

MALLARD EXPLORATION

WELD COUNTY

SEC 19-T8N-R60W

HUNT FED 8-60 19-24-2

OWB

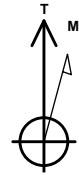
Plan: PROPOSAL 1

Standard Planning Report

19 November, 2022



Project: WELD COUNTY
Site: SEC 19-T8N-R60W
Well: HUNT FED 8-60 19-24-2
Wellbore: OWB
Design: PROPOSAL 1



Azimuths to True North
Magnetic North: 7.38°
Magnetic Field
Strength: 51996.5nT
Dip Angle: 66.88°
Date: 11/19/2022
Model: IGRF2020

WELL DETAILS: HUNT FED 8-60 19-24-2

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1482695.78	3380946.52	40.650300°N	104.127076°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	Target
2	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	
3	716.14	12.32	45.19	711.40	46.52	46.82	2.00	45.19	-42.57	
4	5912.73	12.32	45.19	5788.27	828.18	833.60	0.00	0.00	-757.92	
5	6900.43	90.00	269.59	6441.00	923.93	266.65	10.00	-134.93	-184.77	LP-HUNT FED 19-24-2
6	16876.10	90.00	269.59	6441.00	852.98	-9708.76	0.00	0.00	9746.16	PBHL-HUNT FED 19-24-2

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	Start Build 2.00
716.14	12.32	45.19	711.40	46.52	46.82	-42.57	66.00	Start 5196.59 hold at 716.14 MD
5912.73	12.32	45.19	5788.27	828.18	833.60	-757.92	1175.06	Start DLS 10.00 TFO -134.93
6900.43	90.00	269.59	6441.00	923.93	266.65	-184.77	1782.08	Start 9975.66 hold at 6900.43 MD
16876.10	90.00	269.59	6441.00	852.98	-9708.76	9746.16	11757.74	TD at 16876.10

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
LP-HUNT FED 19-24-2 - plan hits target center	6441.00	923.93	266.65	1483623.72	3381198.84	40.652836°N	104.126115°W	Point
PBHL-HUNT FED 19-24-2 - plan hits target center	6441.00	852.98	-9708.76	1483398.34	3371225.72	40.652636°N	104.162066°W	Point

FORMATION TOP DETAILS

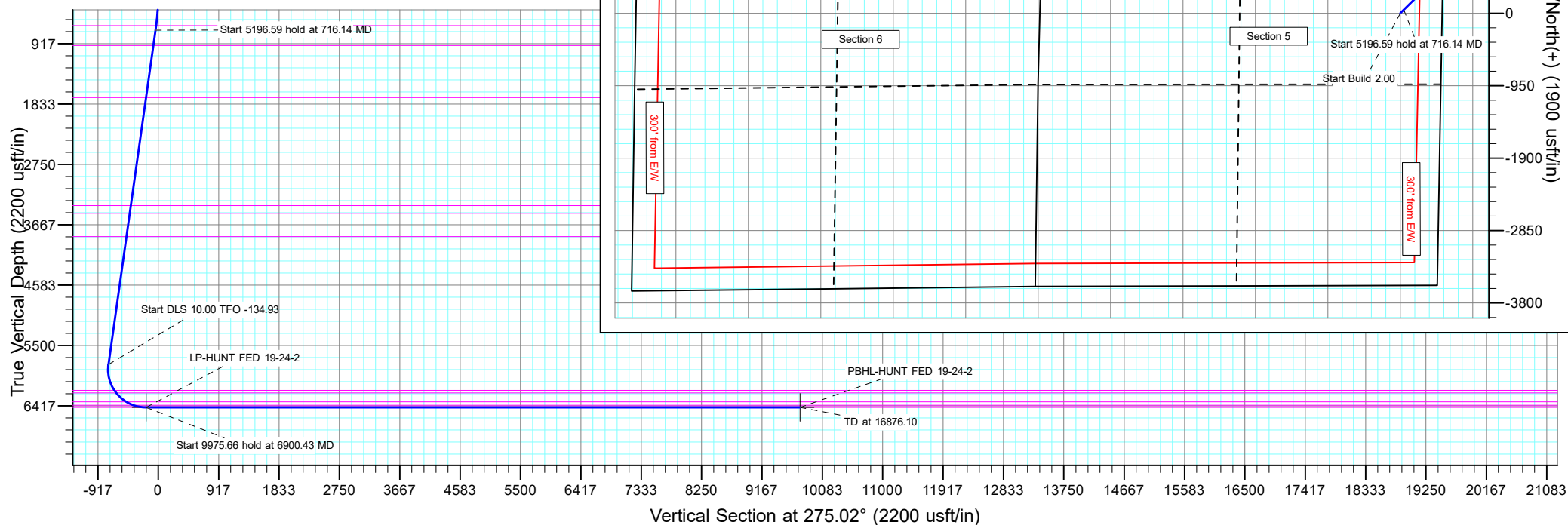
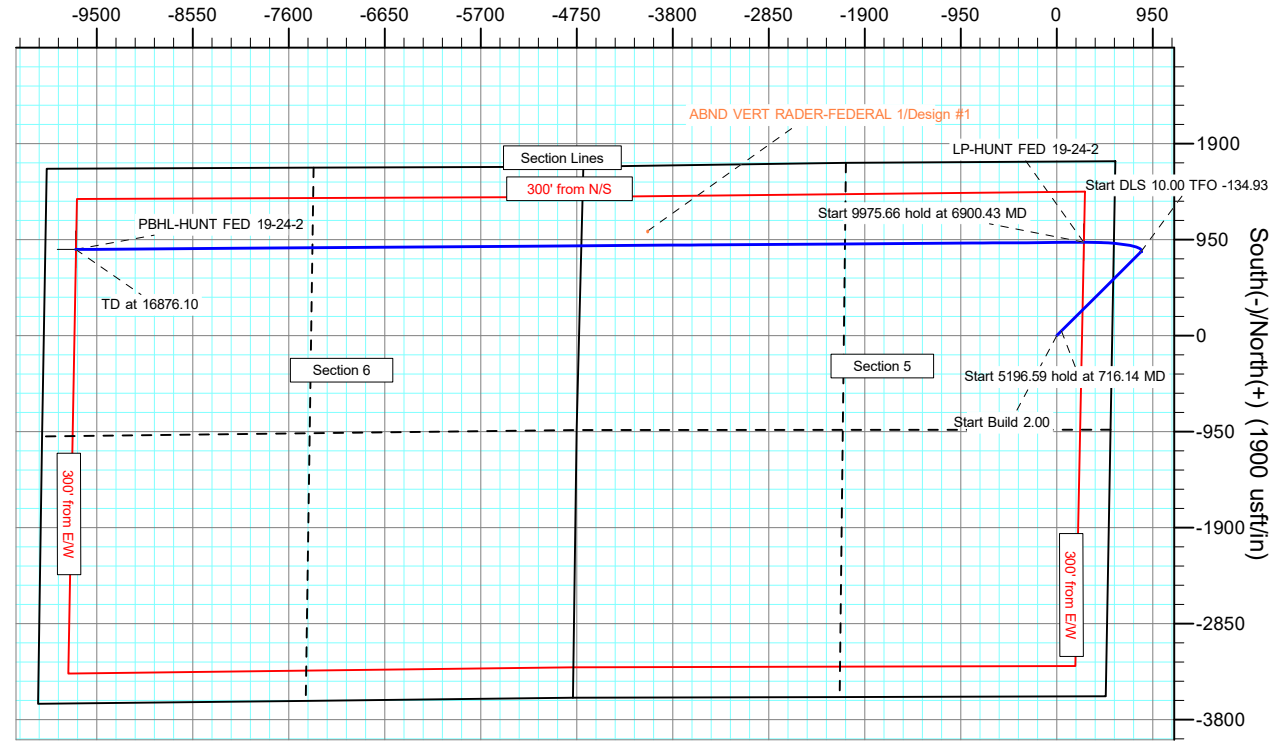
TVDPath	MDPath	Formation
195.00	195.02	Laramie Shale Base
640.00	643.25	Laramie Fox Hills Base
945.00	955.25	Pierre Shale Base
1735.00	1763.88	Upper Pierre Shale Base (SFC min.)
3376.00	3443.58	Richard Sandstone
3491.00	3561.29	Parkman Sandstone
3846.00	3924.66	Parkman Sandstone Base
6182.00	6329.12	Sharon Springs
6220.00	6376.18	Niobrara Top
6356.00	6582.47	Niobrara B2 Chalk Top
6408.00	6703.88	Niobrara C Chalk Target Reservoir Top
6431.00	6792.61	Niobrara C Chalk Target Top
6441.00	6900.43	Niobrara C Chalk Target Landing Point

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:
1722' FNL, 550' FEL
Sec 19-T8N-R60W
LP:
800' FNL, 300' FEL
Sec 19-T8N-R60W
BHL:
800' FNL, 300' FWL
Sec 24-T8N-R61W

West(-)/East(+) (1900 usft/in)



Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well HUNT FED 8-60 19-24-2
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4959.50usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4959.50usft
Site:	SEC 19-T8N-R60W	North Reference:	True
Well:	HUNT FED 8-60 19-24-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
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 19-T8N-R60W				
Site Position:		Northing:	1,484,430.00 usft	Latitude:	40.655036°N
From:	Lat/Long	Easting:	3,381,500.47 usft	Longitude:	104.124983°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in		

Well	HUNT FED 8-60 19-24-2					
Well Position	+N/-S	0.00 usft	Northing:	1,482,695.78 usft	Latitude:	40.650300°N
	+E/-W	0.00 usft	Easting:	3,380,946.52 usft	Longitude:	104.127076°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,932.50 usft
Grid Convergence:		0.89 °				

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	11/19/2022	7.38	66.88	51,996.45852056

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	275.02	

Plan Survey Tool Program	Date	11/19/2022			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	16,876.10 PROPOSAL 1 (OWB)	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	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
716.14	12.32	45.19	711.40	46.52	46.82	2.00	2.00	0.00	45.19	
5,912.73	12.32	45.19	5,788.27	828.18	833.60	0.00	0.00	0.00	0.00	
6,900.43	90.00	269.59	6,441.00	923.93	266.65	10.00	7.86	-13.73	-134.93	LP-HUNT FED 19-24-
16,876.10	90.00	269.59	6,441.00	852.98	-9,708.76	0.00	0.00	0.00	0.00	PBHL-HUNT FED 19-

Planning Report

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Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4959.50usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4959.50usft
Site:	SEC 19-T8N-R60W	North Reference:	True
Well:	HUNT FED 8-60 19-24-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
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
Start Build 2.00									
195.02	1.90	45.19	195.00	1.11	1.12	-1.02	2.00	2.00	0.00
Laramie Shale Base									
200.00	2.00	45.19	199.98	1.23	1.24	-1.13	2.00	2.00	0.00
300.00	4.00	45.19	299.84	4.92	4.95	-4.50	2.00	2.00	0.00
400.00	6.00	45.19	399.45	11.06	11.13	-10.12	2.00	2.00	0.00
500.00	8.00	45.19	498.70	19.65	19.78	-17.98	2.00	2.00	0.00
600.00	10.00	45.19	597.47	30.67	30.88	-28.07	2.00	2.00	0.00
643.25	10.87	45.19	640.00	36.19	36.43	-33.12	2.00	2.00	0.00
Laramie Fox Hills Base									
700.00	12.00	45.19	695.62	44.12	44.41	-40.38	2.00	2.00	0.00
716.14	12.32	45.19	711.40	46.52	46.82	-42.57	2.00	2.00	0.00
Start 5196.59 hold at 716.14 MD									
800.00	12.32	45.19	793.33	59.13	59.52	-54.12	0.00	0.00	0.00
900.00	12.32	45.19	891.02	74.17	74.66	-67.88	0.00	0.00	0.00
955.25	12.32	45.19	945.00	82.48	83.02	-75.49	0.00	0.00	0.00
Pierre Shale Base									
1,000.00	12.32	45.19	988.72	89.22	89.80	-81.65	0.00	0.00	0.00
1,100.00	12.32	45.19	1,086.42	104.26	104.94	-95.41	0.00	0.00	0.00
1,200.00	12.32	45.19	1,184.11	119.30	120.08	-109.18	0.00	0.00	0.00
1,300.00	12.32	45.19	1,281.81	134.34	135.22	-122.94	0.00	0.00	0.00
1,400.00	12.32	45.19	1,379.51	149.38	150.36	-136.71	0.00	0.00	0.00
1,500.00	12.32	45.19	1,477.20	164.43	165.50	-150.48	0.00	0.00	0.00
1,600.00	12.32	45.19	1,574.90	179.47	180.64	-164.24	0.00	0.00	0.00
1,700.00	12.32	45.19	1,672.59	194.51	195.78	-178.01	0.00	0.00	0.00
1,763.88	12.32	45.19	1,735.00	204.12	205.45	-186.80	0.00	0.00	0.00
Upper Pierre Shale Base (SFC min.)									
1,800.00	12.32	45.19	1,770.29	209.55	210.92	-191.77	0.00	0.00	0.00
1,900.00	12.32	45.19	1,867.99	224.59	226.06	-205.54	0.00	0.00	0.00
2,000.00	12.32	45.19	1,965.68	239.63	241.20	-219.31	0.00	0.00	0.00
2,100.00	12.32	45.19	2,063.38	254.68	256.34	-233.07	0.00	0.00	0.00
2,200.00	12.32	45.19	2,161.07	269.72	271.48	-246.84	0.00	0.00	0.00
2,300.00	12.32	45.19	2,258.77	284.76	286.62	-260.60	0.00	0.00	0.00
2,400.00	12.32	45.19	2,356.47	299.80	301.76	-274.37	0.00	0.00	0.00
2,500.00	12.32	45.19	2,454.16	314.84	316.90	-288.13	0.00	0.00	0.00
2,600.00	12.32	45.19	2,551.86	329.88	332.05	-301.90	0.00	0.00	0.00
2,700.00	12.32	45.19	2,649.55	344.93	347.19	-315.67	0.00	0.00	0.00
2,800.00	12.32	45.19	2,747.25	359.97	362.33	-329.43	0.00	0.00	0.00
2,900.00	12.32	45.19	2,844.95	375.01	377.47	-343.20	0.00	0.00	0.00
3,000.00	12.32	45.19	2,942.64	390.05	392.61	-356.96	0.00	0.00	0.00
3,100.00	12.32	45.19	3,040.34	405.09	407.75	-370.73	0.00	0.00	0.00
3,200.00	12.32	45.19	3,138.03	420.14	422.89	-384.49	0.00	0.00	0.00
3,300.00	12.32	45.19	3,235.73	435.18	438.03	-398.26	0.00	0.00	0.00
3,400.00	12.32	45.19	3,333.43	450.22	453.17	-412.03	0.00	0.00	0.00
3,443.58	12.32	45.19	3,376.00	456.77	459.77	-418.02	0.00	0.00	0.00
Richard Sandstone									
3,500.00	12.32	45.19	3,431.12	465.26	468.31	-425.79	0.00	0.00	0.00
3,561.29	12.32	45.19	3,491.00	474.48	477.59	-434.23	0.00	0.00	0.00
Parkman Sandstone									
3,600.00	12.32	45.19	3,528.82	480.30	483.45	-439.56	0.00	0.00	0.00
3,700.00	12.32	45.19	3,626.51	495.34	498.59	-453.32	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well HUNT FED 8-60 19-24-2
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4959.50usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4959.50usft
Site:	SEC 19-T8N-R60W	North Reference:	True
Well:	HUNT FED 8-60 19-24-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
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)	
3,800.00	12.32	45.19	3,724.21	510.39	513.73	-467.09	0.00	0.00	0.00	
3,900.00	12.32	45.19	3,821.91	525.43	528.87	-480.85	0.00	0.00	0.00	
3,924.66	12.32	45.19	3,846.00	529.14	532.60	-484.25	0.00	0.00	0.00	
Parkman Sandstone Base										
4,000.00	12.32	45.19	3,919.60	540.47	544.01	-494.62	0.00	0.00	0.00	
4,100.00	12.32	45.19	4,017.30	555.51	559.15	-508.39	0.00	0.00	0.00	
4,200.00	12.32	45.19	4,114.99	570.55	574.29	-522.15	0.00	0.00	0.00	
4,300.00	12.32	45.19	4,212.69	585.60	589.43	-535.92	0.00	0.00	0.00	
4,400.00	12.32	45.19	4,310.39	600.64	604.57	-549.68	0.00	0.00	0.00	
4,500.00	12.32	45.19	4,408.08	615.68	619.71	-563.45	0.00	0.00	0.00	
4,600.00	12.32	45.19	4,505.78	630.72	634.85	-577.22	0.00	0.00	0.00	
4,700.00	12.32	45.19	4,603.47	645.76	649.99	-590.98	0.00	0.00	0.00	
4,800.00	12.32	45.19	4,701.17	660.80	665.13	-604.75	0.00	0.00	0.00	
4,900.00	12.32	45.19	4,798.87	675.85	680.27	-618.51	0.00	0.00	0.00	
5,000.00	12.32	45.19	4,896.56	690.89	695.41	-632.28	0.00	0.00	0.00	
5,100.00	12.32	45.19	4,994.26	705.93	710.55	-646.04	0.00	0.00	0.00	
5,200.00	12.32	45.19	5,091.95	720.97	725.69	-659.81	0.00	0.00	0.00	
5,300.00	12.32	45.19	5,189.65	736.01	740.83	-673.58	0.00	0.00	0.00	
5,400.00	12.32	45.19	5,287.35	751.06	755.97	-687.34	0.00	0.00	0.00	
5,500.00	12.32	45.19	5,385.04	766.10	771.11	-701.11	0.00	0.00	0.00	
5,600.00	12.32	45.19	5,482.74	781.14	786.25	-714.87	0.00	0.00	0.00	
5,700.00	12.32	45.19	5,580.43	796.18	801.39	-728.64	0.00	0.00	0.00	
5,800.00	12.32	45.19	5,678.13	811.22	816.54	-742.40	0.00	0.00	0.00	
5,900.00	12.32	45.19	5,775.83	826.26	831.68	-756.17	0.00	0.00	0.00	
5,912.73	12.32	45.19	5,788.27	828.18	833.60	-757.92	0.00	0.00	0.00	
Start DLS 10.00 TFO -134.93										
6,000.00	8.69	359.88	5,874.19	841.36	840.21	-763.35	10.00	-4.16	-51.92	
6,100.00	13.19	310.31	5,972.55	856.33	831.47	-753.34	10.00	4.50	-49.57	
6,200.00	21.70	292.19	6,067.93	870.73	805.59	-726.30	10.00	8.51	-18.13	
6,300.00	31.08	284.28	6,157.44	884.11	763.36	-683.05	10.00	9.38	-7.90	
6,329.12	33.87	282.75	6,182.00	887.76	748.16	-667.59	10.00	9.60	-5.25	
Sharon Springs										
6,376.18	38.42	280.70	6,220.00	893.37	720.98	-640.02	10.00	9.67	-4.36	
Niobrara Top										
6,400.00	40.74	279.82	6,238.35	896.07	706.05	-624.92	10.00	9.71	-3.73	
6,500.00	50.51	276.83	6,308.22	906.25	635.41	-553.65	10.00	9.77	-2.99	
6,582.47	58.61	274.94	6,356.00	913.08	568.63	-486.54	10.00	9.83	-2.29	
Niobrara B2 Chalk Top										
6,600.00	60.34	274.59	6,364.91	914.33	553.58	-471.43	10.00	9.84	-2.04	
6,700.00	70.20	272.75	6,406.70	920.08	463.05	-380.75	10.00	9.86	-1.84	
6,703.88	70.58	272.68	6,408.00	920.25	459.40	-377.10	10.00	9.87	-1.70	
Niobrara C Chalk Target Reservoir Top										
6,792.61	79.34	271.24	6,431.00	923.16	373.85	-291.62	10.00	9.88	-1.62	
Niobrara C Chalk Target Top										
6,800.00	80.07	271.13	6,432.32	923.31	366.58	-284.36	10.00	9.88	-1.56	
6,900.00	89.96	269.60	6,441.00	923.93	267.08	-185.20	10.00	9.88	-1.53	
6,900.43	90.00	269.59	6,441.00	923.93	266.65	-184.77	10.00	9.89	-1.51	
Start 9975.66 hold at 6900.43 MD - Niobrara C Chalk Target Landing Point										
7,000.00	90.00	269.59	6,441.00	923.22	167.09	-85.64	0.00	0.00	0.00	
7,100.00	90.00	269.59	6,441.00	922.51	67.09	13.91	0.00	0.00	0.00	
7,200.00	90.00	269.59	6,441.00	921.80	-32.91	113.46	0.00	0.00	0.00	
7,300.00	90.00	269.59	6,441.00	921.08	-132.91	213.01	0.00	0.00	0.00	
7,400.00	90.00	269.59	6,441.00	920.37	-232.90	312.56	0.00	0.00	0.00	

Planning Report

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Project:	WELD COUNTY	MD Reference:	KB 27' @ 4959.50usft
Site:	SEC 19-T8N-R60W	North Reference:	True
Well:	HUNT FED 8-60 19-24-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
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)	
7,500.00	90.00	269.59	6,441.00	919.66	-332.90	412.11	0.00	0.00	0.00	
7,600.00	90.00	269.59	6,441.00	918.95	-432.90	511.66	0.00	0.00	0.00	
7,700.00	90.00	269.59	6,441.00	918.24	-532.90	611.22	0.00	0.00	0.00	
7,800.00	90.00	269.59	6,441.00	917.53	-632.89	710.77	0.00	0.00	0.00	
7,900.00	90.00	269.59	6,441.00	916.82	-732.89	810.32	0.00	0.00	0.00	
8,000.00	90.00	269.59	6,441.00	916.11	-832.89	909.87	0.00	0.00	0.00	
8,100.00	90.00	269.59	6,441.00	915.39	-932.89	1,009.42	0.00	0.00	0.00	
8,200.00	90.00	269.59	6,441.00	914.68	-1,032.88	1,108.97	0.00	0.00	0.00	
8,300.00	90.00	269.59	6,441.00	913.97	-1,132.88	1,208.53	0.00	0.00	0.00	
8,400.00	90.00	269.59	6,441.00	913.26	-1,232.88	1,308.08	0.00	0.00	0.00	
8,500.00	90.00	269.59	6,441.00	912.55	-1,332.88	1,407.63	0.00	0.00	0.00	
8,600.00	90.00	269.59	6,441.00	911.84	-1,432.87	1,507.18	0.00	0.00	0.00	
8,700.00	90.00	269.59	6,441.00	911.13	-1,532.87	1,606.73	0.00	0.00	0.00	
8,800.00	90.00	269.59	6,441.00	910.42	-1,632.87	1,706.28	0.00	0.00	0.00	
8,900.00	90.00	269.59	6,441.00	909.70	-1,732.87	1,805.83	0.00	0.00	0.00	
9,000.00	90.00	269.59	6,441.00	908.99	-1,832.86	1,905.39	0.00	0.00	0.00	
9,100.00	90.00	269.59	6,441.00	908.28	-1,932.86	2,004.94	0.00	0.00	0.00	
9,200.00	90.00	269.59	6,441.00	907.57	-2,032.86	2,104.49	0.00	0.00	0.00	
9,300.00	90.00	269.59	6,441.00	906.86	-2,132.86	2,204.04	0.00	0.00	0.00	
9,400.00	90.00	269.59	6,441.00	906.15	-2,232.85	2,303.59	0.00	0.00	0.00	
9,500.00	90.00	269.59	6,441.00	905.44	-2,332.85	2,403.14	0.00	0.00	0.00	
9,600.00	90.00	269.59	6,441.00	904.73	-2,432.85	2,502.69	0.00	0.00	0.00	
9,700.00	90.00	269.59	6,441.00	904.01	-2,532.85	2,602.25	0.00	0.00	0.00	
9,800.00	90.00	269.59	6,441.00	903.30	-2,632.84	2,701.80	0.00	0.00	0.00	
9,900.00	90.00	269.59	6,441.00	902.59	-2,732.84	2,801.35	0.00	0.00	0.00	
10,000.00	90.00	269.59	6,441.00	901.88	-2,832.84	2,900.90	0.00	0.00	0.00	
10,100.00	90.00	269.59	6,441.00	901.17	-2,932.84	3,000.45	0.00	0.00	0.00	
10,200.00	90.00	269.59	6,441.00	900.46	-3,032.83	3,100.00	0.00	0.00	0.00	
10,300.00	90.00	269.59	6,441.00	899.75	-3,132.83	3,199.56	0.00	0.00	0.00	
10,400.00	90.00	269.59	6,441.00	899.04	-3,232.83	3,299.11	0.00	0.00	0.00	
10,500.00	90.00	269.59	6,441.00	898.32	-3,332.83	3,398.66	0.00	0.00	0.00	
10,600.00	90.00	269.59	6,441.00	897.61	-3,432.82	3,498.21	0.00	0.00	0.00	
10,700.00	90.00	269.59	6,441.00	896.90	-3,532.82	3,597.76	0.00	0.00	0.00	
10,800.00	90.00	269.59	6,441.00	896.19	-3,632.82	3,697.31	0.00	0.00	0.00	
10,900.00	90.00	269.59	6,441.00	895.48	-3,732.82	3,796.86	0.00	0.00	0.00	
11,000.00	90.00	269.59	6,441.00	894.77	-3,832.81	3,896.42	0.00	0.00	0.00	
11,100.00	90.00	269.59	6,441.00	894.06	-3,932.81	3,995.97	0.00	0.00	0.00	
11,200.00	90.00	269.59	6,441.00	893.35	-4,032.81	4,095.52	0.00	0.00	0.00	
11,300.00	90.00	269.59	6,441.00	892.64	-4,132.81	4,195.07	0.00	0.00	0.00	
11,400.00	90.00	269.59	6,441.00	891.92	-4,232.80	4,294.62	0.00	0.00	0.00	
11,500.00	90.00	269.59	6,441.00	891.21	-4,332.80	4,394.17	0.00	0.00	0.00	
11,600.00	90.00	269.59	6,441.00	890.50	-4,432.80	4,493.73	0.00	0.00	0.00	
11,700.00	90.00	269.59	6,441.00	889.79	-4,532.80	4,593.28	0.00	0.00	0.00	
11,800.00	90.00	269.59	6,441.00	889.08	-4,632.79	4,692.83	0.00	0.00	0.00	
11,900.00	90.00	269.59	6,441.00	888.37	-4,732.79	4,792.38	0.00	0.00	0.00	
12,000.00	90.00	269.59	6,441.00	887.66	-4,832.79	4,891.93	0.00	0.00	0.00	
12,100.00	90.00	269.59	6,441.00	886.95	-4,932.79	4,991.48	0.00	0.00	0.00	
12,200.00	90.00	269.59	6,441.00	886.23	-5,032.78	5,091.03	0.00	0.00	0.00	
12,300.00	90.00	269.59	6,441.00	885.52	-5,132.78	5,190.59	0.00	0.00	0.00	
12,400.00	90.00	269.59	6,441.00	884.81	-5,232.78	5,290.14	0.00	0.00	0.00	
12,500.00	90.00	269.59	6,441.00	884.10	-5,332.78	5,389.69	0.00	0.00	0.00	
12,600.00	90.00	269.59	6,441.00	883.39	-5,432.77	5,489.24	0.00	0.00	0.00	
12,700.00	90.00	269.59	6,441.00	882.68	-5,532.77	5,588.79	0.00	0.00	0.00	
12,800.00	90.00	269.59	6,441.00	881.97	-5,632.77	5,688.34	0.00	0.00	0.00	

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well HUNT FED 8-60 19-24-2
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4959.50usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4959.50usft
Site:	SEC 19-T8N-R60W	North Reference:	True
Well:	HUNT FED 8-60 19-24-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
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)
12,900.00	90.00	269.59	6,441.00	881.26	-5,732.77	5,787.90	0.00	0.00	0.00
13,000.00	90.00	269.59	6,441.00	880.54	-5,832.76	5,887.45	0.00	0.00	0.00
13,100.00	90.00	269.59	6,441.00	879.83	-5,932.76	5,987.00	0.00	0.00	0.00
13,200.00	90.00	269.59	6,441.00	879.12	-6,032.76	6,086.55	0.00	0.00	0.00
13,300.00	90.00	269.59	6,441.00	878.41	-6,132.76	6,186.10	0.00	0.00	0.00
13,400.00	90.00	269.59	6,441.00	877.70	-6,232.75	6,285.65	0.00	0.00	0.00
13,500.00	90.00	269.59	6,441.00	876.99	-6,332.75	6,385.20	0.00	0.00	0.00
13,600.00	90.00	269.59	6,441.00	876.28	-6,432.75	6,484.76	0.00	0.00	0.00
13,700.00	90.00	269.59	6,441.00	875.57	-6,532.75	6,584.31	0.00	0.00	0.00
13,800.00	90.00	269.59	6,441.00	874.85	-6,632.74	6,683.86	0.00	0.00	0.00
13,900.00	90.00	269.59	6,441.00	874.14	-6,732.74	6,783.41	0.00	0.00	0.00
14,000.00	90.00	269.59	6,441.00	873.43	-6,832.74	6,882.96	0.00	0.00	0.00
14,100.00	90.00	269.59	6,441.00	872.72	-6,932.74	6,982.51	0.00	0.00	0.00
14,200.00	90.00	269.59	6,441.00	872.01	-7,032.73	7,082.06	0.00	0.00	0.00
14,300.00	90.00	269.59	6,441.00	871.30	-7,132.73	7,181.62	0.00	0.00	0.00
14,400.00	90.00	269.59	6,441.00	870.59	-7,232.73	7,281.17	0.00	0.00	0.00
14,500.00	90.00	269.59	6,441.00	869.88	-7,332.73	7,380.72	0.00	0.00	0.00
14,600.00	90.00	269.59	6,441.00	869.16	-7,432.72	7,480.27	0.00	0.00	0.00
14,700.00	90.00	269.59	6,441.00	868.45	-7,532.72	7,579.82	0.00	0.00	0.00
14,800.00	90.00	269.59	6,441.00	867.74	-7,632.72	7,679.37	0.00	0.00	0.00
14,900.00	90.00	269.59	6,441.00	867.03	-7,732.72	7,778.93	0.00	0.00	0.00
15,000.00	90.00	269.59	6,441.00	866.32	-7,832.71	7,878.48	0.00	0.00	0.00
15,100.00	90.00	269.59	6,441.00	865.61	-7,932.71	7,978.03	0.00	0.00	0.00
15,200.00	90.00	269.59	6,441.00	864.90	-8,032.71	8,077.58	0.00	0.00	0.00
15,300.00	90.00	269.59	6,441.00	864.19	-8,132.71	8,177.13	0.00	0.00	0.00
15,400.00	90.00	269.59	6,441.00	863.47	-8,232.70	8,276.68	0.00	0.00	0.00
15,500.00	90.00	269.59	6,441.00	862.76	-8,332.70	8,376.23	0.00	0.00	0.00
15,600.00	90.00	269.59	6,441.00	862.05	-8,432.70	8,475.79	0.00	0.00	0.00
15,700.00	90.00	269.59	6,441.00	861.34	-8,532.70	8,575.34	0.00	0.00	0.00
15,800.00	90.00	269.59	6,441.00	860.63	-8,632.69	8,674.89	0.00	0.00	0.00
15,900.00	90.00	269.59	6,441.00	859.92	-8,732.69	8,774.44	0.00	0.00	0.00
16,000.00	90.00	269.59	6,441.00	859.21	-8,832.69	8,873.99	0.00	0.00	0.00
16,100.00	90.00	269.59	6,441.00	858.50	-8,932.68	8,973.54	0.00	0.00	0.00
16,200.00	90.00	269.59	6,441.00	857.78	-9,032.68	9,073.10	0.00	0.00	0.00
16,300.00	90.00	269.59	6,441.00	857.07	-9,132.68	9,172.65	0.00	0.00	0.00
16,400.00	90.00	269.59	6,441.00	856.36	-9,232.68	9,272.20	0.00	0.00	0.00
16,500.00	90.00	269.59	6,441.00	855.65	-9,332.67	9,371.75	0.00	0.00	0.00
16,600.00	90.00	269.59	6,441.00	854.94	-9,432.67	9,471.30	0.00	0.00	0.00
16,700.00	90.00	269.59	6,441.00	854.23	-9,532.67	9,570.85	0.00	0.00	0.00
16,800.00	90.00	269.59	6,441.00	853.52	-9,632.67	9,670.40	0.00	0.00	0.00
16,876.10	90.00	269.59	6,441.00	852.98	-9,708.76	9,746.16	0.00	0.00	0.00
TD at 16876.10									

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well HUNT FED 8-60 19-24-2
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4959.50usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4959.50usft
Site:	SEC 19-T8N-R60W	North Reference:	True
Well:	HUNT FED 8-60 19-24-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
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
LP-HUNT FED 19-24-2 - plan hits target center - Point	0.00	0.00	6,441.00	923.93	266.65	1,483,623.72	3,381,198.83	40.652836°N	104.126115°W
PBHL-HUNT FED 19-24 - plan hits target center - Point	0.00	0.00	6,441.00	852.98	-9,708.76	1,483,398.34	3,371,225.72	40.652636°N	104.162066°W

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
195.02	195.00	Laramie Shale Base			
643.25	640.00	Laramie Fox Hills Base			
955.25	945.00	Pierre Shale Base			
1,763.88	1,735.00	Upper Pierre Shale Base (SFC min.)			
3,443.58	3,376.00	Richard Sandstone			
3,561.29	3,491.00	Parkman Sandstone			
3,924.66	3,846.00	Parkman Sandstone Base			
6,329.12	6,182.00	Sharon Springs			
6,376.18	6,220.00	Niobrara Top			
6,582.47	6,356.00	Niobrara B2 Chalk Top			
6,703.88	6,408.00	Niobrara C Chalk Target Reservoir Top			
6,792.61	6,431.00	Niobrara C Chalk Target Top			
6,900.43	6,441.00	Niobrara C Chalk Target Landing Point			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
100.00	100.00	0.00	0.00	Start Build 2.00
716.14	711.40	46.52	46.82	Start 5196.59 hold at 716.14 MD
5,912.73	5,788.27	828.18	833.60	Start DLS 10.00 TFO -134.93
6,900.43	6,441.00	923.93	266.65	Start 9975.66 hold at 6900.43 MD
16,876.10	6,441.00	852.98	-9,708.76	TD at 16876.10