

MALLARD EXPLORATION

WELD COUNTY

SEC 32-T9N-R60W

CANVASBACK FED 32-33-2HN

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

25 August, 2020



Project: WELD COUNTY
Site: SEC 32-T9N-R60W
Well: CANVASBACK FED 32-33-2HN
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL 1



Azimuths to True North
Magnetic North: 7.62°

Magnetic Field
Strength: 52263.1nT
Dip Angle: 67.02°
Date: 8/24/2020
Model: IGRF2020

WELL DETAILS: CANVASBACK FED 32-33-2HN

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1503686.22	3381532.93	40.707883°N	104.123789°W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	746.77	10.94	293.61	743.46	20.83	-47.67	2.00	293.61	-45.54	
4	5863.91	10.94	293.61	5767.68	409.56	-937.18	0.00	0.00	-895.29	
5	6862.14	90.00	87.67	6436.00	488.94	-375.38	10.00	153.65	-328.56	CANVASBACK FED
6	16908.31	90.00	87.67	6436.00	897.43	9662.48	0.00	0.00	9704.07	CANVASBACK FED

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	Start Build 2.00
746.77	10.94	293.61	743.46	20.83	-47.67	-45.54	52.02	Start 5117.14 hold at 746.77 MD
5863.91	10.94	293.61	5767.68	409.56	-937.18	-895.29	1022.76	Start DLS 10.00 TFO 153.65
6862.14	90.00	87.67	6436.00	488.94	-375.38	-328.56	1615.53	Start 10046.17 hold at 6862.14 MD
16908.31	90.00	87.67	6436.00	897.43	9662.48	9704.07	11661.70	TD at 16908.31

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
CANVASBACK FED 32-33-2HN 6436.00	6436.00	488.94	-375.38	1504169.28	3381150.00	40.709225°N	104.125143°W	Point
- plan hits target center								
CANVASBACK FED 32-33-2HN 6436.00	6436.00	897.43	9662.48	1504733.50	3391180.32	40.710341°N	104.088936°W	Point
- plan hits target center								

FORMATION TOP DETAILS

MDPath	MDPath	Formation
1568.00	1566.56	Pierre Shale Top
3455.00	3508.46	Richard Sandstone
3565.00	3620.50	Parkman Sandstone
4252.00	4320.20	Sussex Sandstone
4745.00	4822.32	Shannon Sandstone
5567.00	5659.52	TeePee Buttes
6203.00	6325.05	Sharon Springs
6240.00	6372.62	Niobrara Top
6382.00	6610.93	Niobrara B2 Chalk Top
6436.00	6862.14	Niobrara C Chalk Top (Target)

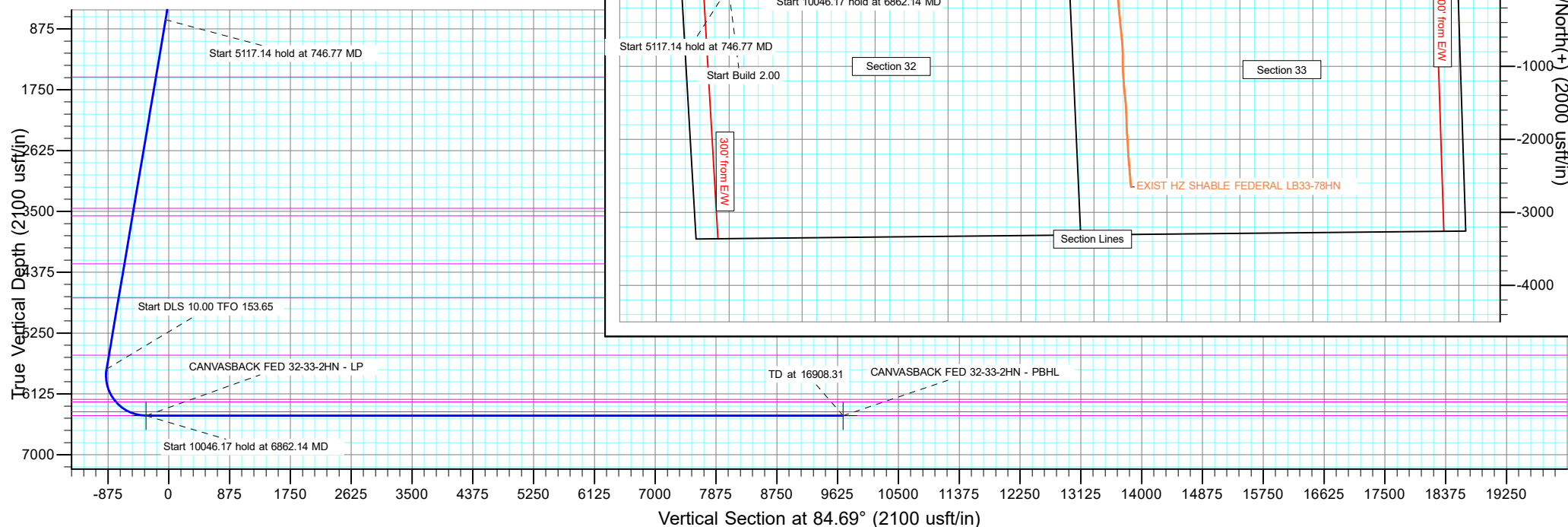
PROJECT DETAILS: WELD COUNTY

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

SHL:
1818' FNL, 647' FWL
Sec 32-T9N-R60W

LP:
1320' FNL, 300' FWL
Sec 32-T9N-R60W

BHL:
1130' FNL, 300' FEL
Sec 33-T9N-R60W



Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well CANVASBACK FED 32-33-2HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4970.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4970.00usft
Site:	SEC 32-T9N-R60W	North Reference:	True
Well:	CANVASBACK FED 32-33-2HN	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 FED 32-33-2HN				
Well Position	+N/-S	0.00 usft	Northing:	1,503,686.23 usft	Latitude:	40.707883°N
	+E/-W	0.00 usft	Easting:	3,381,532.92 usft	Longitude:	104.123789°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,943.00 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	52,263.11539091

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	84.69	

Plan Survey Tool Program	Date	8/25/2020			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	16,908.31	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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
746.77	10.94	293.61	743.46	20.83	-47.67	2.00	2.00	0.00	293.61	
5,863.91	10.94	293.61	5,767.68	409.56	-937.18	0.00	0.00	0.00	0.00	
6,862.14	90.00	87.67	6,436.00	488.94	-375.38	10.00	7.92	15.43	153.65	CANVASBACK FED 32-33-2HN
16,908.31	90.00	87.67	6,436.00	897.43	9,662.48	0.00	0.00	0.00	0.00	CANVASBACK FED 32-33-2HN

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Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4970.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4970.00usft
Site:	SEC 32-T9N-R60W	North Reference:	True
Well:	CANVASBACK FED 32-33-2HN	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
Start Build 2.00									
300.00	2.00	293.61	299.98	0.70	-1.60	-1.53	2.00	2.00	0.00
400.00	4.00	293.61	399.84	2.79	-6.39	-6.11	2.00	2.00	0.00
500.00	6.00	293.61	499.45	6.28	-14.38	-13.74	2.00	2.00	0.00
600.00	8.00	293.61	598.70	11.16	-25.55	-24.41	2.00	2.00	0.00
700.00	10.00	293.61	697.47	17.43	-39.88	-38.10	2.00	2.00	0.00
746.77	10.94	293.61	743.46	20.83	-47.67	-45.54	2.00	2.00	0.00
Start 5117.14 hold at 746.77 MD									
800.00	10.94	293.61	795.72	24.87	-56.92	-54.38	0.00	0.00	0.00
900.00	10.94	293.61	893.90	32.47	-74.30	-70.98	0.00	0.00	0.00
1,000.00	10.94	293.61	992.09	40.07	-91.69	-87.59	0.00	0.00	0.00
1,100.00	10.94	293.61	1,090.27	47.66	-109.07	-104.19	0.00	0.00	0.00
1,200.00	10.94	293.61	1,188.46	55.26	-126.45	-120.80	0.00	0.00	0.00
1,300.00	10.94	293.61	1,286.64	62.86	-143.83	-137.41	0.00	0.00	0.00
1,400.00	10.94	293.61	1,384.82	70.45	-161.22	-154.01	0.00	0.00	0.00
1,500.00	10.94	293.61	1,483.01	78.05	-178.60	-170.62	0.00	0.00	0.00
1,586.56	10.94	293.61	1,568.00	84.63	-193.65	-184.99	0.00	0.00	0.00
Pierre Shale Top									
1,600.00	10.94	293.61	1,581.19	85.65	-195.98	-187.22	0.00	0.00	0.00
1,700.00	10.94	293.61	1,679.38	93.24	-213.37	-203.83	0.00	0.00	0.00
1,800.00	10.94	293.61	1,777.56	100.84	-230.75	-220.43	0.00	0.00	0.00
1,900.00	10.94	293.61	1,875.75	108.44	-248.13	-237.04	0.00	0.00	0.00
2,000.00	10.94	293.61	1,973.93	116.03	-265.52	-253.65	0.00	0.00	0.00
2,100.00	10.94	293.61	2,072.11	123.63	-282.90	-270.25	0.00	0.00	0.00
2,200.00	10.94	293.61	2,170.30	131.23	-300.28	-286.86	0.00	0.00	0.00
2,300.00	10.94	293.61	2,268.48	138.82	-317.66	-303.46	0.00	0.00	0.00
2,400.00	10.94	293.61	2,366.67	146.42	-335.05	-320.07	0.00	0.00	0.00
2,500.00	10.94	293.61	2,464.85	154.02	-352.43	-336.68	0.00	0.00	0.00
2,600.00	10.94	293.61	2,563.03	161.61	-369.81	-353.28	0.00	0.00	0.00
2,700.00	10.94	293.61	2,661.22	169.21	-387.20	-369.89	0.00	0.00	0.00
2,800.00	10.94	293.61	2,759.40	176.81	-404.58	-386.49	0.00	0.00	0.00
2,900.00	10.94	293.61	2,857.59	184.40	-421.96	-403.10	0.00	0.00	0.00
3,000.00	10.94	293.61	2,955.77	192.00	-439.34	-419.71	0.00	0.00	0.00
3,100.00	10.94	293.61	3,053.96	199.59	-456.73	-436.31	0.00	0.00	0.00
3,200.00	10.94	293.61	3,152.14	207.19	-474.11	-452.92	0.00	0.00	0.00
3,300.00	10.94	293.61	3,250.32	214.79	-491.49	-469.52	0.00	0.00	0.00
3,400.00	10.94	293.61	3,348.51	222.38	-508.88	-486.13	0.00	0.00	0.00
3,500.00	10.94	293.61	3,446.69	229.98	-526.26	-502.74	0.00	0.00	0.00
3,508.46	10.94	293.61	3,455.00	230.62	-527.73	-504.14	0.00	0.00	0.00
Richard Sandstone									
3,600.00	10.94	293.61	3,544.88	237.58	-543.64	-519.34	0.00	0.00	0.00
3,620.50	10.94	293.61	3,565.00	239.13	-547.21	-522.75	0.00	0.00	0.00
Parkman Sandstone									
3,700.00	10.94	293.61	3,643.06	245.17	-561.03	-535.95	0.00	0.00	0.00
3,800.00	10.94	293.61	3,741.24	252.77	-578.41	-552.55	0.00	0.00	0.00
3,900.00	10.94	293.61	3,839.43	260.37	-595.79	-569.16	0.00	0.00	0.00
4,000.00	10.94	293.61	3,937.61	267.96	-613.17	-585.77	0.00	0.00	0.00
4,100.00	10.94	293.61	4,035.80	275.56	-630.56	-602.37	0.00	0.00	0.00
4,200.00	10.94	293.61	4,133.98	283.16	-647.94	-618.98	0.00	0.00	0.00
4,300.00	10.94	293.61	4,232.17	290.75	-665.32	-635.58	0.00	0.00	0.00

Planning Report

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Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4970.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4970.00usft
Site:	SEC 32-T9N-R60W	North Reference:	True
Well:	CANVASBACK FED 32-33-2HN	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)	
4,320.20	10.94	293.61	4,252.00	292.29	-668.83	-638.94	0.00	0.00	0.00	
Sussex Sandstone										
4,400.00	10.94	293.61	4,330.35	298.35	-682.71	-652.19	0.00	0.00	0.00	
4,500.00	10.94	293.61	4,428.53	305.95	-700.09	-668.79	0.00	0.00	0.00	
4,600.00	10.94	293.61	4,526.72	313.54	-717.47	-685.40	0.00	0.00	0.00	
4,700.00	10.94	293.61	4,624.90	321.14	-734.85	-702.01	0.00	0.00	0.00	
4,800.00	10.94	293.61	4,723.09	328.74	-752.24	-718.61	0.00	0.00	0.00	
4,822.32	10.94	293.61	4,745.00	330.43	-756.12	-722.32	0.00	0.00	0.00	
Shannon Sandstone										
4,900.00	10.94	293.61	4,821.27	336.33	-769.62	-735.22	0.00	0.00	0.00	
5,000.00	10.94	293.61	4,919.45	343.93	-787.00	-751.82	0.00	0.00	0.00	
5,100.00	10.94	293.61	5,017.64	351.53	-804.39	-768.43	0.00	0.00	0.00	
5,200.00	10.94	293.61	5,115.82	359.12	-821.77	-785.04	0.00	0.00	0.00	
5,300.00	10.94	293.61	5,214.01	366.72	-839.15	-801.64	0.00	0.00	0.00	
5,400.00	10.94	293.61	5,312.19	374.32	-856.54	-818.25	0.00	0.00	0.00	
5,500.00	10.94	293.61	5,410.37	381.91	-873.92	-834.85	0.00	0.00	0.00	
5,600.00	10.94	293.61	5,508.56	389.51	-891.30	-851.46	0.00	0.00	0.00	
5,659.52	10.94	293.61	5,567.00	394.03	-901.65	-861.34	0.00	0.00	0.00	
TeePee Buttes										
5,700.00	10.94	293.61	5,606.74	397.10	-908.68	-868.07	0.00	0.00	0.00	
5,800.00	10.94	293.61	5,704.93	404.70	-926.07	-884.67	0.00	0.00	0.00	
5,863.91	10.94	293.61	5,767.68	409.56	-937.18	-895.29	0.00	0.00	0.00	
Start DLS 10.00 TFO 153.65										
5,900.00	7.86	305.39	5,803.28	412.36	-942.33	-900.16	10.00	-8.51	32.65	
5,950.00	4.98	343.54	5,852.98	416.42	-945.73	-903.17	10.00	-5.77	76.31	
6,000.00	6.13	35.83	5,902.78	420.67	-944.78	-901.83	10.00	2.31	104.58	
6,050.00	10.02	59.09	5,952.28	425.08	-939.49	-896.15	10.00	7.77	46.51	
6,100.00	14.59	68.73	6,001.13	429.60	-929.88	-886.17	10.00	9.15	19.28	
6,150.00	19.38	73.77	6,048.94	434.20	-916.04	-871.96	10.00	9.57	10.07	
6,200.00	24.24	76.85	6,095.34	438.86	-898.07	-853.63	10.00	9.74	6.18	
6,250.00	29.15	78.96	6,140.00	443.53	-876.10	-831.33	10.00	9.82	4.21	
6,300.00	34.09	80.50	6,182.56	448.18	-850.31	-805.22	10.00	9.87	3.08	
6,325.05	36.57	81.13	6,203.00	450.49	-836.02	-790.77	10.00	9.89	2.52	
Sharon Springs										
6,350.00	39.04	81.69	6,222.71	452.77	-820.89	-775.50	10.00	9.91	2.24	
6,372.62	41.28	82.15	6,240.00	454.82	-806.45	-760.93	10.00	9.91	2.03	
Niobrara Top										
6,400.00	44.00	82.65	6,260.14	457.27	-788.07	-742.40	10.00	9.92	1.84	
6,450.00	48.96	83.45	6,294.56	461.65	-752.09	-706.17	10.00	9.93	1.61	
6,500.00	53.94	84.14	6,325.71	465.87	-713.23	-667.09	10.00	9.94	1.38	
6,550.00	58.91	84.75	6,353.35	469.89	-671.78	-625.44	10.00	9.95	1.21	
6,600.00	63.89	85.30	6,377.28	473.69	-628.06	-581.56	10.00	9.95	1.09	
6,610.93	64.97	85.41	6,382.00	474.49	-618.23	-571.70	10.00	9.96	1.03	
Niobrara B2 Chalk Top										
6,650.00	68.87	85.80	6,397.31	477.24	-582.40	-535.77	10.00	9.96	1.00	
6,700.00	73.85	86.27	6,413.29	480.52	-535.15	-488.42	10.00	9.96	0.94	
6,750.00	78.83	86.71	6,425.10	483.49	-486.68	-439.88	10.00	9.96	0.89	
6,800.00	83.81	87.14	6,432.65	486.14	-437.34	-390.50	10.00	9.96	0.86	
6,850.00	88.79	87.57	6,435.87	488.44	-387.51	-340.68	10.00	9.96	0.85	
6,862.14	90.00	87.67	6,436.00	488.94	-375.38	-328.56	10.00	9.96	0.84	
Start 10046.17 hold at 6862.14 MD - Niobrara C Chalk Top (Target)										
6,900.00	90.00	87.67	6,436.00	490.48	-337.55	-290.75	0.00	0.00	0.00	
7,000.00	90.00	87.67	6,436.00	494.55	-237.63	-190.88	0.00	0.00	0.00	

Planning Report

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Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4970.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4970.00usft
Site:	SEC 32-T9N-R60W	North Reference:	True
Well:	CANVASBACK FED 32-33-2HN	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)	
7,100.00	90.00	87.67	6,436.00	498.61	-137.72	-91.02	0.00	0.00	0.00	
7,200.00	90.00	87.67	6,436.00	502.68	-37.80	8.85	0.00	0.00	0.00	
7,300.00	90.00	87.67	6,436.00	506.75	62.12	108.71	0.00	0.00	0.00	
7,400.00	90.00	87.67	6,436.00	510.81	162.03	208.58	0.00	0.00	0.00	
7,500.00	90.00	87.67	6,436.00	514.88	261.95	308.45	0.00	0.00	0.00	
7,600.00	90.00	87.67	6,436.00	518.94	361.87	408.31	0.00	0.00	0.00	
7,700.00	90.00	87.67	6,436.00	523.01	461.79	508.18	0.00	0.00	0.00	
7,800.00	90.00	87.67	6,436.00	527.08	561.70	608.04	0.00	0.00	0.00	
7,900.00	90.00	87.67	6,436.00	531.14	661.62	707.91	0.00	0.00	0.00	
8,000.00	90.00	87.67	6,436.00	535.21	761.54	807.77	0.00	0.00	0.00	
8,100.00	90.00	87.67	6,436.00	539.27	861.46	907.64	0.00	0.00	0.00	
8,200.00	90.00	87.67	6,436.00	543.34	961.37	1,007.50	0.00	0.00	0.00	
8,300.00	90.00	87.67	6,436.00	547.41	1,061.29	1,107.37	0.00	0.00	0.00	
8,400.00	90.00	87.67	6,436.00	551.47	1,161.21	1,207.23	0.00	0.00	0.00	
8,500.00	90.00	87.67	6,436.00	555.54	1,261.13	1,307.10	0.00	0.00	0.00	
8,600.00	90.00	87.67	6,436.00	559.60	1,361.04	1,406.96	0.00	0.00	0.00	
8,700.00	90.00	87.67	6,436.00	563.67	1,460.96	1,506.83	0.00	0.00	0.00	
8,800.00	90.00	87.67	6,436.00	567.74	1,560.88	1,606.69	0.00	0.00	0.00	
8,900.00	90.00	87.67	6,436.00	571.80	1,660.79	1,706.56	0.00	0.00	0.00	
9,000.00	90.00	87.67	6,436.00	575.87	1,760.71	1,806.42	0.00	0.00	0.00	
9,100.00	90.00	87.67	6,436.00	579.93	1,860.63	1,906.29	0.00	0.00	0.00	
9,200.00	90.00	87.67	6,436.00	584.00	1,960.55	2,006.15	0.00	0.00	0.00	
9,300.00	90.00	87.67	6,436.00	588.07	2,060.46	2,106.02	0.00	0.00	0.00	
9,400.00	90.00	87.67	6,436.00	592.13	2,160.38	2,205.88	0.00	0.00	0.00	
9,500.00	90.00	87.67	6,436.00	596.20	2,260.30	2,305.75	0.00	0.00	0.00	
9,600.00	90.00	87.67	6,436.00	600.26	2,360.22	2,405.61	0.00	0.00	0.00	
9,700.00	90.00	87.67	6,436.00	604.33	2,460.13	2,505.48	0.00	0.00	0.00	
9,800.00	90.00	87.67	6,436.00	608.40	2,560.05	2,605.34	0.00	0.00	0.00	
9,900.00	90.00	87.67	6,436.00	612.46	2,659.97	2,705.21	0.00	0.00	0.00	
10,000.00	90.00	87.67	6,436.00	616.53	2,759.88	2,805.07	0.00	0.00	0.00	
10,100.00	90.00	87.67	6,436.00	620.60	2,859.80	2,904.94	0.00	0.00	0.00	
10,200.00	90.00	87.67	6,436.00	624.66	2,959.72	3,004.80	0.00	0.00	0.00	
10,300.00	90.00	87.67	6,436.00	628.73	3,059.64	3,104.67	0.00	0.00	0.00	
10,400.00	90.00	87.67	6,436.00	632.79	3,159.55	3,204.53	0.00	0.00	0.00	
10,500.00	90.00	87.67	6,436.00	636.86	3,259.47	3,304.40	0.00	0.00	0.00	
10,600.00	90.00	87.67	6,436.00	640.93	3,359.39	3,404.26	0.00	0.00	0.00	
10,700.00	90.00	87.67	6,436.00	644.99	3,459.31	3,504.13	0.00	0.00	0.00	
10,800.00	90.00	87.67	6,436.00	649.06	3,559.22	3,603.99	0.00	0.00	0.00	
10,900.00	90.00	87.67	6,436.00	653.12	3,659.14	3,703.86	0.00	0.00	0.00	
11,000.00	90.00	87.67	6,436.00	657.19	3,759.06	3,803.73	0.00	0.00	0.00	
11,100.00	90.00	87.67	6,436.00	661.26	3,858.97	3,903.59	0.00	0.00	0.00	
11,200.00	90.00	87.67	6,436.00	665.32	3,958.89	4,003.46	0.00	0.00	0.00	
11,300.00	90.00	87.67	6,436.00	669.39	4,058.81	4,103.32	0.00	0.00	0.00	
11,400.00	90.00	87.67	6,436.00	673.45	4,158.73	4,203.19	0.00	0.00	0.00	
11,500.00	90.00	87.67	6,436.00	677.52	4,258.64	4,303.05	0.00	0.00	0.00	
11,600.00	90.00	87.67	6,436.00	681.59	4,358.56	4,402.92	0.00	0.00	0.00	
11,700.00	90.00	87.67	6,436.00	685.65	4,458.48	4,502.78	0.00	0.00	0.00	
11,800.00	90.00	87.67	6,436.00	689.72	4,558.40	4,602.65	0.00	0.00	0.00	
11,900.00	90.00	87.67	6,436.00	693.78	4,658.31	4,702.51	0.00	0.00	0.00	
12,000.00	90.00	87.67	6,436.00	697.85	4,758.23	4,802.38	0.00	0.00	0.00	
12,100.00	90.00	87.67	6,436.00	701.92	4,858.15	4,902.24	0.00	0.00	0.00	
12,200.00	90.00	87.67	6,436.00	705.98	4,958.07	5,002.11	0.00	0.00	0.00	
12,300.00	90.00	87.67	6,436.00	710.05	5,057.98	5,101.97	0.00	0.00	0.00	
12,400.00	90.00	87.67	6,436.00	714.11	5,157.90	5,201.84	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well CANVASBACK FED 32-33-2HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4970.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4970.00usft
Site:	SEC 32-T9N-R60W	North Reference:	True
Well:	CANVASBACK FED 32-33-2HN	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)	
12,500.00	90.00	87.67	6,436.00	718.18	5,257.82	5,301.70	0.00	0.00	0.00	
12,600.00	90.00	87.67	6,436.00	722.25	5,357.73	5,401.57	0.00	0.00	0.00	
12,700.00	90.00	87.67	6,436.00	726.31	5,457.65	5,501.43	0.00	0.00	0.00	
12,800.00	90.00	87.67	6,436.00	730.38	5,557.57	5,601.30	0.00	0.00	0.00	
12,900.00	90.00	87.67	6,436.00	734.45	5,657.49	5,701.16	0.00	0.00	0.00	
13,000.00	90.00	87.67	6,436.00	738.51	5,757.40	5,801.03	0.00	0.00	0.00	
13,100.00	90.00	87.67	6,436.00	742.58	5,857.32	5,900.89	0.00	0.00	0.00	
13,200.00	90.00	87.67	6,436.00	746.64	5,957.24	6,000.76	0.00	0.00	0.00	
13,300.00	90.00	87.67	6,436.00	750.71	6,057.16	6,100.62	0.00	0.00	0.00	
13,400.00	90.00	87.67	6,436.00	754.78	6,157.07	6,200.49	0.00	0.00	0.00	
13,500.00	90.00	87.67	6,436.00	758.84	6,256.99	6,300.35	0.00	0.00	0.00	
13,600.00	90.00	87.67	6,436.00	762.91	6,356.91	6,400.22	0.00	0.00	0.00	
13,700.00	90.00	87.67	6,436.00	766.97	6,456.82	6,500.08	0.00	0.00	0.00	
13,800.00	90.00	87.67	6,436.00	771.04	6,556.74	6,599.95	0.00	0.00	0.00	
13,900.00	90.00	87.67	6,436.00	775.11	6,656.66	6,699.81	0.00	0.00	0.00	
14,000.00	90.00	87.67	6,436.00	779.17	6,756.58	6,799.68	0.00	0.00	0.00	
14,100.00	90.00	87.67	6,436.00	783.24	6,856.49	6,899.54	0.00	0.00	0.00	
14,200.00	90.00	87.67	6,436.00	787.30	6,956.41	6,999.41	0.00	0.00	0.00	
14,300.00	90.00	87.67	6,436.00	791.37	7,056.33	7,099.27	0.00	0.00	0.00	
14,400.00	90.00	87.67	6,436.00	795.44	7,156.25	7,199.14	0.00	0.00	0.00	
14,500.00	90.00	87.67	6,436.00	799.50	7,256.16	7,299.01	0.00	0.00	0.00	
14,600.00	90.00	87.67	6,436.00	803.57	7,356.08	7,398.87	0.00	0.00	0.00	
14,700.00	90.00	87.67	6,436.00	807.63	7,456.00	7,498.74	0.00	0.00	0.00	
14,800.00	90.00	87.67	6,436.00	811.70	7,555.92	7,598.60	0.00	0.00	0.00	
14,900.00	90.00	87.67	6,436.00	815.77	7,655.83	7,698.47	0.00	0.00	0.00	
15,000.00	90.00	87.67	6,436.00	819.83	7,755.75	7,798.33	0.00	0.00	0.00	
15,100.00	90.00	87.67	6,436.00	823.90	7,855.67	7,898.20	0.00	0.00	0.00	
15,200.00	90.00	87.67	6,436.00	827.97	7,955.58	7,998.06	0.00	0.00	0.00	
15,300.00	90.00	87.67	6,436.00	832.03	8,055.50	8,097.93	0.00	0.00	0.00	
15,400.00	90.00	87.67	6,436.00	836.10	8,155.42	8,197.79	0.00	0.00	0.00	
15,500.00	90.00	87.67	6,436.00	840.16	8,255.34	8,297.66	0.00	0.00	0.00	
15,600.00	90.00	87.67	6,436.00	844.23	8,355.25	8,397.52	0.00	0.00	0.00	
15,700.00	90.00	87.67	6,436.00	848.30	8,455.17	8,497.39	0.00	0.00	0.00	
15,800.00	90.00	87.67	6,436.00	852.36	8,555.09	8,597.25	0.00	0.00	0.00	
15,900.00	90.00	87.67	6,436.00	856.43	8,655.01	8,697.12	0.00	0.00	0.00	
16,000.00	90.00	87.67	6,436.00	860.49	8,754.92	8,796.98	0.00	0.00	0.00	
16,100.00	90.00	87.67	6,436.00	864.56	8,854.84	8,896.85	0.00	0.00	0.00	
16,200.00	90.00	87.67	6,436.00	868.63	8,954.76	8,996.71	0.00	0.00	0.00	
16,300.00	90.00	87.67	6,436.00	872.69	9,054.67	9,096.58	0.00	0.00	0.00	
16,400.00	90.00	87.67	6,436.00	876.76	9,154.59	9,196.44	0.00	0.00	0.00	
16,500.00	90.00	87.67	6,436.00	880.82	9,254.51	9,296.31	0.00	0.00	0.00	
16,600.00	90.00	87.67	6,436.00	884.89	9,354.43	9,396.17	0.00	0.00	0.00	
16,700.00	90.00	87.67	6,436.00	888.96	9,454.34	9,496.04	0.00	0.00	0.00	
16,800.00	90.00	87.67	6,436.00	893.02	9,554.26	9,595.90	0.00	0.00	0.00	
16,908.31	90.00	87.67	6,436.00	897.43	9,662.48	9,704.07	0.00	0.00	0.00	
TD at 16908.31										

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well CANVASBACK FED 32-33-2HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4970.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4970.00usft
Site:	SEC 32-T9N-R60W	North Reference:	True
Well:	CANVASBACK FED 32-33-2HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

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 FED 32- - plan hits target center - Point	0.00	0.00	6,436.00	897.43	9,662.48	1,504,733.50	3,391,180.31	40.710341°N	104.088936°W
CANVASBACK FED 32- - plan hits target center - Point	0.00	0.00	6,436.00	488.94	-375.38	1,504,169.28	3,381,150.00	40.709225°N	104.125143°W

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,586.56	1,568.00	Pierre Shale Top				
3,508.46	3,455.00	Richard Sandstone				
3,620.50	3,565.00	Parkman Sandstone				
4,320.20	4,252.00	Sussex Sandstone				
4,822.32	4,745.00	Shannon Sandstone				
5,659.52	5,567.00	TeePee Buttes				
6,325.05	6,203.00	Sharon Springs				
6,372.62	6,240.00	Niobrara Top				
6,610.93	6,382.00	Niobrara B2 Chalk Top				
6,862.14	6,436.00	Niobrara C Chalk Top (Target)				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
200.00	200.00	0.00	0.00	Start Build 2.00	
746.77	743.46	20.83	-47.67	Start 5117.14 hold at 746.77 MD	
5,863.91	5,767.68	409.56	-937.18	Start DLS 10.00 TFO 153.65	
6,862.14	6,436.00	488.94	-375.38	Start 10046.17 hold at 6862.14 MD	
16,908.31	6,436.00	897.43	9,662.48	TD at 16908.31	