

MALLARD EXPLORATION

WELD COUNTY

SEC 32-T9N-R60W

CANVASBACK 32-33-6HC

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

25 August, 2020



Project: WELD COUNTY
Site: SEC 32-T9N-R60W
Well: CANVASBACK 32-33-6HC
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL 1



Azimuths to True North
Magnetic North: 7.62°

Magnetic Field
Strength: 52263.0nT
Dip Angle: 67.02°
Date: 8/24/2020
Model: IGRF2020

WELL DETAILS: CANVASBACK 32-33-6HC

| | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Slot |
|--|-------|-------|------------|------------|-------------|--------------|------|
| | 0.00 | 0.00 | 1503606.49 | 3381536.94 | 40.707664°N | 104.123779°W | |

SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dieg | TFace | Vsect | Target |
|-----|----------|-------|--------|---------|----------|---------|-------|--------|---------|--------|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2 | 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 3 | 1528.15 | 24.56 | 204.16 | 1490.88 | -236.54 | -106.12 | 2.00 | 204.16 | -63.70 | |
| 4 | 5064.42 | 24.56 | 204.16 | 4707.12 | -1577.76 | -707.82 | 0.00 | 0.00 | -424.92 | |
| 5 | 6292.57 | 0.00 | 0.00 | 5898.00 | -1814.30 | -813.94 | 2.00 | 180.00 | -488.62 | |
| 6 | 6392.57 | 0.00 | 0.00 | 5998.00 | -1814.30 | -813.94 | 0.00 | 0.00 | -488.62 | |
| 7 | 7292.66 | 90.00 | 89.42 | 6571.00 | -1808.50 | -240.94 | 10.00 | 89.42 | 74.77 | |
| 8 | 17279.73 | 90.00 | 89.42 | 6571.00 | -1707.48 | 9745.61 | 0.00 | 0.00 | 9894.06 | |

ANNOTATIONS

| MD | Inc | Azi | TVD | +N/-S | +E/-W | Vsect | Departure | Annotation |
|----------|-------|--------|---------|----------|---------|---------|-----------|----------------------------------|
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | Start Build 2.00 |
| 1528.15 | 24.56 | 204.16 | 1490.88 | -236.54 | -106.12 | -63.70 | 259.25 | Start 3536.26 hold at 1528.15 MD |
| 5064.42 | 24.56 | 204.16 | 4707.12 | -1577.76 | -707.82 | -424.92 | 1729.26 | Start Drop -2.00 |
| 6292.57 | 0.00 | 0.00 | 5898.00 | -1814.30 | -813.94 | -488.62 | 1988.51 | Start 100.00 hold at 6292.57 MD |
| 6392.57 | 0.00 | 0.00 | 5998.00 | -1814.30 | -813.94 | -488.62 | 1988.51 | Start DLS 10.00 TFO 89.42 |
| 7292.66 | 90.00 | 89.42 | 6571.00 | -1808.50 | -240.94 | 74.77 | 2561.54 | Start 9987.07 hold at 7292.66 MD |
| 17279.73 | 90.00 | 89.42 | 6571.00 | -1707.48 | 9745.61 | 9894.06 | 12548.60 | TD at 17279.73 |

DESIGN TARGET DETAILS

| Name | TVD | +N/-S | +E/-W | Northing | Easting | Latitude | Longitude | Shape |
|-------------------------------------|----------|---------|------------|------------|-------------|--------------|-----------|-------|
| CANVASBACK 32-33-6HC - LP 6571.00 | -1808.50 | -240.94 | 1501794.46 | 3381324.09 | 40.702700°N | 104.124648°W | Point | |
| - plan hits target center | | | | | | | | |
| CANVASBACK 32-33-6HC - PBHL 6571.00 | -1707.48 | 9745.61 | 1502050.46 | 3391307.87 | 40.702972°N | 104.088630°W | Point | |
| - plan hits target center | | | | | | | | |

FORMATION TOP DETAILS

| TVDPath | MDPath | Formation |
|---------|---------|-----------------------|
| 1571.00 | 1616.25 | Pierre Shale Top |
| 3458.00 | 3691.01 | Richard Sandstone |
| 3568.00 | 3811.95 | Parkman Sandstone |
| 4255.00 | 4567.31 | Sussex Sandstone |
| 4748.00 | 5109.20 | Shannon Sandstone |
| 5570.00 | 5963.85 | TeePee Buttes |
| 6206.00 | 6605.43 | Sharon Springs |
| 6243.00 | 6645.73 | Niobrara Top |
| 6385.00 | 6817.45 | Niobrara B2 Chalk Top |
| 6439.00 | 6895.82 | Niobrara C Chalk Top |
| 6571.00 | 7292.66 | Codell (Target) |

PROJECT DETAILS: WELD COUNTY

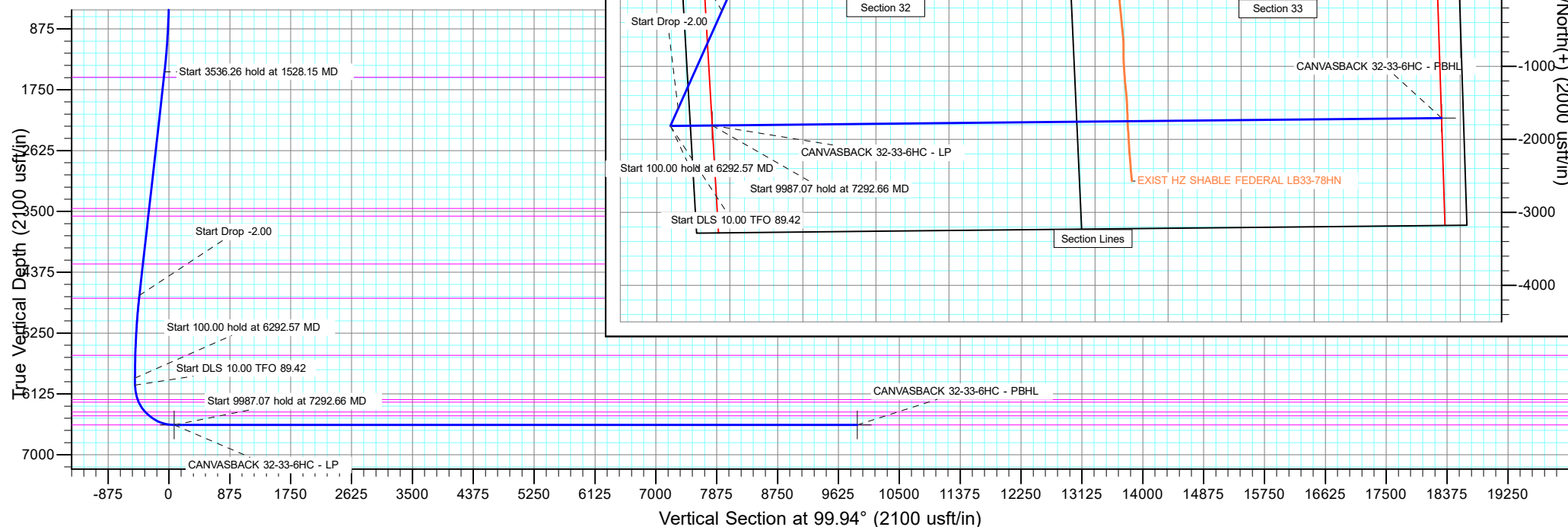
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone

System Datum: Mean Sea Level

SHL:
1898' FNL, 645' FWL
Sec 32-T9N-R60W

LP:
1472' FSL, 300' FWL
Sec 32-T9N-R60W

BHL:
1472' FSL, 300' FEL
Sec 33-T9N-R60W



Planning Report

| | | | |
|------------------|----------------------------|-------------------------------------|---------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well CANVASBACK 32-33-6HC |
| Company: | MALLARD EXPLORATION | TVD Reference: | KB 27' @ 4973.00usft |
| Project: | WELD COUNTY | MD Reference: | KB 27' @ 4973.00usft |
| Site: | SEC 32-T9N-R60W | North Reference: | True |
| Well: | CANVASBACK 32-33-6HC | Survey Calculation Method: | Minimum Curvature |
| Wellbore: | ORIGINAL WELLBORE | | |
| Design: | PROPOSAL 1 | | |

| | | | |
|--------------------|---------------------------|----------------------|----------------|
| Project | WELD 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 32-T9N-R60W | | | | |
| Site Position: | | Northing: | 1,505,473.79 | usft | Latitude: | 40.712822°N |
| From: | Lat/Long | Easting: | 3,380,754.08 | usft | Longitude: | 104.126498°W |
| Position Uncertainty: | | 0.00 | usft | Slot Radius: | 13.200 | in |

| Well | | CANVASBACK 32-33-6HC | | | | |
|----------------------|-------|----------------------|---------------------|-------------------|---------------|---------------|
| Well Position | +N/-S | 0.00 usft | Northing: | 1,503,606.49 usft | Latitude: | 40.707664°N |
| | +E/-W | 0.00 usft | Easting: | 3,381,536.93 usft | Longitude: | 104.123779°W |
| Position Uncertainty | | 0.00 usft | Wellhead Elevation: | usft | Ground Level: | 4,946.00 usft |
| Grid Convergence: | | 0.89 ° | | | | |

| | | | | | |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| Wellbore | ORIGINAL WELLBORE | | | | |
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
| | IGRF2020 | 8/24/2020 | 7.62 | 67.02 | 52,262.97917543 |

| | | | | | |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|--|
| 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 | 99.94 | |

| | | | | | |
|---------------------------------|------------------------|--------------------------|---------------------------|----------------|--|
| Plan Survey Tool Program | Date | 8/25/2020 | | | |
| Depth From (usft) | Depth To (usft) | Survey (Wellbore) | Tool Name | Remarks | |
| 1 | 0.00 | 17,279.39 | PROPOSAL 1 (ORIGINAL WELL | MWD | |
| | | | 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 | |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,528.15 | 24.56 | 204.16 | 1,490.88 | -236.54 | -106.12 | 2.00 | 2.00 | 0.00 | 204.16 | |
| 5,064.42 | 24.56 | 204.16 | 4,707.12 | -1,577.76 | -707.82 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 6,292.57 | 0.00 | 0.00 | 5,898.00 | -1,814.30 | -813.94 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 6,392.57 | 0.00 | 0.00 | 5,998.00 | -1,814.30 | -813.94 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 7,292.66 | 90.00 | 89.42 | 6,571.00 | -1,808.50 | -240.94 | 10.00 | 10.00 | 9.93 | 89.42 | CANVASBACK 32-33 |
| 17,279.73 | 90.00 | 89.42 | 6,571.00 | -1,707.48 | 9,745.61 | 0.00 | 0.00 | 0.00 | 0.00 | CANVASBACK 32-33 |

Planning Report

| | | | |
|------------------|----------------------------|-------------------------------------|---------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well CANVASBACK 32-33-6HC |
| Company: | MALLARD EXPLORATION | TVD Reference: | KB 27' @ 4973.00usft |
| Project: | WELD COUNTY | MD Reference: | KB 27' @ 4973.00usft |
| Site: | SEC 32-T9N-R60W | North Reference: | True |
| Well: | CANVASBACK 32-33-6HC | 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 |
| Start Build 2.00 | | | | | | | | | |
| 400.00 | 2.00 | 204.16 | 399.98 | -1.59 | -0.71 | -0.43 | 2.00 | 2.00 | 0.00 |
| 500.00 | 4.00 | 204.16 | 499.84 | -6.37 | -2.86 | -1.71 | 2.00 | 2.00 | 0.00 |
| 600.00 | 6.00 | 204.16 | 599.45 | -14.32 | -6.42 | -3.86 | 2.00 | 2.00 | 0.00 |
| 700.00 | 8.00 | 204.16 | 698.70 | -25.44 | -11.41 | -6.85 | 2.00 | 2.00 | 0.00 |
| 800.00 | 10.00 | 204.16 | 797.47 | -39.71 | -17.81 | -10.69 | 2.00 | 2.00 | 0.00 |
| 900.00 | 12.00 | 204.16 | 895.62 | -57.12 | -25.62 | -15.38 | 2.00 | 2.00 | 0.00 |
| 1,000.00 | 14.00 | 204.16 | 993.06 | -77.64 | -34.83 | -20.91 | 2.00 | 2.00 | 0.00 |
| 1,100.00 | 16.00 | 204.16 | 1,089.64 | -101.25 | -45.43 | -27.27 | 2.00 | 2.00 | 0.00 |
| 1,200.00 | 18.00 | 204.16 | 1,185.27 | -127.93 | -57.39 | -34.45 | 2.00 | 2.00 | 0.00 |
| 1,300.00 | 20.00 | 204.16 | 1,279.82 | -157.63 | -70.72 | -42.45 | 2.00 | 2.00 | 0.00 |
| 1,400.00 | 22.00 | 204.16 | 1,373.17 | -190.33 | -85.39 | -51.26 | 2.00 | 2.00 | 0.00 |
| 1,500.00 | 24.00 | 204.16 | 1,465.21 | -225.98 | -101.38 | -60.86 | 2.00 | 2.00 | 0.00 |
| 1,528.15 | 24.56 | 204.16 | 1,490.88 | -236.54 | -106.12 | -63.70 | 2.00 | 2.00 | 0.00 |
| Start 3536.26 hold at 1528.15 MD | | | | | | | | | |
| 1,600.00 | 24.56 | 204.16 | 1,556.22 | -263.79 | -118.34 | -71.04 | 0.00 | 0.00 | 0.00 |
| 1,616.25 | 24.56 | 204.16 | 1,571.00 | -269.95 | -121.11 | -72.70 | 0.00 | 0.00 | 0.00 |
| Pierre Shale Top | | | | | | | | | |
| 1,700.00 | 24.56 | 204.16 | 1,647.17 | -301.72 | -135.36 | -81.26 | 0.00 | 0.00 | 0.00 |
| 1,800.00 | 24.56 | 204.16 | 1,738.12 | -339.64 | -152.37 | -91.47 | 0.00 | 0.00 | 0.00 |
| 1,900.00 | 24.56 | 204.16 | 1,829.07 | -377.57 | -169.39 | -101.69 | 0.00 | 0.00 | 0.00 |
| 2,000.00 | 24.56 | 204.16 | 1,920.02 | -415.50 | -186.40 | -111.90 | 0.00 | 0.00 | 0.00 |
| 2,100.00 | 24.56 | 204.16 | 2,010.97 | -453.43 | -203.42 | -122.12 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 24.56 | 204.16 | 2,101.92 | -491.35 | -220.43 | -132.33 | 0.00 | 0.00 | 0.00 |
| 2,300.00 | 24.56 | 204.16 | 2,192.87 | -529.28 | -237.45 | -142.55 | 0.00 | 0.00 | 0.00 |
| 2,400.00 | 24.56 | 204.16 | 2,283.83 | -567.21 | -254.46 | -152.76 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 24.56 | 204.16 | 2,374.78 | -605.14 | -271.48 | -162.97 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 24.56 | 204.16 | 2,465.73 | -643.07 | -288.50 | -173.19 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 24.56 | 204.16 | 2,556.68 | -680.99 | -305.51 | -183.40 | 0.00 | 0.00 | 0.00 |
| 2,800.00 | 24.56 | 204.16 | 2,647.63 | -718.92 | -322.53 | -193.62 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 24.56 | 204.16 | 2,738.58 | -756.85 | -339.54 | -203.83 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 24.56 | 204.16 | 2,829.53 | -794.78 | -356.56 | -214.05 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 24.56 | 204.16 | 2,920.48 | -832.70 | -373.57 | -224.26 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 24.56 | 204.16 | 3,011.43 | -870.63 | -390.59 | -234.48 | 0.00 | 0.00 | 0.00 |
| 3,300.00 | 24.56 | 204.16 | 3,102.38 | -908.56 | -407.60 | -244.69 | 0.00 | 0.00 | 0.00 |
| 3,400.00 | 24.56 | 204.16 | 3,193.33 | -946.49 | -424.62 | -254.91 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 24.56 | 204.16 | 3,284.28 | -984.41 | -441.63 | -265.12 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 24.56 | 204.16 | 3,375.23 | -1,022.34 | -458.65 | -275.33 | 0.00 | 0.00 | 0.00 |
| 3,691.01 | 24.56 | 204.16 | 3,458.00 | -1,056.86 | -474.13 | -284.63 | 0.00 | 0.00 | 0.00 |
| Richard Sandstone | | | | | | | | | |
| 3,700.00 | 24.56 | 204.16 | 3,466.18 | -1,060.27 | -475.66 | -285.55 | 0.00 | 0.00 | 0.00 |
| 3,800.00 | 24.56 | 204.16 | 3,557.13 | -1,098.20 | -492.68 | -295.76 | 0.00 | 0.00 | 0.00 |
| 3,811.95 | 24.56 | 204.16 | 3,568.00 | -1,102.73 | -494.71 | -296.98 | 0.00 | 0.00 | 0.00 |
| Parkman Sandstone | | | | | | | | | |
| 3,900.00 | 24.56 | 204.16 | 3,648.08 | -1,136.12 | -509.69 | -305.98 | 0.00 | 0.00 | 0.00 |
| 4,000.00 | 24.56 | 204.16 | 3,739.03 | -1,174.05 | -526.71 | -316.19 | 0.00 | 0.00 | 0.00 |
| 4,100.00 | 24.56 | 204.16 | 3,829.98 | -1,211.98 | -543.72 | -326.41 | 0.00 | 0.00 | 0.00 |
| 4,200.00 | 24.56 | 204.16 | 3,920.93 | -1,249.91 | -560.74 | -336.62 | 0.00 | 0.00 | 0.00 |
| 4,300.00 | 24.56 | 204.16 | 4,011.88 | -1,287.84 | -577.75 | -346.84 | 0.00 | 0.00 | 0.00 |

Planning Report

| | | | |
|------------------|----------------------------|-------------------------------------|---------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well CANVASBACK 32-33-6HC |
| Company: | MALLARD EXPLORATION | TVD Reference: | KB 27' @ 4973.00usft |
| Project: | WELD COUNTY | MD Reference: | KB 27' @ 4973.00usft |
| Site: | SEC 32-T9N-R60W | North Reference: | True |
| Well: | CANVASBACK 32-33-6HC | 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) | |
| 4,400.00 | 24.56 | 204.16 | 4,102.83 | -1,325.76 | -594.77 | -357.05 | 0.00 | 0.00 | 0.00 | |
| 4,500.00 | 24.56 | 204.16 | 4,193.78 | -1,363.69 | -611.79 | -367.27 | 0.00 | 0.00 | 0.00 | |
| 4,567.31 | 24.56 | 204.16 | 4,255.00 | -1,389.22 | -623.24 | -374.14 | 0.00 | 0.00 | 0.00 | |
| Sussex Sandstone | | | | | | | | | | |
| 4,600.00 | 24.56 | 204.16 | 4,284.73 | -1,401.62 | -628.80 | -377.48 | 0.00 | 0.00 | 0.00 | |
| 4,700.00 | 24.56 | 204.16 | 4,375.68 | -1,439.55 | -645.82 | -387.70 | 0.00 | 0.00 | 0.00 | |
| 4,800.00 | 24.56 | 204.16 | 4,466.63 | -1,477.47 | -662.83 | -397.91 | 0.00 | 0.00 | 0.00 | |
| 4,900.00 | 24.56 | 204.16 | 4,557.58 | -1,515.40 | -679.85 | -408.12 | 0.00 | 0.00 | 0.00 | |
| 5,000.00 | 24.56 | 204.16 | 4,648.54 | -1,553.33 | -696.86 | -418.34 | 0.00 | 0.00 | 0.00 | |
| 5,064.42 | 24.56 | 204.16 | 4,707.12 | -1,577.76 | -707.82 | -424.92 | 0.00 | 0.00 | 0.00 | |
| Start Drop -2.00 | | | | | | | | | | |
| 5,100.00 | 23.85 | 204.16 | 4,739.58 | -1,591.07 | -713.79 | -428.50 | 2.00 | -2.00 | 0.00 | |
| 5,109.20 | 23.67 | 204.16 | 4,748.00 | -1,594.46 | -715.31 | -429.42 | 2.00 | -2.00 | 0.00 | |
| Shannon Sandstone | | | | | | | | | | |
| 5,200.00 | 21.85 | 204.16 | 4,831.72 | -1,626.50 | -729.69 | -438.05 | 2.00 | -2.00 | 0.00 | |
| 5,300.00 | 19.85 | 204.16 | 4,925.17 | -1,658.98 | -744.26 | -446.79 | 2.00 | -2.00 | 0.00 | |
| 5,400.00 | 17.85 | 204.16 | 5,019.80 | -1,688.46 | -757.48 | -454.73 | 2.00 | -2.00 | 0.00 | |
| 5,500.00 | 15.85 | 204.16 | 5,115.50 | -1,714.91 | -769.35 | -461.85 | 2.00 | -2.00 | 0.00 | |
| 5,600.00 | 13.85 | 204.16 | 5,212.16 | -1,738.29 | -779.84 | -468.15 | 2.00 | -2.00 | 0.00 | |
| 5,700.00 | 11.85 | 204.16 | 5,309.65 | -1,758.58 | -788.94 | -473.62 | 2.00 | -2.00 | 0.00 | |
| 5,800.00 | 9.85 | 204.16 | 5,407.85 | -1,775.76 | -796.65 | -478.24 | 2.00 | -2.00 | 0.00 | |
| 5,900.00 | 7.85 | 204.16 | 5,506.66 | -1,789.80 | -802.95 | -482.02 | 2.00 | -2.00 | 0.00 | |
| 5,963.85 | 6.57 | 204.16 | 5,570.00 | -1,797.11 | -806.23 | -483.99 | 2.00 | -2.00 | 0.00 | |
| TeePee Buttes | | | | | | | | | | |
| 6,000.00 | 5.85 | 204.16 | 5,605.94 | -1,800.68 | -807.83 | -484.96 | 2.00 | -2.00 | 0.00 | |
| 6,100.00 | 3.85 | 204.16 | 5,705.57 | -1,808.40 | -811.29 | -487.03 | 2.00 | -2.00 | 0.00 | |
| 6,200.00 | 1.85 | 204.16 | 5,805.45 | -1,812.94 | -813.33 | -488.26 | 2.00 | -2.00 | 0.00 | |
| 6,292.57 | 0.00 | 0.00 | 5,898.00 | -1,814.30 | -813.94 | -488.62 | 2.00 | -2.00 | 0.00 | |
| Start 100.00 hold at 6292.57 MD | | | | | | | | | | |
| 6,300.00 | 0.00 | 0.00 | 5,905.43 | -1,814.30 | -813.94 | -488.62 | 0.00 | 0.00 | 0.00 | |
| 6,392.57 | 0.00 | 0.00 | 5,998.00 | -1,814.30 | -813.94 | -488.62 | 0.00 | 0.00 | 0.00 | |
| Start DLS 10.00 TFO 89.42 | | | | | | | | | | |
| 6,400.00 | 0.74 | 89.42 | 6,005.43 | -1,814.30 | -813.89 | -488.58 | 10.00 | 10.00 | 0.00 | |
| 6,450.00 | 5.74 | 89.42 | 6,055.33 | -1,814.27 | -811.06 | -485.80 | 10.00 | 10.00 | 0.00 | |
| 6,500.00 | 10.74 | 89.42 | 6,104.80 | -1,814.20 | -803.90 | -478.75 | 10.00 | 10.00 | 0.00 | |
| 6,550.00 | 15.74 | 89.42 | 6,153.46 | -1,814.08 | -792.45 | -467.49 | 10.00 | 10.00 | 0.00 | |
| 6,600.00 | 20.74 | 89.42 | 6,200.93 | -1,813.92 | -776.80 | -452.11 | 10.00 | 10.00 | 0.00 | |
| 6,605.43 | 21.28 | 89.42 | 6,206.00 | -1,813.90 | -774.86 | -450.19 | 10.00 | 10.00 | 0.00 | |
| Sharon Springs | | | | | | | | | | |
| 6,645.73 | 25.31 | 89.42 | 6,243.00 | -1,813.74 | -758.92 | -434.53 | 10.00 | 10.00 | 0.00 | |
| Niobrara Top | | | | | | | | | | |
| 6,650.00 | 25.74 | 89.42 | 6,246.86 | -1,813.72 | -757.08 | -432.72 | 10.00 | 10.00 | 0.00 | |
| 6,700.00 | 30.74 | 89.42 | 6,290.89 | -1,813.49 | -733.43 | -409.46 | 10.00 | 10.00 | 0.00 | |
| 6,750.00 | 35.74 | 89.42 | 6,332.70 | -1,813.21 | -706.03 | -382.52 | 10.00 | 10.00 | 0.00 | |
| 6,800.00 | 40.74 | 89.42 | 6,371.96 | -1,812.90 | -675.10 | -352.11 | 10.00 | 10.00 | 0.00 | |
| 6,817.45 | 42.48 | 89.42 | 6,385.00 | -1,812.78 | -663.51 | -340.71 | 10.00 | 10.00 | 0.00 | |
| Niobrara B2 Chalk Top | | | | | | | | | | |
| 6,850.00 | 45.74 | 89.42 | 6,408.37 | -1,812.55 | -640.86 | -318.44 | 10.00 | 10.00 | 0.00 | |
| 6,895.82 | 50.32 | 89.42 | 6,439.00 | -1,812.20 | -606.80 | -284.96 | 10.00 | 10.00 | 0.00 | |
| Niobrara C Chalk Top | | | | | | | | | | |
| 6,900.00 | 50.74 | 89.42 | 6,441.66 | -1,812.17 | -603.57 | -281.78 | 10.00 | 10.00 | 0.00 | |
| 6,950.00 | 55.74 | 89.42 | 6,471.57 | -1,811.77 | -563.53 | -242.41 | 10.00 | 10.00 | 0.00 | |

Planning Report

| | | | |
|------------------|----------------------------|-------------------------------------|---------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well CANVASBACK 32-33-6HC |
| Company: | MALLARD EXPLORATION | TVD Reference: | KB 27' @ 4973.00usft |
| Project: | WELD COUNTY | MD Reference: | KB 27' @ 4973.00usft |
| Site: | SEC 32-T9N-R60W | North Reference: | True |
| Well: | CANVASBACK 32-33-6HC | 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) | |
| 7,000.00 | 60.74 | 89.42 | 6,497.88 | -1,811.34 | -521.04 | -200.63 | 10.00 | 10.00 | 0.00 | |
| 7,050.00 | 65.74 | 89.42 | 6,520.39 | -1,810.89 | -476.41 | -156.74 | 10.00 | 10.00 | 0.00 | |
| 7,100.00 | 70.74 | 89.42 | 6,538.92 | -1,810.42 | -429.99 | -111.10 | 10.00 | 10.00 | 0.00 | |
| 7,150.00 | 75.74 | 89.42 | 6,553.34 | -1,809.93 | -382.13 | -64.05 | 10.00 | 10.00 | 0.00 | |
| 7,200.00 | 80.74 | 89.42 | 6,563.53 | -1,809.44 | -333.20 | -15.93 | 10.00 | 10.00 | 0.00 | |
| 7,250.00 | 85.74 | 89.42 | 6,569.41 | -1,808.93 | -283.56 | 32.87 | 10.00 | 10.00 | 0.00 | |
| 7,292.66 | 90.00 | 89.42 | 6,571.00 | -1,808.50 | -240.94 | 74.77 | 10.00 | 10.00 | 0.00 | |
| Start 9987.07 hold at 7292.66 MD - Codell (Target) | | | | | | | | | | |
| 7,300.00 | 90.00 | 89.42 | 6,571.00 | -1,808.43 | -233.61 | 81.99 | 0.00 | 0.00 | 0.00 | |
| 7,400.00 | 90.00 | 89.42 | 6,571.00 | -1,807.42 | -133.61 | 180.31 | 0.00 | 0.00 | 0.00 | |
| 7,500.00 | 90.00 | 89.42 | 6,570.99 | -1,806.41 | -33.62 | 278.63 | 0.00 | 0.00 | 0.00 | |
| 7,600.00 | 90.00 | 89.42 | 6,570.99 | -1,805.39 | 66.38 | 376.95 | 0.00 | 0.00 | 0.00 | |
| 7,700.00 | 90.00 | 89.42 | 6,570.98 | -1,804.38 | 166.37 | 475.27 | 0.00 | 0.00 | 0.00 | |
| 7,800.00 | 90.00 | 89.42 | 6,570.98 | -1,803.37 | 266.37 | 573.59 | 0.00 | 0.00 | 0.00 | |
| 7,900.00 | 90.00 | 89.42 | 6,570.97 | -1,802.36 | 366.36 | 671.91 | 0.00 | 0.00 | 0.00 | |
| 8,000.00 | 90.00 | 89.42 | 6,570.97 | -1,801.35 | 466.36 | 770.23 | 0.00 | 0.00 | 0.00 | |
| 8,100.00 | 90.00 | 89.42 | 6,570.97 | -1,800.34 | 566.35 | 868.55 | 0.00 | 0.00 | 0.00 | |
| 8,200.00 | 90.00 | 89.42 | 6,570.96 | -1,799.32 | 666.35 | 966.87 | 0.00 | 0.00 | 0.00 | |
| 8,300.00 | 90.00 | 89.42 | 6,570.96 | -1,798.31 | 766.34 | 1,065.19 | 0.00 | 0.00 | 0.00 | |
| 8,400.00 | 90.00 | 89.42 | 6,570.95 | -1,797.30 | 866.34 | 1,163.51 | 0.00 | 0.00 | 0.00 | |
| 8,500.00 | 90.00 | 89.42 | 6,570.95 | -1,796.29 | 966.33 | 1,261.83 | 0.00 | 0.00 | 0.00 | |
| 8,600.00 | 90.00 | 89.42 | 6,570.94 | -1,795.28 | 1,066.33 | 1,360.15 | 0.00 | 0.00 | 0.00 | |
| 8,700.00 | 90.00 | 89.42 | 6,570.94 | -1,794.27 | 1,166.32 | 1,458.47 | 0.00 | 0.00 | 0.00 | |
| 8,800.00 | 90.00 | 89.42 | 6,570.94 | -1,793.25 | 1,266.32 | 1,556.79 | 0.00 | 0.00 | 0.00 | |
| 8,900.00 | 90.00 | 89.42 | 6,570.93 | -1,792.24 | 1,366.31 | 1,655.11 | 0.00 | 0.00 | 0.00 | |
| 9,000.00 | 90.00 | 89.42 | 6,570.93 | -1,791.23 | 1,466.31 | 1,753.43 | 0.00 | 0.00 | 0.00 | |
| 9,100.00 | 90.00 | 89.42 | 6,570.92 | -1,790.22 | 1,566.30 | 1,851.75 | 0.00 | 0.00 | 0.00 | |
| 9,200.00 | 90.00 | 89.42 | 6,570.92 | -1,789.21 | 1,666.30 | 1,950.07 | 0.00 | 0.00 | 0.00 | |
| 9,300.00 | 90.00 | 89.42 | 6,570.91 | -1,788.20 | 1,766.29 | 2,048.39 | 0.00 | 0.00 | 0.00 | |
| 9,400.00 | 90.00 | 89.42 | 6,570.91 | -1,787.18 | 1,866.29 | 2,146.71 | 0.00 | 0.00 | 0.00 | |
| 9,500.00 | 90.00 | 89.42 | 6,570.91 | -1,786.17 | 1,966.28 | 2,245.03 | 0.00 | 0.00 | 0.00 | |
| 9,600.00 | 90.00 | 89.42 | 6,570.90 | -1,785.16 | 2,066.28 | 2,343.35 | 0.00 | 0.00 | 0.00 | |
| 9,700.00 | 90.00 | 89.42 | 6,570.90 | -1,784.15 | 2,166.27 | 2,441.67 | 0.00 | 0.00 | 0.00 | |
| 9,800.00 | 90.00 | 89.42 | 6,570.89 | -1,783.14 | 2,266.27 | 2,539.99 | 0.00 | 0.00 | 0.00 | |
| 9,900.00 | 90.00 | 89.42 | 6,570.89 | -1,782.13 | 2,366.26 | 2,638.31 | 0.00 | 0.00 | 0.00 | |
| 10,000.00 | 90.00 | 89.42 | 6,570.88 | -1,781.12 | 2,466.26 | 2,736.63 | 0.00 | 0.00 | 0.00 | |
| 10,100.00 | 90.00 | 89.42 | 6,570.88 | -1,780.10 | 2,566.25 | 2,834.95 | 0.00 | 0.00 | 0.00 | |
| 10,200.00 | 90.00 | 89.42 | 6,570.88 | -1,779.09 | 2,666.24 | 2,933.27 | 0.00 | 0.00 | 0.00 | |
| 10,300.00 | 90.00 | 89.42 | 6,570.87 | -1,778.08 | 2,766.24 | 3,031.59 | 0.00 | 0.00 | 0.00 | |
| 10,400.00 | 90.00 | 89.42 | 6,570.87 | -1,777.07 | 2,866.23 | 3,129.91 | 0.00 | 0.00 | 0.00 | |
| 10,500.00 | 90.00 | 89.42 | 6,570.86 | -1,776.06 | 2,966.23 | 3,228.23 | 0.00 | 0.00 | 0.00 | |
| 10,600.00 | 90.00 | 89.42 | 6,570.86 | -1,775.05 | 3,066.22 | 3,326.55 | 0.00 | 0.00 | 0.00 | |
| 10,700.00 | 90.00 | 89.42 | 6,570.85 | -1,774.03 | 3,166.22 | 3,424.87 | 0.00 | 0.00 | 0.00 | |
| 10,800.00 | 90.00 | 89.42 | 6,570.85 | -1,773.02 | 3,266.21 | 3,523.19 | 0.00 | 0.00 | 0.00 | |
| 10,900.00 | 90.00 | 89.42 | 6,570.85 | -1,772.01 | 3,366.21 | 3,621.51 | 0.00 | 0.00 | 0.00 | |
| 11,000.00 | 90.00 | 89.42 | 6,570.84 | -1,771.00 | 3,466.20 | 3,719.83 | 0.00 | 0.00 | 0.00 | |
| 11,100.00 | 90.00 | 89.42 | 6,570.84 | -1,769.99 | 3,566.20 | 3,818.15 | 0.00 | 0.00 | 0.00 | |
| 11,200.00 | 90.00 | 89.42 | 6,570.83 | -1,768.98 | 3,666.19 | 3,916.47 | 0.00 | 0.00 | 0.00 | |
| 11,300.00 | 90.00 | 89.42 | 6,570.83 | -1,767.96 | 3,766.19 | 4,014.79 | 0.00 | 0.00 | 0.00 | |
| 11,400.00 | 90.00 | 89.42 | 6,570.82 | -1,766.95 | 3,866.18 | 4,113.11 | 0.00 | 0.00 | 0.00 | |
| 11,500.00 | 90.00 | 89.42 | 6,570.82 | -1,765.94 | 3,966.18 | 4,211.43 | 0.00 | 0.00 | 0.00 | |
| 11,600.00 | 90.00 | 89.42 | 6,570.82 | -1,764.93 | 4,066.17 | 4,309.75 | 0.00 | 0.00 | 0.00 | |
| 11,700.00 | 90.00 | 89.42 | 6,570.81 | -1,763.92 | 4,166.17 | 4,408.07 | 0.00 | 0.00 | 0.00 | |
| 11,800.00 | 90.00 | 89.42 | 6,570.81 | -1,762.91 | 4,266.16 | 4,506.39 | 0.00 | 0.00 | 0.00 | |

Planning Report

| | | | |
|------------------|----------------------------|-------------------------------------|---------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well CANVASBACK 32-33-6HC |
| Company: | MALLARD EXPLORATION | TVD Reference: | KB 27' @ 4973.00usft |
| Project: | WELD COUNTY | MD Reference: | KB 27' @ 4973.00usft |
| Site: | SEC 32-T9N-R60W | North Reference: | True |
| Well: | CANVASBACK 32-33-6HC | 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) | |
| 11,900.00 | 90.00 | 89.42 | 6,570.80 | -1,761.89 | 4,366.16 | 4,604.71 | 0.00 | 0.00 | 0.00 | |
| 12,000.00 | 90.00 | 89.42 | 6,570.80 | -1,760.88 | 4,466.15 | 4,703.03 | 0.00 | 0.00 | 0.00 | |
| 12,100.00 | 90.00 | 89.42 | 6,570.79 | -1,759.87 | 4,566.15 | 4,801.35 | 0.00 | 0.00 | 0.00 | |
| 12,200.00 | 90.00 | 89.42 | 6,570.79 | -1,758.86 | 4,666.14 | 4,899.67 | 0.00 | 0.00 | 0.00 | |
| 12,300.00 | 90.00 | 89.42 | 6,570.79 | -1,757.85 | 4,766.14 | 4,997.99 | 0.00 | 0.00 | 0.00 | |
| 12,400.00 | 90.00 | 89.42 | 6,570.78 | -1,756.84 | 4,866.13 | 5,096.31 | 0.00 | 0.00 | 0.00 | |
| 12,500.00 | 90.00 | 89.42 | 6,570.78 | -1,755.82 | 4,966.13 | 5,194.63 | 0.00 | 0.00 | 0.00 | |
| 12,600.00 | 90.00 | 89.42 | 6,570.77 | -1,754.81 | 5,066.12 | 5,292.95 | 0.00 | 0.00 | 0.00 | |
| 12,700.00 | 90.00 | 89.42 | 6,570.77 | -1,753.80 | 5,166.12 | 5,391.27 | 0.00 | 0.00 | 0.00 | |
| 12,800.00 | 90.00 | 89.42 | 6,570.76 | -1,752.79 | 5,266.11 | 5,489.59 | 0.00 | 0.00 | 0.00 | |
| 12,900.00 | 90.00 | 89.42 | 6,570.76 | -1,751.78 | 5,366.11 | 5,587.91 | 0.00 | 0.00 | 0.00 | |
| 13,000.00 | 90.00 | 89.42 | 6,570.76 | -1,750.77 | 5,466.10 | 5,686.23 | 0.00 | 0.00 | 0.00 | |
| 13,100.00 | 90.00 | 89.42 | 6,570.75 | -1,749.75 | 5,566.10 | 5,784.55 | 0.00 | 0.00 | 0.00 | |
| 13,200.00 | 90.00 | 89.42 | 6,570.75 | -1,748.74 | 5,666.09 | 5,882.87 | 0.00 | 0.00 | 0.00 | |
| 13,300.00 | 90.00 | 89.42 | 6,570.74 | -1,747.73 | 5,766.09 | 5,981.19 | 0.00 | 0.00 | 0.00 | |
| 13,400.00 | 90.00 | 89.42 | 6,570.74 | -1,746.72 | 5,866.08 | 6,079.51 | 0.00 | 0.00 | 0.00 | |
| 13,500.00 | 90.00 | 89.42 | 6,570.73 | -1,745.71 | 5,966.08 | 6,177.83 | 0.00 | 0.00 | 0.00 | |
| 13,600.00 | 90.00 | 89.42 | 6,570.73 | -1,744.70 | 6,066.07 | 6,276.15 | 0.00 | 0.00 | 0.00 | |
| 13,700.00 | 90.00 | 89.42 | 6,570.73 | -1,743.68 | 6,166.07 | 6,374.47 | 0.00 | 0.00 | 0.00 | |
| 13,800.00 | 90.00 | 89.42 | 6,570.72 | -1,742.67 | 6,266.06 | 6,472.79 | 0.00 | 0.00 | 0.00 | |
| 13,900.00 | 90.00 | 89.42 | 6,570.72 | -1,741.66 | 6,366.06 | 6,571.11 | 0.00 | 0.00 | 0.00 | |
| 14,000.00 | 90.00 | 89.42 | 6,570.71 | -1,740.65 | 6,466.05 | 6,669.43 | 0.00 | 0.00 | 0.00 | |
| 14,100.00 | 90.00 | 89.42 | 6,570.71 | -1,739.64 | 6,566.05 | 6,767.75 | 0.00 | 0.00 | 0.00 | |
| 14,200.00 | 90.00 | 89.42 | 6,570.70 | -1,738.63 | 6,666.04 | 6,866.07 | 0.00 | 0.00 | 0.00 | |
| 14,300.00 | 90.00 | 89.42 | 6,570.70 | -1,737.62 | 6,766.04 | 6,964.39 | 0.00 | 0.00 | 0.00 | |
| 14,400.00 | 90.00 | 89.42 | 6,570.70 | -1,736.60 | 6,866.03 | 7,062.71 | 0.00 | 0.00 | 0.00 | |
| 14,500.00 | 90.00 | 89.42 | 6,570.69 | -1,735.59 | 6,966.03 | 7,161.03 | 0.00 | 0.00 | 0.00 | |
| 14,600.00 | 90.00 | 89.42 | 6,570.69 | -1,734.58 | 7,066.02 | 7,259.35 | 0.00 | 0.00 | 0.00 | |
| 14,700.00 | 90.00 | 89.42 | 6,570.68 | -1,733.57 | 7,166.01 | 7,357.67 | 0.00 | 0.00 | 0.00 | |
| 14,800.00 | 90.00 | 89.42 | 6,570.68 | -1,732.56 | 7,266.01 | 7,455.99 | 0.00 | 0.00 | 0.00 | |
| 14,900.00 | 90.00 | 89.42 | 6,570.67 | -1,731.55 | 7,366.00 | 7,554.31 | 0.00 | 0.00 | 0.00 | |
| 15,000.00 | 90.00 | 89.42 | 6,570.67 | -1,730.53 | 7,466.00 | 7,652.63 | 0.00 | 0.00 | 0.00 | |
| 15,100.00 | 90.00 | 89.42 | 6,570.67 | -1,729.52 | 7,565.99 | 7,750.95 | 0.00 | 0.00 | 0.00 | |
| 15,200.00 | 90.00 | 89.42 | 6,570.66 | -1,728.51 | 7,665.99 | 7,849.27 | 0.00 | 0.00 | 0.00 | |
| 15,300.00 | 90.00 | 89.42 | 6,570.66 | -1,727.50 | 7,765.98 | 7,947.59 | 0.00 | 0.00 | 0.00 | |
| 15,400.00 | 90.00 | 89.42 | 6,570.65 | -1,726.49 | 7,865.98 | 8,045.91 | 0.00 | 0.00 | 0.00 | |
| 15,500.00 | 90.00 | 89.42 | 6,570.65 | -1,725.48 | 7,965.97 | 8,144.23 | 0.00 | 0.00 | 0.00 | |
| 15,600.00 | 90.00 | 89.42 | 6,570.64 | -1,724.46 | 8,065.97 | 8,242.55 | 0.00 | 0.00 | 0.00 | |
| 15,700.00 | 90.00 | 89.42 | 6,570.64 | -1,723.45 | 8,165.96 | 8,340.87 | 0.00 | 0.00 | 0.00 | |
| 15,800.00 | 90.00 | 89.42 | 6,570.64 | -1,722.44 | 8,265.96 | 8,439.19 | 0.00 | 0.00 | 0.00 | |
| 15,900.00 | 90.00 | 89.42 | 6,570.63 | -1,721.43 | 8,365.95 | 8,537.51 | 0.00 | 0.00 | 0.00 | |
| 16,000.00 | 90.00 | 89.42 | 6,570.63 | -1,720.42 | 8,465.95 | 8,635.83 | 0.00 | 0.00 | 0.00 | |
| 16,100.00 | 90.00 | 89.42 | 6,570.62 | -1,719.41 | 8,565.94 | 8,734.15 | 0.00 | 0.00 | 0.00 | |
| 16,200.00 | 90.00 | 89.42 | 6,570.62 | -1,718.39 | 8,665.94 | 8,832.47 | 0.00 | 0.00 | 0.00 | |
| 16,300.00 | 90.00 | 89.42 | 6,570.61 | -1,717.38 | 8,765.93 | 8,930.79 | 0.00 | 0.00 | 0.00 | |
| 16,400.00 | 90.00 | 89.42 | 6,570.61 | -1,716.37 | 8,865.93 | 9,029.11 | 0.00 | 0.00 | 0.00 | |
| 16,500.00 | 90.00 | 89.42 | 6,570.61 | -1,715.36 | 8,965.92 | 9,127.43 | 0.00 | 0.00 | 0.00 | |
| 16,600.00 | 90.00 | 89.42 | 6,570.60 | -1,714.35 | 9,065.92 | 9,225.75 | 0.00 | 0.00 | 0.00 | |
| 16,700.00 | 90.00 | 89.42 | 6,570.60 | -1,713.34 | 9,165.91 | 9,324.07 | 0.00 | 0.00 | 0.00 | |
| 16,800.00 | 90.00 | 89.42 | 6,570.59 | -1,712.32 | 9,265.91 | 9,422.39 | 0.00 | 0.00 | 0.00 | |
| 16,900.00 | 90.00 | 89.42 | 6,570.59 | -1,711.31 | 9,365.90 | 9,520.71 | 0.00 | 0.00 | 0.00 | |
| 17,000.00 | 90.00 | 89.42 | 6,570.58 | -1,710.30 | 9,465.90 | 9,619.03 | 0.00 | 0.00 | 0.00 | |
| 17,100.00 | 90.00 | 89.42 | 6,570.58 | -1,709.29 | 9,565.89 | 9,717.35 | 0.00 | 0.00 | 0.00 | |
| 17,200.00 | 90.00 | 89.42 | 6,570.58 | -1,708.28 | 9,665.89 | 9,815.67 | 0.00 | 0.00 | 0.00 | |

Planning Report

| | | | |
|------------------|----------------------------|-------------------------------------|---------------------------|
| Database: | EDM 5000.16 Single User Db | Local Co-ordinate Reference: | Well CANVASBACK 32-33-6HC |
| Company: | MALLARD EXPLORATION | TVD Reference: | KB 27' @ 4973.00usft |
| Project: | WELD COUNTY | MD Reference: | KB 27' @ 4973.00usft |
| Site: | SEC 32-T9N-R60W | North Reference: | True |
| Well: | CANVASBACK 32-33-6HC | 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) |
| 17,279.73 | 90.00 | 89.42 | 6,571.00 | -1,707.48 | 9,745.61 | 9,894.06 | 0.00 | 0.00 | 0.00 |
| TD at 17279.73 | | | | | | | | | |

| 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 |
| CANVASBACK 32-33-6H - plan hits target center - Point | 0.00 | 0.00 | 6,571.00 | -1,707.48 | 9,745.61 | 1,502,050.47 | 3,391,307.87 | 40.702972°N | 104.088630°W |
| CANVASBACK 32-33-6H - plan hits target center - Point | 0.00 | 0.00 | 6,571.00 | -1,808.50 | -240.94 | 1,501,794.47 | 3,381,324.08 | 40.702700°N | 104.124648°W |

| Formations | | | | | | |
|-----------------------|-----------------------|-----------------------|-----------|---------|-------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) | |
| 1,616.25 | 1,571.00 | Pierre Shale Top | | | | |
| 3,691.01 | 3,458.00 | Richard Sandstone | | | | |
| 3,811.95 | 3,568.00 | Parkman Sandstone | | | | |
| 4,567.31 | 4,255.00 | Sussex Sandstone | | | | |
| 5,109.20 | 4,748.00 | Shannon Sandstone | | | | |
| 5,963.85 | 5,570.00 | TeePee Buttes | | | | |
| 6,605.43 | 6,206.00 | Sharon Springs | | | | |
| 6,645.73 | 6,243.00 | Niobrara Top | | | | |
| 6,817.45 | 6,385.00 | Niobrara B2 Chalk Top | | | | |
| 6,895.82 | 6,439.00 | Niobrara C Chalk Top | | | | |
| 7,292.66 | 6,571.00 | Codell (Target) | | | | |

| Plan Annotations | | | | | |
|-----------------------|-----------------------|-------------------|--------------|----------------------------------|--|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates | | | |
| | | +N/-S (usft) | +E/-W (usft) | Comment | |
| 300.00 | 300.00 | 0.00 | 0.00 | Start Build 2.00 | |
| 1,528.15 | 1,490.88 | -236.54 | -106.12 | Start 3536.26 hold at 1528.15 MD | |
| 5,064.42 | 4,707.12 | -1,577.76 | -707.82 | Start Drop -2.00 | |
| 6,292.57 | 5,898.00 | -1,814.30 | -813.94 | Start 100.00 hold at 6292.57 MD | |
| 6,392.57 | 5,998.00 | -1,814.30 | -813.94 | Start DLS 10.00 TFO 89.42 | |
| 7,292.66 | 6,571.00 | -1,808.50 | -240.94 | Start 9987.07 hold at 7292.66 MD | |
| 17,279.73 | 6,571.00 | -1,707.48 | 9,745.61 | TD at 17279.73 | |