 | 0.00 | |
| 9,000.00 | 90.00 | 90.08 | 7,501.01 | 235.33 | 239.74 | 245.66 | 0.00 | 0.00 | 0.00 | |
| 9,100.00 | 90.00 | 90.08 | 7,501.01 | 235.20 | 339.74 | 345.62 | 0.00 | 0.00 | 0.00 | |
| 9,200.00 | 90.00 | 90.08 | 7,501.01 | 235.06 | 439.74 | 445.58 | 0.00 | 0.00 | 0.00 | |
| 9,300.00 | 90.00 | 90.08 | 7,501.01 | 234.92 | 539.74 | 545.55 | 0.00 | 0.00 | 0.00 | |
| 9,400.00 | 90.00 | 90.08 | 7,501.01 | 234.78 | 639.74 | 645.51 | 0.00 | 0.00 | 0.00 | |
| 9,500.00 | 90.00 | 90.08 | 7,501.01 | 234.65 | 739.74 | 745.48 | 0.00 | 0.00 | 0.00 | |
| 9,600.00 | 90.00 | 90.08 | 7,501.02 | 234.51 | 839.73 | 845.44 | 0.00 | 0.00 | 0.00 | |
| 9,700.00 | 90.00 | 90.08 | 7,501.02 | 234.37 | 939.73 | 945.40 | 0.00 | 0.00 | 0.00 | |
| 9,800.00 | 90.00 | 90.08 | 7,501.02 | 234.24 | 1,039.73 | 1,045.37 | 0.00 | 0.00 | 0.00 | |
| 9,900.00 | 90.00 | 90.08 | 7,501.02 | 234.10 | 1,139.73 | 1,145.33 | 0.00 | 0.00 | 0.00 | |
| 10,000.00 | 90.00 | 90.08 | 7,501.02 | 233.96 | 1,239.73 | 1,245.30 | 0.00 | 0.00 | 0.00 | |
| 10,100.00 | 90.00 | 90.08 | 7,501.02 | 233.82 | 1,339.73 | 1,345.26 | 0.00 | 0.00 | 0.00 | |
| 10,200.00 | 90.00 | 90.08 | 7,501.02 | 233.69 | 1,439.73 | 1,445.22 | 0.00 | 0.00 | 0.00 | |
| 10,300.00 | 90.00 | 90.08 | 7,501.02 | 233.55 | 1,539.73 | 1,545.19 | 0.00 | 0.00 | 0.00 | |
| 10,400.00 | 90.00 | 90.08 | 7,501.02 | 233.41 | 1,639.73 | 1,645.15 | 0.00 | 0.00 | 0.00 | |
| 10,500.00 | 90.00 | 90.08 | 7,501.02 | 233.27 | 1,739.73 | 1,745.12 | 0.00 | 0.00 | 0.00 | |
| 10,600.00 | 90.00 | 90.08 | 7,501.03 | 233.14 | 1,839.73 | 1,845.08 | 0.00 | 0.00 | 0.00 | |
| 10,700.00 | 90.00 | 90.08 | 7,501.03 | 233.00 | 1,939.73 | 1,945.04 | 0.00 | 0.00 | 0.00 | |
| 10,800.00 | 90.00 | 90.08 | 7,501.03 | 232.86 | 2,039.73 | 2,045.01 | 0.00 | 0.00 | 0.00 | |
| 10,900.00 | 90.00 | 90.08 | 7,501.03 | 232.73 | 2,139.73 | 2,144.97 | 0.00 | 0.00 | 0.00 | |
| 11,000.00 | 90.00 | 90.08 | 7,501.03 | 232.59 | 2,239.73 | 2,244.94 | 0.00 | 0.00 | 0.00 | |
| 11,100.00 | 90.00 | 90.08 | 7,501.03 | 232.45 | 2,339.73 | 2,344.90 | 0.00 | 0.00 | 0.00 | |
| 11,200.00 | 90.00 | 90.08 | 7,501.03 | 232.31 | 2,439.73 | 2,444.86 | 0.00 | 0.00 | 0.00 | |
| 11,300.00 | 90.00 | 90.08 | 7,501.03 | 232.18 | 2,539.73 | 2,544.83 | 0.00 | 0.00 | 0.00 | |
| 11,400.00 | 90.00 | 90.08 | 7,501.03 | 232.04 | 2,639.73 | 2,644.79 | 0.00 | 0.00 | 0.00 | |
| 11,500.00 | 90.00 | 90.08 | 7,501.03 | 231.90 | 2,739.73 | 2,744.75 | 0.00 | 0.00 | 0.00 | |
| 11,600.00 | 90.00 | 90.08 | 7,501.03 | 231.76 | 2,839.73 | 2,844.72 | 0.00 | 0.00 | 0.00 | |

Planning Report

| | | | |
|------------------|----------------------|-------------------------------------|-------------------------|
| Database: | EDT_32Bit_ODBC | Local Co-ordinate Reference: | Well PC 1S-66-2928-13NH |
| Company: | EXTRACTION OIL & GAS | TVD Reference: | KB 25' @ 5091.00usft |
| Project: | Adams County | MD Reference: | KB 25' @ 5091.00usft |
| Site: | Sec 29-T1-R66W | North Reference: | True |
| Well: | PC 1S-66-2928-13NH | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | ORIGINAL WELLBORE | | |
| Design: | PROPOSAL 1 | | |

| Planned Survey | | | | | | | | | | |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-----------------------|----------------------|---------------------|--|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | |
| 11,700.00 | 90.00 | 90.08 | 7,501.04 | 231.63 | 2,939.73 | 2,944.68 | 0.00 | 0.00 | 0.00 | |
| 11,800.00 | 90.00 | 90.08 | 7,501.04 | 231.49 | 3,039.73 | 3,044.65 | 0.00 | 0.00 | 0.00 | |
| 11,900.00 | 90.00 | 90.08 | 7,501.04 | 231.35 | 3,139.73 | 3,144.61 | 0.00 | 0.00 | 0.00 | |
| 12,000.00 | 90.00 | 90.08 | 7,501.04 | 231.22 | 3,239.73 | 3,244.57 | 0.00 | 0.00 | 0.00 | |
| 12,100.00 | 90.00 | 90.08 | 7,501.04 | 231.08 | 3,339.73 | 3,344.54 | 0.00 | 0.00 | 0.00 | |
| 12,200.00 | 90.00 | 90.08 | 7,501.04 | 230.94 | 3,439.73 | 3,444.50 | 0.00 | 0.00 | 0.00 | |
| 12,300.00 | 90.00 | 90.08 | 7,501.04 | 230.80 | 3,539.73 | 3,544.47 | 0.00 | 0.00 | 0.00 | |
| 12,400.00 | 90.00 | 90.08 | 7,501.04 | 230.67 | 3,639.73 | 3,644.43 | 0.00 | 0.00 | 0.00 | |
| 12,500.00 | 90.00 | 90.08 | 7,501.04 | 230.53 | 3,739.73 | 3,744.39 | 0.00 | 0.00 | 0.00 | |
| 12,600.00 | 90.00 | 90.08 | 7,501.04 | 230.39 | 3,839.73 | 3,844.36 | 0.00 | 0.00 | 0.00 | |
| 12,700.00 | 90.00 | 90.08 | 7,501.04 | 230.26 | 3,939.73 | 3,944.32 | 0.00 | 0.00 | 0.00 | |
| 12,800.00 | 90.00 | 90.08 | 7,501.05 | 230.12 | 4,039.73 | 4,044.29 | 0.00 | 0.00 | 0.00 | |
| 12,900.00 | 90.00 | 90.08 | 7,501.05 | 229.98 | 4,139.73 | 4,144.25 | 0.00 | 0.00 | 0.00 | |
| 13,000.00 | 90.00 | 90.08 | 7,501.05 | 229.84 | 4,239.73 | 4,244.21 | 0.00 | 0.00 | 0.00 | |
| 13,100.00 | 90.00 | 90.08 | 7,501.05 | 229.71 | 4,339.73 | 4,344.18 | 0.00 | 0.00 | 0.00 | |
| 13,200.00 | 90.00 | 90.08 | 7,501.05 | 229.57 | 4,439.73 | 4,444.14 | 0.00 | 0.00 | 0.00 | |
| 13,300.00 | 90.00 | 90.08 | 7,501.05 | 229.43 | 4,539.73 | 4,544.10 | 0.00 | 0.00 | 0.00 | |
| 13,400.00 | 90.00 | 90.08 | 7,501.05 | 229.29 | 4,639.73 | 4,644.07 | 0.00 | 0.00 | 0.00 | |
| 13,500.00 | 90.00 | 90.08 | 7,501.05 | 229.16 | 4,739.73 | 4,744.03 | 0.00 | 0.00 | 0.00 | |
| 13,600.00 | 90.00 | 90.08 | 7,501.05 | 229.02 | 4,839.73 | 4,844.00 | 0.00 | 0.00 | 0.00 | |
| 13,700.00 | 90.00 | 90.08 | 7,501.05 | 228.88 | 4,939.73 | 4,943.96 | 0.00 | 0.00 | 0.00 | |
| 13,800.00 | 90.00 | 90.08 | 7,501.06 | 228.75 | 5,039.73 | 5,043.92 | 0.00 | 0.00 | 0.00 | |
| 13,900.00 | 90.00 | 90.08 | 7,501.06 | 228.61 | 5,139.73 | 5,143.89 | 0.00 | 0.00 | 0.00 | |
| 14,000.00 | 90.00 | 90.08 | 7,501.06 | 228.47 | 5,239.73 | 5,243.85 | 0.00 | 0.00 | 0.00 | |
| 14,100.00 | 90.00 | 90.08 | 7,501.06 | 228.33 | 5,339.73 | 5,343.82 | 0.00 | 0.00 | 0.00 | |
| 14,200.00 | 90.00 | 90.08 | 7,501.06 | 228.20 | 5,439.73 | 5,443.78 | 0.00 | 0.00 | 0.00 | |
| 14,300.00 | 90.00 | 90.08 | 7,501.06 | 228.06 | 5,539.73 | 5,543.74 | 0.00 | 0.00 | 0.00 | |
| 14,400.00 | 90.00 | 90.08 | 7,501.06 | 227.92 | 5,639.73 | 5,643.71 | 0.00 | 0.00 | 0.00 | |
| 14,500.00 | 90.00 | 90.08 | 7,501.06 | 227.78 | 5,739.73 | 5,743.67 | 0.00 | 0.00 | 0.00 | |
| 14,600.00 | 90.00 | 90.08 | 7,501.06 | 227.65 | 5,839.73 | 5,843.64 | 0.00 | 0.00 | 0.00 | |
| 14,700.00 | 90.00 | 90.08 | 7,501.06 | 227.51 | 5,939.73 | 5,943.60 | 0.00 | 0.00 | 0.00 | |
| 14,800.00 | 90.00 | 90.08 | 7,501.06 | 227.37 | 6,039.73 | 6,043.56 | 0.00 | 0.00 | 0.00 | |
| 14,900.00 | 90.00 | 90.08 | 7,501.07 | 227.24 | 6,139.73 | 6,143.53 | 0.00 | 0.00 | 0.00 | |
| 15,000.00 | 90.00 | 90.08 | 7,501.07 | 227.10 | 6,239.73 | 6,243.49 | 0.00 | 0.00 | 0.00 | |
| 15,100.00 | 90.00 | 90.08 | 7,501.07 | 226.96 | 6,339.73 | 6,343.46 | 0.00 | 0.00 | 0.00 | |
| 15,200.00 | 90.00 | 90.08 | 7,501.07 | 226.82 | 6,439.73 | 6,443.42 | 0.00 | 0.00 | 0.00 | |
| 15,300.00 | 90.00 | 90.08 | 7,501.07 | 226.69 | 6,539.73 | 6,543.38 | 0.00 | 0.00 | 0.00 | |
| 15,400.00 | 90.00 | 90.08 | 7,501.07 | 226.55 | 6,639.73 | 6,643.35 | 0.00 | 0.00 | 0.00 | |
| 15,500.00 | 90.00 | 90.08 | 7,501.07 | 226.41 | 6,739.73 | 6,743.31 | 0.00 | 0.00 | 0.00 | |
| 15,600.00 | 90.00 | 90.08 | 7,501.07 | 226.27 | 6,839.73 | 6,843.27 | 0.00 | 0.00 | 0.00 | |
| 15,700.00 | 90.00 | 90.08 | 7,501.07 | 226.14 | 6,939.73 | 6,943.24 | 0.00 | 0.00 | 0.00 | |
| 15,800.00 | 90.00 | 90.08 | 7,501.07 | 226.00 | 7,039.73 | 7,043.20 | 0.00 | 0.00 | 0.00 | |
| 15,900.00 | 90.00 | 90.08 | 7,501.07 | 225.86 | 7,139.73 | 7,143.17 | 0.00 | 0.00 | 0.00 | |
| 16,000.00 | 90.00 | 90.08 | 7,501.08 | 225.73 | 7,239.73 | 7,243.13 | 0.00 | 0.00 | 0.00 | |
| 16,100.00 | 90.00 | 90.08 | 7,501.08 | 225.59 | 7,339.73 | 7,343.09 | 0.00 | 0.00 | 0.00 | |
| 16,200.00 | 90.00 | 90.08 | 7,501.08 | 225.45 | 7,439.73 | 7,443.06 | 0.00 | 0.00 | 0.00 | |
| 16,300.00 | 90.00 | 90.08 | 7,501.08 | 225.31 | 7,539.73 | 7,543.02 | 0.00 | 0.00 | 0.00 | |
| 16,400.00 | 90.00 | 90.08 | 7,501.08 | 225.18 | 7,639.73 | 7,642.99 | 0.00 | 0.00 | 0.00 | |
| 16,500.00 | 90.00 | 90.08 | 7,501.08 | 225.04 | 7,739.73 | 7,742.95 | 0.00 | 0.00 | 0.00 | |
| 16,600.00 | 90.00 | 90.08 | 7,501.08 | 224.90 | 7,839.73 | 7,842.91 | 0.00 | 0.00 | 0.00 | |
| 16,700.00 | 90.00 | 90.08 | 7,501.08 | 224.76 | 7,939.73 | 7,942.88 | 0.00 | 0.00 | 0.00 | |
| 16,800.00 | 90.00 | 90.08 | 7,501.08 | 224.63 | 8,039.73 | 8,042.84 | 0.00 | 0.00 | 0.00 | |
| 16,900.00 | 90.00 | 90.08 | 7,501.08 | 224.49 | 8,139.73 | 8,142.81 | 0.00 | 0.00 | 0.00 | |
| 17,000.00 | 90.00 | 90.08 | 7,501.09 | 224.35 | 8,239.73 | 8,242.77 | 0.00 | 0.00 | 0.00 | |

Planning Report

| | | | |
|------------------|----------------------|-------------------------------------|-------------------------|
| Database: | EDT_32Bit_ODBC | Local Co-ordinate Reference: | Well PC 1S-66-2928-13NH |
| Company: | EXTRACTION OIL & GAS | TVD Reference: | KB 25' @ 5091.00usft |
| Project: | Adams County | MD Reference: | KB 25' @ 5091.00usft |
| Site: | Sec 29-T1-R66W | North Reference: | True |
| Well: | PC 1S-66-2928-13NH | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | ORIGINAL WELLBORE | | |
| Design: | PROPOSAL 1 | | |

Planned Survey

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-----------------------|----------------------|---------------------|
| 17,100.00 | 90.00 | 90.08 | 7,501.09 | 224.22 | 8,339.73 | 8,342.73 | 0.00 | 0.00 | 0.00 |
| 17,200.00 | 90.00 | 90.08 | 7,501.09 | 224.08 | 8,439.73 | 8,442.70 | 0.00 | 0.00 | 0.00 |
| 17,300.00 | 90.00 | 90.08 | 7,501.09 | 223.94 | 8,539.73 | 8,542.66 | 0.00 | 0.00 | 0.00 |
| 17,400.00 | 90.00 | 90.08 | 7,501.09 | 223.80 | 8,639.73 | 8,642.63 | 0.00 | 0.00 | 0.00 |
| 17,500.00 | 90.00 | 90.08 | 7,501.09 | 223.67 | 8,739.73 | 8,742.59 | 0.00 | 0.00 | 0.00 |
| 17,534.73 | 90.00 | 90.08 | 7,501.00 | 223.76 | 8,774.45 | 8,777.31 | 0.00 | 0.00 | 0.00 |
| TD at 17534.73' MD | | | | | | | | | |

Design Targets

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|--|---------------|--------------|------------|--------------|--------------|-----------------|----------------|-----------------|-------------------|
| PC 13NH PBHL - plan hits target center - Point | 0.00 | 0.00 | 7,501.00 | 223.76 | 8,774.45 | 1,219,739.08 | 3,203,890.92 | 39° 56' 3.372 N | 104° 46' 22.476 W |
| PC 13NH LP - plan hits target center - Point | 0.00 | 0.00 | 7,501.00 | 236.79 | -824.44 | 1,219,676.80 | 3,194,292.21 | 39° 56' 3.516 N | 104° 48' 25.704 W |

Formations

| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|-----------------------|-----------------------|--------------|-----------|---------|-------------------|
| 4,272.21 | 4,188.00 | PARKMAN | | | |
| 4,999.92 | 4,892.00 | SUSSEX | | | |
| 5,563.29 | 5,437.00 | SHANNON | | | |
| 7,534.44 | 7,342.00 | NIOBRARA | | | |
| 7,837.93 | 7,491.00 | NIO B TARGET | | | |

Plan Annotations

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | Comment |
|-----------------------|-----------------------|-------------------|--------------|-------------------------------|
| | | +N/-S (usft) | +E/-W (usft) | |
| 1,200.00 | 1,200.00 | 0.00 | 0.00 | BUILD 2°/100' |
| 1,933.40 | 1,925.41 | 16.75 | -91.85 | HOLD 14.67° INC |
| 6,422.37 | 6,268.09 | 220.70 | -1,210.09 | DROP 2°/100' |
| 7,155.77 | 6,993.50 | 237.45 | -1,301.94 | HOLD VERTICAL |
| 7,185.77 | 7,023.50 | 237.45 | -1,301.94 | KOP, BUILD 12°/100' |
| 7,935.82 | 7,501.00 | 236.79 | -824.44 | LP @ 90° INC, 90.08° AZM HOLD |
| 17,534.73 | 7,501.00 | 223.76 | 8,774.45 | TD at 17534.73' MD |