

MALLARD EXPLORATION

**WELD COUNTY
SEC 25-T8N-R60W
EIDER 36-1-6HN**

OWB

Plan: PROPOSAL 2

Standard Planning Report

08 April, 2022



Project: WELD COUNTY
Site: SEC 25-T8N-R60W
Well: EIDER 36-1-6HN
Wellbore: OWB
Design: PROPOSAL 2

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



Azimuths to True North
Magnetic North: 7.51°
Magnetic Field
Strength: 52179.9nT
Dip Angle: 66.95°
Date: 2/17/2021
Model: IGRF2020

WELL DETAILS: EIDER 36-1-6HN

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1475455.59	3405532.52	40.629351°N	104.038914°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	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	1109.19	16.18	126.02	1098.47	-66.76	91.82	2.00	126.02	75.30	
4	6039.57	16.18	126.02	5833.47	-874.92	1203.24	0.00	0.00	986.81	
5	6947.84	90.00	181.14	6302.00	-1442.66	1303.54	10.00	56.19	1561.57	LP-EIDER 6HN (P2)
6	11726.92	90.00	181.14	6302.00	-6320.78	1206.70	0.00	0.00	6407.65	
7	12120.06	90.00	189.00	6302.00	-6712.07	1171.99	2.00	90.00	6793.77	
8	12220.06	90.00	189.00	6302.00	-6810.84	1156.35	0.00	0.00	6890.57	
9	12659.35	90.00	180.21	6302.00	-7248.28	1121.10	2.00	-90.00	7322.58	PBHL-EIDER 6HN (P2)
10	16828.74	90.00	180.21	6302.00	-11417.65	1105.51	0.00	0.00	11471.04	PBHL-EIDER 6HN (P2)

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
134.00	134.00	Laramie Shale Base
514.00	514.20	Laramie Fox Hills Base
834.00	837.14	Pierre Shale Base
1534.00	1562.69	Upper Pierre Shale Base
3244.00	3343.25	Richard Sandstone
3359.00	3462.99	Parkman Sandstone
3689.00	3806.61	Parkman Sandstone Base
6030.00	6255.81	Sharon Springs
6074.00	6310.08	Niobrara Top
6200.00	6495.70	Niobrara B2 Chalk Top
6268.00	6646.68	Niobrara C Chalk Target Reservoir Top
6294.00	6750.65	Niobrara C Chalk Target Top
6302.00	6847.84	Niobrara C Chalk Target Landing Point

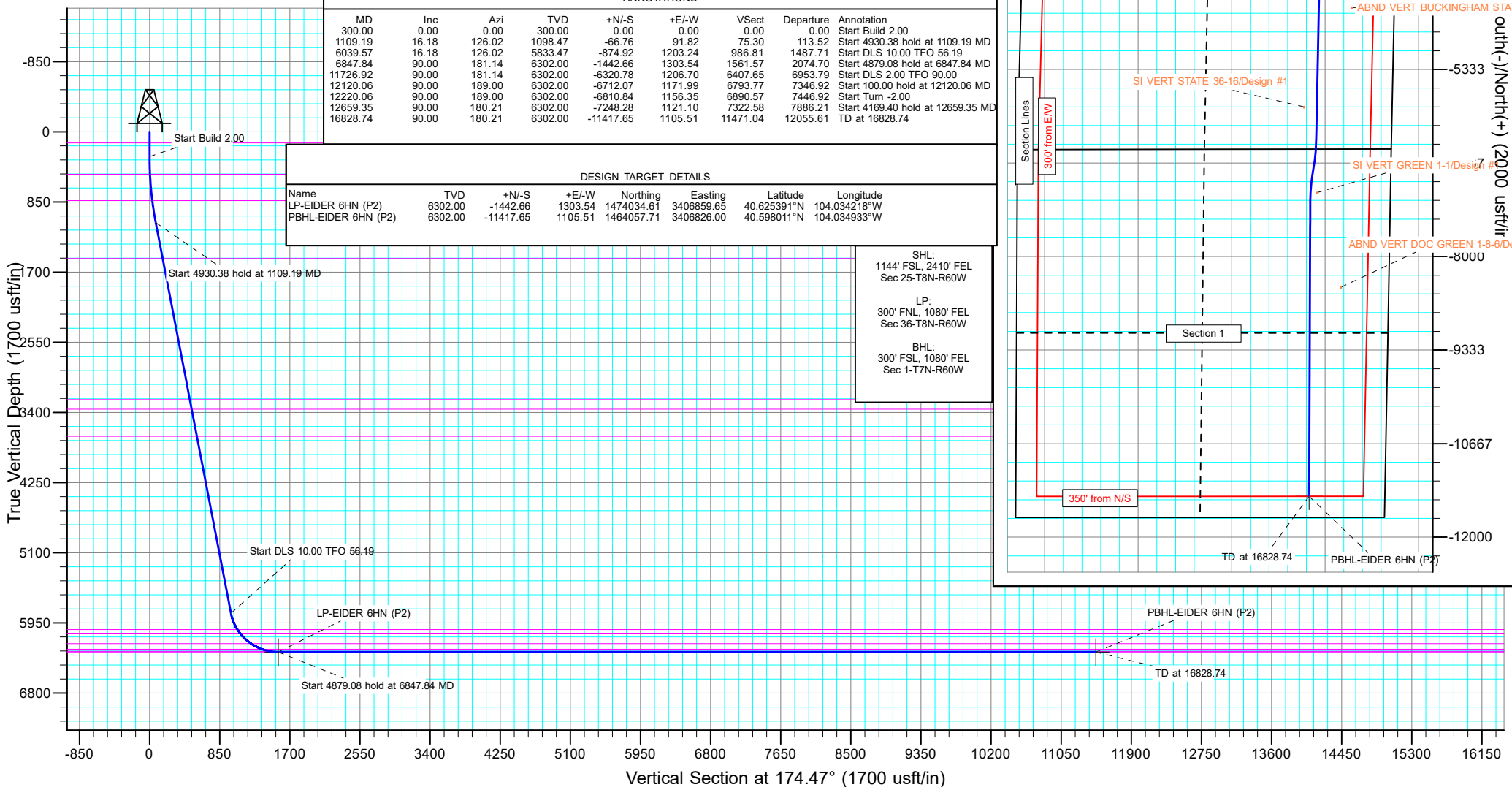
ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	Start Build 2.00
1109.19	16.18	126.02	1098.47	-66.76	91.82	75.30	113.52	Start 4930.38 hold at 1109.19 MD
6039.57	16.18	126.02	5833.47	-874.92	1203.24	986.81	1487.71	Start DLS 10.00 TFO 56.19
6947.84	90.00	181.14	6302.00	-1442.66	1303.54	1561.57	2074.70	Start 4879.08 hold at 6947.84 MD
11726.92	90.00	181.14	6302.00	-6320.78	1206.70	6407.65	6953.79	Start DLS 2.00 TFO 90.00
12120.06	90.00	189.00	6302.00	-6712.07	1171.99	6793.77	7346.92	Start 100.00 hold at 12120.06 MD
12220.06	90.00	189.00	6302.00	-6810.84	1156.35	6890.57	7446.92	Start Turn -2.00
12659.35	90.00	180.21	6302.00	-7248.28	1121.10	7322.58	7886.21	Start 4169.40 hold at 12659.35 MD
16828.74	90.00	180.21	6302.00	-11417.65	1105.51	11471.04	12055.61	TD at 16828.74

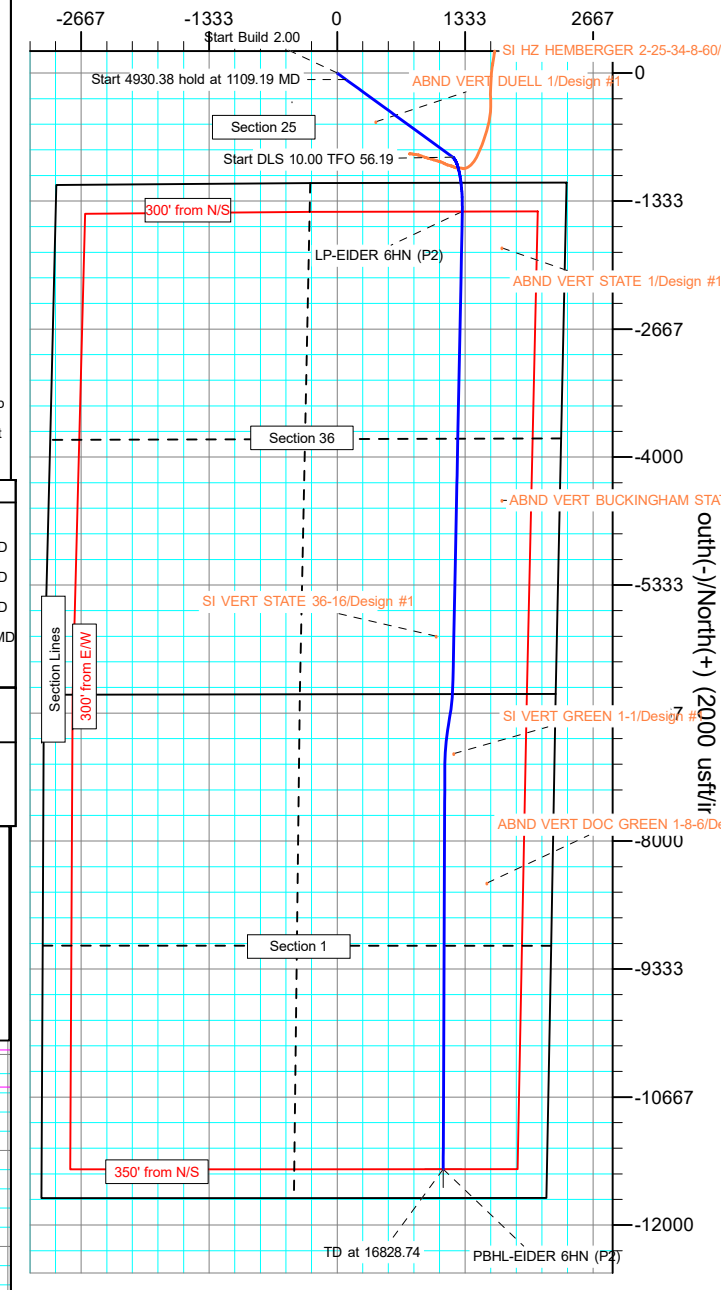
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
LP-EIDER 6HN (P2)	6302.00	-1442.66	1303.54	1474034.61	3406859.65	40.625391°N	104.034218°W
PBHL-EIDER 6HN (P2)	6302.00	-11417.65	1105.51	1464057.71	3406826.00	40.598011°N	104.034933°W

SHL:
1144' FSL, 2410' FEL
Sec 25-T8N-R60W
LP:
300' FNL, 1080' FEL
Sec 36-T8N-R60W
BHL:
300' FSL, 1080' FEL
Sec 1-T7N-R60W



West(-)/East(+) (2000 usft/in)



Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well EIDER 36-1-6HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4954.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4954.00usft
Site:	SEC 25-T8N-R60W	North Reference:	True
Well:	EIDER 36-1-6HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 2		

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 25-T8N-R60W				
Site Position:		Northing:	1,474,353.84	usft	Latitude:	40.626218°N
From:	Lat/Long	Easting:	3,407,940.97	usft	Longitude:	104.030304°W
Position Uncertainty:		0.00	usft	Slot Radius:	13.200	in

Well		EIDER 36-1-6HN				
Well Position	+N/-S	0.00 usft	Northing:	1,475,455.60 usft	Latitude:	40.629351°N
	+E/-W	0.00 usft	Easting:	3,405,532.52 usft	Longitude:	104.038914°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,927.00 usft
Grid Convergence:		0.94 °				

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	2/17/2021	7.51	66.95	52,179.85522317

Design	PROPOSAL 2				
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	174.47	

Plan Survey Tool Program	Date	4/8/2022			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	16,828.74 PROPOSAL 2 (OWB)	MWD		
			OWSG MWD - Standard		

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Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4954.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4954.00usft
Site:	SEC 25-T8N-R60W	North Reference:	True
Well:	EIDER 36-1-6HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 2		

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	
1,109.19	16.18	126.02	1,098.47	-66.76	91.82	2.00	2.00	0.00	126.02	
6,039.57	16.18	126.02	5,833.47	-874.92	1,203.24	0.00	0.00	0.00	0.00	
6,847.84	90.00	181.14	6,302.00	-1,442.66	1,303.54	10.00	9.13	6.82	56.19	LP-EIDER 6HN (P2)
11,726.92	90.00	181.14	6,302.00	-6,320.78	1,206.70	0.00	0.00	0.00	0.00	
12,120.06	90.00	189.00	6,302.00	-6,712.07	1,171.99	2.00	0.00	2.00	90.00	
12,220.06	90.00	189.00	6,302.00	-6,810.84	1,156.35	0.00	0.00	0.00	0.00	
12,659.35	90.00	180.21	6,302.00	-7,248.28	1,121.10	2.00	0.00	-2.00	-90.00	PBHL-EIDER 6HN (P
16,828.74	90.00	180.21	6,302.00	-11,417.65	1,105.51	0.00	0.00	0.00	0.00	PBHL-EIDER 6HN (P

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well EIDER 36-1-6HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4954.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4954.00usft
Site:	SEC 25-T8N-R60W	North Reference:	True
Well:	EIDER 36-1-6HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 2		

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
134.00	0.00	0.00	134.00	0.00	0.00	0.00	0.00	0.00	0.00
Laramie Shale Base									
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	126.02	399.98	-1.03	1.41	1.16	2.00	2.00	0.00
500.00	4.00	126.02	499.84	-4.10	5.64	4.63	2.00	2.00	0.00
514.20	4.28	126.02	514.00	-4.71	6.47	5.31	2.00	2.00	0.00
Laramie Fox Hills Base									
600.00	6.00	126.02	599.45	-9.23	12.69	10.41	2.00	2.00	0.00
700.00	8.00	126.02	698.70	-16.40	22.55	18.49	2.00	2.00	0.00
800.00	10.00	126.02	797.47	-25.60	35.20	28.87	2.00	2.00	0.00
837.14	10.74	126.02	834.00	-29.53	40.61	33.30	2.00	2.00	0.00
Pierre Shale Base									
900.00	12.00	126.02	895.62	-36.82	50.63	41.52	2.00	2.00	0.00
1,000.00	14.00	126.02	993.06	-50.05	68.83	56.45	2.00	2.00	0.00
1,100.00	16.00	126.02	1,089.64	-65.27	89.76	73.61	2.00	2.00	0.00
1,109.19	16.18	126.02	1,098.47	-66.76	91.82	75.30	2.00	2.00	0.00
Start 4930.38 hold at 1109.19 MD									
1,200.00	16.18	126.02	1,185.68	-81.65	112.29	92.09	0.00	0.00	0.00
1,300.00	16.18	126.02	1,281.72	-98.04	134.83	110.58	0.00	0.00	0.00
1,400.00	16.18	126.02	1,377.76	-114.43	157.37	129.07	0.00	0.00	0.00
1,500.00	16.18	126.02	1,473.80	-130.82	179.92	147.55	0.00	0.00	0.00
1,562.69	16.18	126.02	1,534.00	-141.10	194.05	159.14	0.00	0.00	0.00
Upper Pierre Shale Base									
1,600.00	16.18	126.02	1,569.83	-147.21	202.46	166.04	0.00	0.00	0.00
1,700.00	16.18	126.02	1,665.87	-163.61	225.00	184.53	0.00	0.00	0.00
1,800.00	16.18	126.02	1,761.91	-180.00	247.54	203.02	0.00	0.00	0.00
1,900.00	16.18	126.02	1,857.95	-196.39	270.09	221.50	0.00	0.00	0.00
2,000.00	16.18	126.02	1,953.98	-212.78	292.63	239.99	0.00	0.00	0.00
2,100.00	16.18	126.02	2,050.02	-229.17	315.17	258.48	0.00	0.00	0.00
2,200.00	16.18	126.02	2,146.06	-245.56	337.71	276.97	0.00	0.00	0.00
2,300.00	16.18	126.02	2,242.09	-261.95	360.25	295.45	0.00	0.00	0.00
2,400.00	16.18	126.02	2,338.13	-278.35	382.80	313.94	0.00	0.00	0.00
2,500.00	16.18	126.02	2,434.17	-294.74	405.34	332.43	0.00	0.00	0.00
2,600.00	16.18	126.02	2,530.21	-311.13	427.88	350.92	0.00	0.00	0.00
2,700.00	16.18	126.02	2,626.24	-327.52	450.42	369.41	0.00	0.00	0.00
2,800.00	16.18	126.02	2,722.28	-343.91	472.97	387.89	0.00	0.00	0.00
2,900.00	16.18	126.02	2,818.32	-360.30	495.51	406.38	0.00	0.00	0.00
3,000.00	16.18	126.02	2,914.36	-376.69	518.05	424.87	0.00	0.00	0.00
3,100.00	16.18	126.02	3,010.39	-393.09	540.59	443.36	0.00	0.00	0.00
3,200.00	16.18	126.02	3,106.43	-409.48	563.14	461.84	0.00	0.00	0.00
3,300.00	16.18	126.02	3,202.47	-425.87	585.68	480.33	0.00	0.00	0.00
3,343.25	16.18	126.02	3,244.00	-432.96	595.43	488.33	0.00	0.00	0.00
Richard Sandstone									
3,400.00	16.18	126.02	3,298.50	-442.26	608.22	498.82	0.00	0.00	0.00
3,462.99	16.18	126.02	3,359.00	-452.59	622.42	510.46	0.00	0.00	0.00
Parkman Sandstone									
3,500.00	16.18	126.02	3,394.54	-458.65	630.76	517.31	0.00	0.00	0.00
3,600.00	16.18	126.02	3,490.58	-475.04	653.31	535.79	0.00	0.00	0.00
3,700.00	16.18	126.02	3,586.62	-491.44	675.85	554.28	0.00	0.00	0.00
3,800.00	16.18	126.02	3,682.65	-507.83	698.39	572.77	0.00	0.00	0.00
3,806.61	16.18	126.02	3,689.00	-508.91	699.88	573.99	0.00	0.00	0.00

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Project:	WELD COUNTY	MD Reference:	KB 27' @ 4954.00usft
Site:	SEC 25-T8N-R60W	North Reference:	True
Well:	EIDER 36-1-6HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 2		

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)
Parkman Sandstone Base									
3,900.00	16.18	126.02	3,778.69	-524.22	720.93	591.26	0.00	0.00	0.00
4,000.00	16.18	126.02	3,874.73	-540.61	743.48	609.74	0.00	0.00	0.00
4,100.00	16.18	126.02	3,970.77	-557.00	766.02	628.23	0.00	0.00	0.00
4,200.00	16.18	126.02	4,066.80	-573.39	788.56	646.72	0.00	0.00	0.00
4,300.00	16.18	126.02	4,162.84	-589.78	811.10	665.21	0.00	0.00	0.00
4,400.00	16.18	126.02	4,258.88	-606.18	833.65	683.70	0.00	0.00	0.00
4,500.00	16.18	126.02	4,354.91	-622.57	856.19	702.18	0.00	0.00	0.00
4,600.00	16.18	126.02	4,450.95	-638.96	878.73	720.67	0.00	0.00	0.00
4,700.00	16.18	126.02	4,546.99	-655.35	901.27	739.16	0.00	0.00	0.00
4,800.00	16.18	126.02	4,643.03	-671.74	923.82	757.65	0.00	0.00	0.00
4,900.00	16.18	126.02	4,739.06	-688.13	946.36	776.13	0.00	0.00	0.00
5,000.00	16.18	126.02	4,835.10	-704.52	968.90	794.62	0.00	0.00	0.00
5,100.00	16.18	126.02	4,931.14	-720.92	991.44	813.11	0.00	0.00	0.00
5,200.00	16.18	126.02	5,027.18	-737.31	1,013.99	831.60	0.00	0.00	0.00
5,300.00	16.18	126.02	5,123.21	-753.70	1,036.53	850.08	0.00	0.00	0.00
5,400.00	16.18	126.02	5,219.25	-770.09	1,059.07	868.57	0.00	0.00	0.00
5,500.00	16.18	126.02	5,315.29	-786.48	1,081.61	887.06	0.00	0.00	0.00
5,600.00	16.18	126.02	5,411.32	-802.87	1,104.15	905.55	0.00	0.00	0.00
5,700.00	16.18	126.02	5,507.36	-819.26	1,126.70	924.03	0.00	0.00	0.00
5,800.00	16.18	126.02	5,603.40	-835.66	1,149.24	942.52	0.00	0.00	0.00
5,900.00	16.18	126.02	5,699.44	-852.05	1,171.78	961.01	0.00	0.00	0.00
6,000.00	16.18	126.02	5,795.47	-868.44	1,194.32	979.50	0.00	0.00	0.00
6,039.57	16.18	126.02	5,833.47	-874.92	1,203.24	986.81	0.00	0.00	0.00
Start DLS 10.00 TFO 56.19									
6,100.00	20.16	140.72	5,890.91	-887.95	1,216.66	1,001.07	10.00	6.59	24.33
6,200.00	28.34	154.95	5,982.08	-922.89	1,237.68	1,037.87	10.00	8.18	14.23
6,255.81	33.32	159.90	6,030.00	-949.31	1,248.56	1,065.22	10.00	8.91	8.88
Sharon Springs									
6,300.00	37.37	162.97	6,066.04	-973.54	1,256.66	1,090.12	10.00	9.16	6.94
6,310.08	38.30	163.59	6,074.00	-979.46	1,258.44	1,096.18	10.00	9.26	6.16
Niobrara Top									
6,400.00	46.74	168.19	6,140.23	-1,038.36	1,273.04	1,156.22	10.00	9.39	5.12
6,495.70	55.88	171.85	6,200.00	-1,111.85	1,285.82	1,230.60	10.00	9.55	3.83
Niobrara B2 Chalk Top									
6,500.00	56.29	172.00	6,202.40	-1,115.39	1,286.32	1,234.16	10.00	9.60	3.36
6,600.00	65.93	175.03	6,250.66	-1,202.28	1,296.08	1,321.59	10.00	9.64	3.04
6,646.68	70.45	176.29	6,268.00	-1,245.49	1,299.35	1,364.91	10.00	9.68	2.69
Niobrara C Chalk Target Reservoir Top									
6,700.00	75.63	177.64	6,283.55	-1,296.39	1,302.05	1,415.84	10.00	9.70	2.53
6,750.65	80.55	178.87	6,294.00	-1,345.91	1,303.55	1,465.28	10.00	9.72	2.42
Niobrara C Chalk Target Top									
6,800.00	85.35	180.03	6,300.06	-1,394.87	1,304.02	1,514.05	10.00	9.72	2.35
6,847.84	90.00	181.14	6,302.00	-1,442.66	1,303.54	1,561.57	10.00	9.73	2.32
Start 4879.08 hold at 6847.84 MD - Niobrara C Chalk Target Landing Point									
6,900.00	90.00	181.14	6,302.00	-1,494.81	1,302.50	1,613.38	0.00	0.00	0.00
7,000.00	90.00	181.14	6,302.00	-1,594.79	1,300.52	1,712.70	0.00	0.00	0.00
7,100.00	90.00	181.14	6,302.00	-1,694.77	1,298.53	1,812.02	0.00	0.00	0.00
7,200.00	90.00	181.14	6,302.00	-1,794.75	1,296.55	1,911.35	0.00	0.00	0.00
7,300.00	90.00	181.14	6,302.00	-1,894.73	1,294.56	2,010.67	0.00	0.00	0.00
7,400.00	90.00	181.14	6,302.00	-1,994.71	1,292.58	2,109.99	0.00	0.00	0.00
7,500.00	90.00	181.14	6,302.00	-2,094.69	1,290.59	2,209.32	0.00	0.00	0.00
7,600.00	90.00	181.14	6,302.00	-2,194.67	1,288.61	2,308.64	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well EIDER 36-1-6HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4954.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4954.00usft
Site:	SEC 25-T8N-R60W	North Reference:	True
Well:	EIDER 36-1-6HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 2		

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)	
7,700.00	90.00	181.14	6,302.00	-2,294.65	1,286.62	2,407.97	0.00	0.00	0.00	
7,800.00	90.00	181.14	6,302.00	-2,394.63	1,284.64	2,507.29	0.00	0.00	0.00	
7,900.00	90.00	181.14	6,302.00	-2,494.61	1,282.65	2,606.61	0.00	0.00	0.00	
8,000.00	90.00	181.14	6,302.00	-2,594.59	1,280.67	2,705.94	0.00	0.00	0.00	
8,100.00	90.00	181.14	6,302.00	-2,694.57	1,278.68	2,805.26	0.00	0.00	0.00	
8,200.00	90.00	181.14	6,302.00	-2,794.55	1,276.70	2,904.58	0.00	0.00	0.00	
8,300.00	90.00	181.14	6,302.00	-2,894.53	1,274.71	3,003.91	0.00	0.00	0.00	
8,400.00	90.00	181.14	6,302.00	-2,994.51	1,272.73	3,103.23	0.00	0.00	0.00	
8,500.00	90.00	181.14	6,302.00	-3,094.49	1,270.74	3,202.55	0.00	0.00	0.00	
8,600.00	90.00	181.14	6,302.00	-3,194.47	1,268.76	3,301.88	0.00	0.00	0.00	
8,700.00	90.00	181.14	6,302.00	-3,294.45	1,266.77	3,401.20	0.00	0.00	0.00	
8,800.00	90.00	181.14	6,302.00	-3,394.43	1,264.79	3,500.53	0.00	0.00	0.00	
8,900.00	90.00	181.14	6,302.00	-3,494.41	1,262.80	3,599.85	0.00	0.00	0.00	
9,000.00	90.00	181.14	6,302.00	-3,594.39	1,260.82	3,699.17	0.00	0.00	0.00	
9,100.00	90.00	181.14	6,302.00	-3,694.37	1,258.83	3,798.50	0.00	0.00	0.00	
9,200.00	90.00	181.14	6,302.00	-3,794.35	1,256.85	3,897.82	0.00	0.00	0.00	
9,300.00	90.00	181.14	6,302.00	-3,894.33	1,254.87	3,997.14	0.00	0.00	0.00	
9,400.00	90.00	181.14	6,302.00	-3,994.32	1,252.88	4,096.47	0.00	0.00	0.00	
9,500.00	90.00	181.14	6,302.00	-4,094.30	1,250.90	4,195.79	0.00	0.00	0.00	
9,600.00	90.00	181.14	6,302.00	-4,194.28	1,248.91	4,295.11	0.00	0.00	0.00	
9,700.00	90.00	181.14	6,302.00	-4,294.26	1,246.93	4,394.44	0.00	0.00	0.00	
9,800.00	90.00	181.14	6,302.00	-4,394.24	1,244.94	4,493.76	0.00	0.00	0.00	
9,900.00	90.00	181.14	6,302.00	-4,494.22	1,242.96	4,593.09	0.00	0.00	0.00	
10,000.00	90.00	181.14	6,302.00	-4,594.20	1,240.97	4,692.41	0.00	0.00	0.00	
10,100.00	90.00	181.14	6,302.00	-4,694.18	1,238.99	4,791.73	0.00	0.00	0.00	
10,200.00	90.00	181.14	6,302.00	-4,794.16	1,237.00	4,891.06	0.00	0.00	0.00	
10,300.00	90.00	181.14	6,302.00	-4,894.14	1,235.02	4,990.38	0.00	0.00	0.00	
10,400.00	90.00	181.14	6,302.00	-4,994.12	1,233.03	5,089.70	0.00	0.00	0.00	
10,500.00	90.00	181.14	6,302.00	-5,094.10	1,231.05	5,189.03	0.00	0.00	0.00	
10,600.00	90.00	181.14	6,302.00	-5,194.08	1,229.06	5,288.35	0.00	0.00	0.00	
10,700.00	90.00	181.14	6,302.00	-5,294.06	1,227.08	5,387.67	0.00	0.00	0.00	
10,800.00	90.00	181.14	6,302.00	-5,394.04	1,225.09	5,487.00	0.00	0.00	0.00	
10,900.00	90.00	181.14	6,302.00	-5,494.02	1,223.11	5,586.32	0.00	0.00	0.00	
11,000.00	90.00	181.14	6,302.00	-5,594.00	1,221.12	5,685.65	0.00	0.00	0.00	
11,100.00	90.00	181.14	6,302.00	-5,693.98	1,219.14	5,784.97	0.00	0.00	0.00	
11,200.00	90.00	181.14	6,302.00	-5,793.96	1,217.15	5,884.29	0.00	0.00	0.00	
11,300.00	90.00	181.14	6,302.00	-5,893.94	1,215.17	5,983.62	0.00	0.00	0.00	
11,400.00	90.00	181.14	6,302.00	-5,993.92	1,213.18	6,082.94	0.00	0.00	0.00	
11,500.00	90.00	181.14	6,302.00	-6,093.90	1,211.20	6,182.26	0.00	0.00	0.00	
11,600.00	90.00	181.14	6,302.00	-6,193.88	1,209.21	6,281.59	0.00	0.00	0.00	
11,700.00	90.00	181.14	6,302.00	-6,293.86	1,207.23	6,380.91	0.00	0.00	0.00	
11,726.92	90.00	181.14	6,302.00	-6,320.78	1,206.70	6,407.65	0.00	0.00	0.00	
Start DLS 2.00 TFO 90.00										
11,800.00	90.00	182.60	6,302.00	-6,393.82	1,204.31	6,480.12	2.00	0.00	2.00	
11,900.00	90.00	184.60	6,302.00	-6,493.61	1,198.04	6,578.85	2.00	0.00	2.00	
12,000.00	90.00	186.60	6,302.00	-6,593.13	1,188.28	6,676.96	2.00	0.00	2.00	
12,100.00	90.00	188.60	6,302.00	-6,692.25	1,175.06	6,774.34	2.00	0.00	2.00	
12,120.06	90.00	189.00	6,302.00	-6,712.07	1,171.99	6,793.77	2.00	0.00	2.00	
Start 100.00 hold at 12120.06 MD										
12,200.00	90.00	189.00	6,302.00	-6,791.03	1,159.48	6,871.16	0.00	0.00	0.00	
12,220.06	90.00	189.00	6,302.00	-6,810.84	1,156.35	6,890.57	0.00	0.00	0.00	
Start Turn -2.00										
12,300.00	90.00	187.40	6,302.00	-6,889.96	1,144.94	6,968.23	2.00	0.00	-2.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well EIDER 36-1-6HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4954.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4954.00usft
Site:	SEC 25-T8N-R60W	North Reference:	True
Well:	EIDER 36-1-6HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 2		

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)	
12,400.00	90.00	185.40	6,302.00	-6,989.33	1,133.79	7,066.07	2.00	0.00	-2.00	
12,500.00	90.00	183.40	6,302.00	-7,089.03	1,126.12	7,164.56	2.00	0.00	-2.00	
12,600.00	90.00	181.40	6,302.00	-7,188.94	1,121.93	7,263.60	2.00	0.00	-2.00	
12,659.35	90.00	180.21	6,302.00	-7,248.28	1,121.10	7,322.58	2.00	0.00	-2.00	
Start 4169.40 hold at 12659.35 MD										
12,700.00	90.00	180.21	6,302.00	-7,288.93	1,120.94	7,363.03	0.00	0.00	0.00	
12,800.00	90.00	180.21	6,302.00	-7,388.93	1,120.57	7,462.53	0.00	0.00	0.00	
12,900.00	90.00	180.21	6,302.00	-7,488.93	1,120.20	7,562.03	0.00	0.00	0.00	
13,000.00	90.00	180.21	6,302.00	-7,588.93	1,119.82	7,661.53	0.00	0.00	0.00	
13,100.00	90.00	180.21	6,302.00	-7,688.93	1,119.45	7,761.02	0.00	0.00	0.00	
13,200.00	90.00	180.21	6,302.00	-7,788.93	1,119.07	7,860.52	0.00	0.00	0.00	
13,300.00	90.00	180.21	6,302.00	-7,888.93	1,118.70	7,960.02	0.00	0.00	0.00	
13,400.00	90.00	180.21	6,302.00	-7,988.93	1,118.33	8,059.52	0.00	0.00	0.00	
13,500.00	90.00	180.21	6,302.00	-8,088.93	1,117.95	8,159.02	0.00	0.00	0.00	
13,600.00	90.00	180.21	6,302.00	-8,188.93	1,117.58	8,258.51	0.00	0.00	0.00	
13,700.00	90.00	180.21	6,302.00	-8,288.93	1,117.21	8,358.01	0.00	0.00	0.00	
13,800.00	90.00	180.21	6,302.00	-8,388.92	1,116.83	8,457.51	0.00	0.00	0.00	
13,900.00	90.00	180.21	6,302.00	-8,488.92	1,116.46	8,557.01	0.00	0.00	0.00	
14,000.00	90.00	180.21	6,302.00	-8,588.92	1,116.08	8,656.51	0.00	0.00	0.00	
14,100.00	90.00	180.21	6,302.00	-8,688.92	1,115.71	8,756.00	0.00	0.00	0.00	
14,200.00	90.00	180.21	6,302.00	-8,788.92	1,115.34	8,855.50	0.00	0.00	0.00	
14,300.00	90.00	180.21	6,302.00	-8,888.92	1,114.96	8,955.00	0.00	0.00	0.00	
14,400.00	90.00	180.21	6,302.00	-8,988.92	1,114.59	9,054.50	0.00	0.00	0.00	
14,500.00	90.00	180.21	6,302.00	-9,088.92	1,114.22	9,153.99	0.00	0.00	0.00	
14,600.00	90.00	180.21	6,302.00	-9,188.92	1,113.84	9,253.49	0.00	0.00	0.00	
14,700.00	90.00	180.21	6,302.00	-9,288.92	1,113.47	9,352.99	0.00	0.00	0.00	
14,800.00	90.00	180.21	6,302.00	-9,388.92	1,113.09	9,452.49	0.00	0.00	0.00	
14,900.00	90.00	180.21	6,302.00	-9,488.92	1,112.72	9,551.99	0.00	0.00	0.00	
15,000.00	90.00	180.21	6,302.00	-9,588.92	1,112.35	9,651.48	0.00	0.00	0.00	
15,100.00	90.00	180.21	6,302.00	-9,688.92	1,111.97	9,750.98	0.00	0.00	0.00	
15,200.00	90.00	180.21	6,302.00	-9,788.92	1,111.60	9,850.48	0.00	0.00	0.00	
15,300.00	90.00	180.21	6,302.00	-9,888.91	1,111.23	9,949.98	0.00	0.00	0.00	
15,400.00	90.00	180.21	6,302.00	-9,988.91	1,110.85	10,049.47	0.00	0.00	0.00	
15,500.00	90.00	180.21	6,302.00	-10,088.91	1,110.48	10,148.97	0.00	0.00	0.00	
15,600.00	90.00	180.21	6,302.00	-10,188.91	1,110.10	10,248.47	0.00	0.00	0.00	
15,700.00	90.00	180.21	6,302.00	-10,288.91	1,109.73	10,347.97	0.00	0.00	0.00	
15,800.00	90.00	180.21	6,302.00	-10,388.91	1,109.36	10,447.47	0.00	0.00	0.00	
15,900.00	90.00	180.21	6,302.00	-10,488.91	1,108.98	10,546.96	0.00	0.00	0.00	
16,000.00	90.00	180.21	6,302.00	-10,588.91	1,108.61	10,646.46	0.00	0.00	0.00	
16,100.00	90.00	180.21	6,302.00	-10,688.91	1,108.24	10,745.96	0.00	0.00	0.00	
16,200.00	90.00	180.21	6,302.00	-10,788.91	1,107.86	10,845.46	0.00	0.00	0.00	
16,300.00	90.00	180.21	6,302.00	-10,888.91	1,107.49	10,944.95	0.00	0.00	0.00	
16,400.00	90.00	180.21	6,302.00	-10,988.91	1,107.11	11,044.45	0.00	0.00	0.00	
16,500.00	90.00	180.21	6,302.00	-11,088.91	1,106.74	11,143.95	0.00	0.00	0.00	
16,600.00	90.00	180.21	6,302.00	-11,188.91	1,106.37	11,243.45	0.00	0.00	0.00	
16,700.00	90.00	180.21	6,302.00	-11,288.90	1,105.99	11,342.95	0.00	0.00	0.00	
16,800.00	90.00	180.21	6,302.00	-11,388.90	1,105.62	11,442.44	0.00	0.00	0.00	
16,828.74	90.00	180.21	6,302.00	-11,417.65	1,105.51	11,471.04	0.00	0.00	0.00	
TD at 16828.74										

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well EIDER 36-1-6HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4954.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4954.00usft
Site:	SEC 25-T8N-R60W	North Reference:	True
Well:	EIDER 36-1-6HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 2		

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
LP-EIDER 6HN (P2) - plan hits target center - Point	0.00	0.00	6,302.00	-1,442.66	1,303.54	1,474,034.61	3,406,859.64	40.625391°N	104.034218°W
PBHL-EIDER 6HN (P2) - plan hits target center - Point	0.00	0.00	6,302.00	-11,417.65	1,105.51	1,464,057.72	3,406,826.00	40.598011°N	104.034933°W

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
134.00	134.00	Laramie Shale Base				
514.20	514.00	Laramie Fox Hills Base				
837.14	834.00	Pierre Shale Base				
1,562.69	1,534.00	Upper Pierre Shale Base				
3,343.25	3,244.00	Richard Sandstone				
3,462.99	3,359.00	Parkman Sandstone				
3,806.61	3,689.00	Parkman Sandstone Base				
6,255.81	6,030.00	Sharon Springs				
6,310.08	6,074.00	Niobrara Top				
6,495.70	6,200.00	Niobrara B2 Chalk Top				
6,646.68	6,268.00	Niobrara C Chalk Target Reservoir Top				
6,750.65	6,294.00	Niobrara C Chalk Target Top				
6,847.84	6,302.00	Niobrara C Chalk Target Landing Point				

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	
1,109.19	1,098.47	-66.76	91.82	Start 4930.38 hold at 1109.19 MD	
6,039.57	5,833.47	-874.92	1,203.24	Start DLS 10.00 TFO 56.19	
6,847.84	6,302.00	-1,442.66	1,303.54	Start 4879.08 hold at 6847.84 MD	
11,726.92	6,302.00	-6,320.78	1,206.70	Start DLS 2.00 TFO 90.00	
12,120.06	6,302.00	-6,712.07	1,171.99	Start 100.00 hold at 12120.06 MD	
12,220.06	6,302.00	-6,810.84	1,156.35	Start Turn -2.00	
12,659.35	6,302.00	-7,248.28	1,121.10	Start 4169.40 hold at 12659.35 MD	
16,828.74	6,302.00	-11,417.65	1,105.51	TD at 16828.74	