

MALLARD EXPLORATION

WELD COUNTY

SEC 27-T9N-R60W

BASHOR FED 27-34-1HN

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

13 September, 2021



Project: WELD COUNTY
Site: SEC 27-T9N-R60W
Well: BASHOR FED 27-34-1HN
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL 1

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: 7.60°
Magnetic Field
Strength: 52292.5nT
Dip Angle: 67.05°
Date: 7/3/2020
Model: IGRF2020

WELL DETAILS: BASHOR FED 27-34-1HN

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1510899.89	3395058.92	40.727094°N	104.074590°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	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	
3	1743.01	32.86	282.25	1654.41	97.25	-447.94	2.00	282.25	46.63	
4	6717.38	32.86	282.25	5832.86	669.89	-3085.55	0.00	0.00	321.23	
5	7688.58	90.00	179.04	6378.00	95.71	-3418.84	10.00	-101.15	970.52	BASHOR FED 27-34-1HN - LP
6	17739.24	90.00	179.04	6378.00	-9953.56	-3251.09	0.00	0.00	10471.05	BASHOR FED 27-34-1HN - PBHL

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
339.00	339.28	Laramie-Fox Hills Top
648.00	651.40	Pierre Shale Top
1111.00	1133.26	Upper Pierre Top
1765.00	1874.67	Upper Pierre Base (SFC min depth)
3471.00	3905.63	Richard Sandstone
3627.00	4091.34	Parkman Sandstone
3913.00	4431.82	Parkman Sandstone Base
6184.00	7157.29	Sharon Springs
6221.00	7214.14	Niobrara Top
6366.00	7560.86	Niobrara B2 Chalk Top
6373.00	7606.24	Niobrara B2 Chalk Target Top
6378.00	7688.58	Niobrara B2 Chalk Target LP

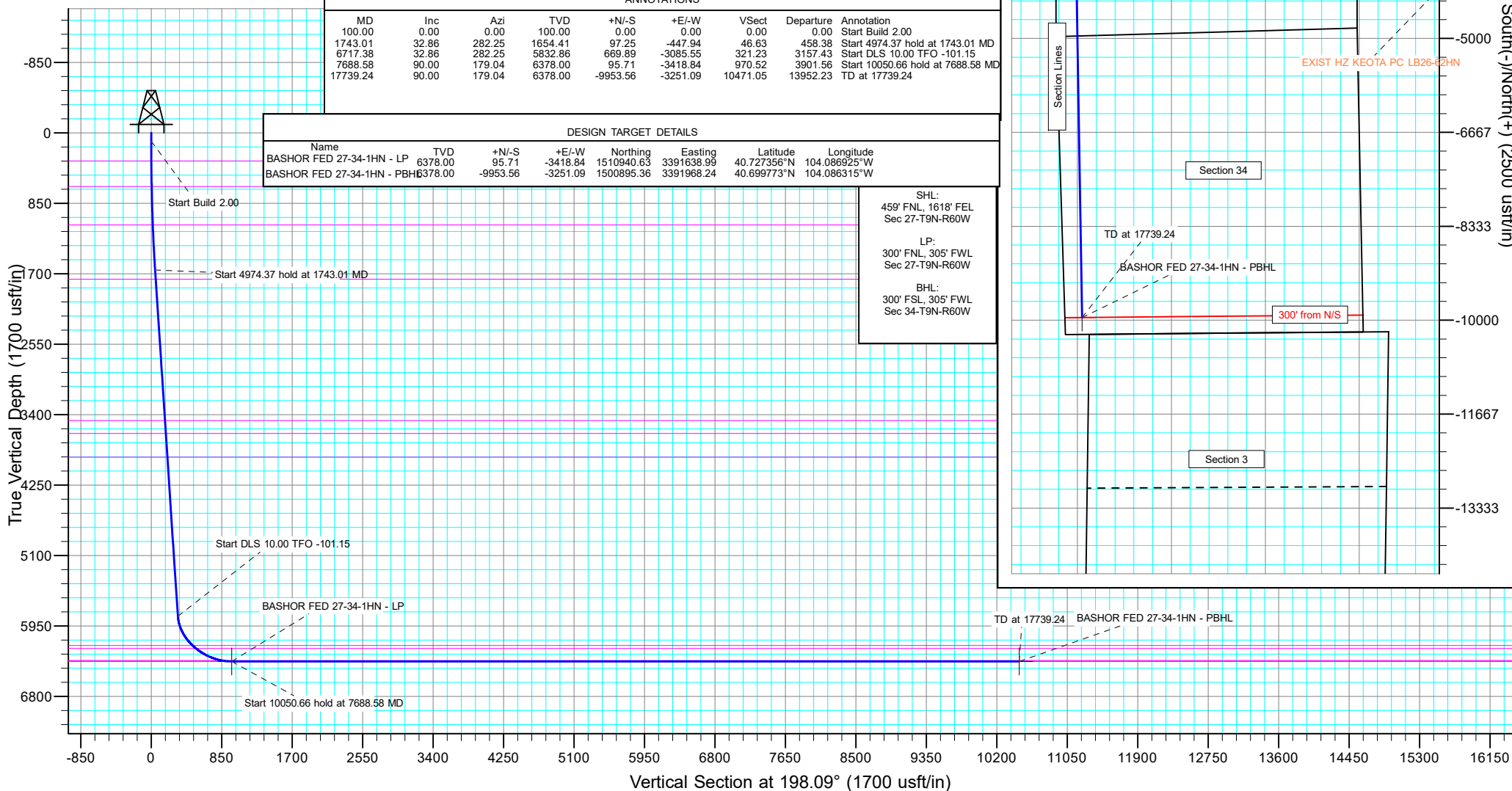
ANNOTATIONS

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
1743.01	32.86	282.25	1654.41	97.25	-447.94	46.63	458.38	Start 4974.37 hold at 1743.01 MD
6717.38	32.86	282.25	5832.86	669.89	-3085.55	321.23	3157.43	Start DLS 10.00 TFO -101.15
7688.58	90.00	179.04	6378.00	95.71	-3418.84	970.52	3901.56	Start 10050.66 hold at 7688.58 MD
17739.24	90.00	179.04	6378.00	-9953.56	-3251.09	10471.05	13952.23	TD at 17739.24

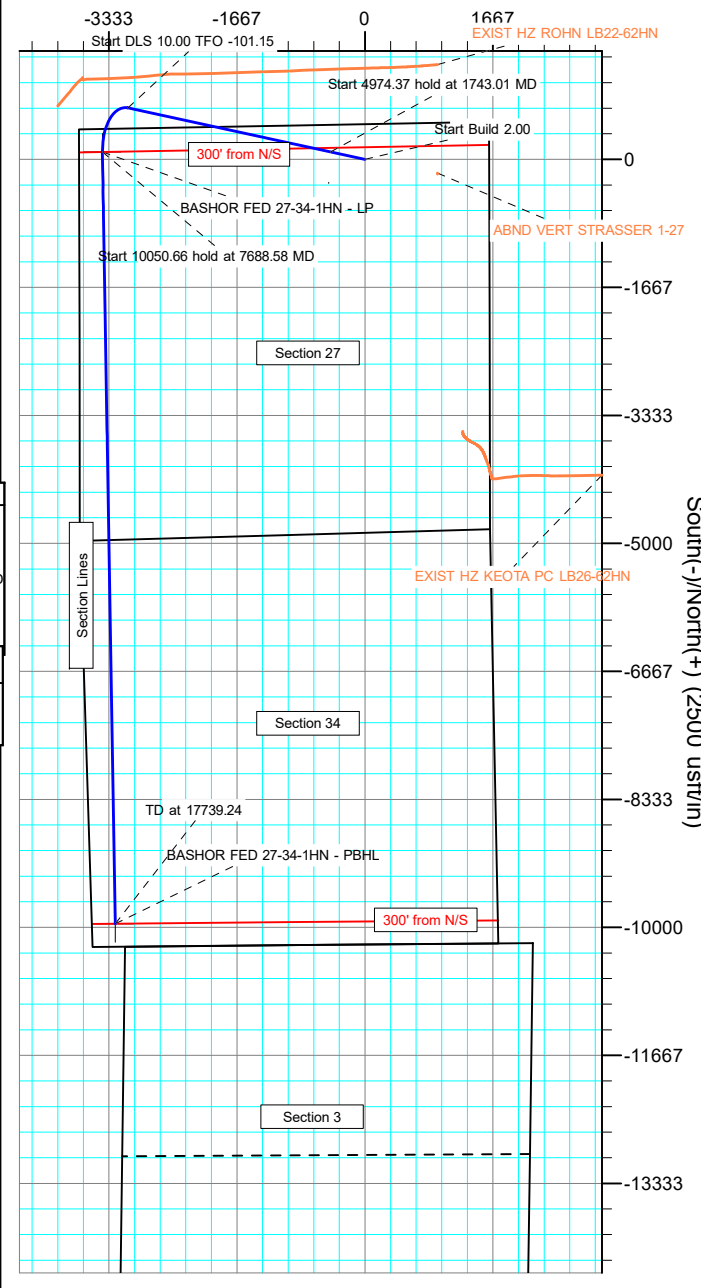
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BASHOR FED 27-34-1HN - LP	6378.00	95.71	-3418.84	1510940.63	3391638.99	40.727356°N	104.086925°W
BASHOR FED 27-34-1HN - PBHL	6378.00	-9953.56	-3251.09	1500895.36	3391968.24	40.699773°N	104.086315°W

SHL:
459' FNL, 1618' FEL
Sec 27-T9N-R60W
LP:
300' FNL, 305' FWL
Sec 27-T9N-R60W
BHL:
300' FSL, 305' FWL
Sec 34-T9N-R60W



West(-)/East(+) (2500 usft/in)



Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well BASHOR FED 27-34-1HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 5021.20usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 5021.20usft
Site:	SEC 27-T9N-R60W	North Reference:	True
Well:	BASHOR FED 27-34-1HN	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 27-T9N-R60W			
Site Position:		Northing:	1,511,414.81 usft	Latitude: 40.728436°N
From:	Lat/Long	Easting:	3,396,667.25 usft	Longitude: 104.068758°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	

Well	BASHOR FED 27-34-1HN			
Well Position	+N/-S	0.00 usft	Northing:	1,510,899.89 usft
	+E/-W	0.00 usft	Easting:	3,395,058.92 usft
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft
Grid Convergence:		0.92 °	Ground Level:	4,994.20 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	7/3/2020	7.60	67.05	52,292.53683480

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	198.09

Plan Survey Tool Program	Date	9/13/2021		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,739.24	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	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,743.01	32.86	282.25	1,654.41	97.25	-447.94	2.00	2.00	0.00	282.25	
6,717.38	32.86	282.25	5,832.86	669.89	-3,085.55	0.00	0.00	0.00	0.00	
7,688.58	90.00	179.04	6,378.00	95.71	-3,418.84	10.00	5.88	-10.63	-101.15	BASHOR FED 27-34-
17,739.24	90.00	179.04	6,378.00	-9,953.56	-3,251.09	0.00	0.00	0.00	0.00	BASHOR FED 27-34-

Planning Report

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Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 5021.20usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 5021.20usft
Site:	SEC 27-T9N-R60W	North Reference:	True
Well:	BASHOR FED 27-34-1HN	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
Start Build 2.00									
200.00	2.00	282.25	199.98	0.37	-1.71	0.18	2.00	2.00	0.00
300.00	4.00	282.25	299.84	1.48	-6.82	0.71	2.00	2.00	0.00
339.28	4.79	282.25	339.00	2.12	-9.76	1.02	2.00	2.00	0.00
Laramie-Fox Hills Top									
400.00	6.00	282.25	399.45	3.33	-15.34	1.60	2.00	2.00	0.00
500.00	8.00	282.25	498.70	5.92	-27.25	2.84	2.00	2.00	0.00
600.00	10.00	282.25	597.47	9.23	-42.53	4.43	2.00	2.00	0.00
651.40	11.03	282.25	648.00	11.22	-51.70	5.38	2.00	2.00	0.00
Pierre Shale Top									
700.00	12.00	282.25	695.62	13.28	-61.18	6.37	2.00	2.00	0.00
800.00	14.00	282.25	793.06	18.05	-83.16	8.66	2.00	2.00	0.00
900.00	16.00	282.25	889.64	23.55	-108.45	11.29	2.00	2.00	0.00
1,000.00	18.00	282.25	985.27	29.75	-137.02	14.27	2.00	2.00	0.00
1,100.00	20.00	282.25	1,079.82	36.65	-168.84	17.58	2.00	2.00	0.00
1,133.26	20.67	282.25	1,111.00	39.11	-180.13	18.75	2.00	2.00	0.00
Upper Pierre Top									
1,200.00	22.00	282.25	1,173.17	44.26	-203.85	21.22	2.00	2.00	0.00
1,300.00	24.00	282.25	1,265.21	52.55	-242.04	25.20	2.00	2.00	0.00
1,400.00	26.00	282.25	1,355.84	61.51	-283.33	29.50	2.00	2.00	0.00
1,500.00	28.00	282.25	1,444.94	71.14	-327.70	34.12	2.00	2.00	0.00
1,600.00	30.00	282.25	1,532.39	81.43	-375.07	39.05	2.00	2.00	0.00
1,700.00	32.00	282.25	1,618.11	92.36	-425.40	44.29	2.00	2.00	0.00
1,743.01	32.86	282.25	1,654.41	97.25	-447.94	46.63	2.00	2.00	0.00
Start 4974.37 hold at 1743.01 MD									
1,800.00	32.86	282.25	1,702.28	103.81	-478.16	49.78	0.00	0.00	0.00
1,874.67	32.86	282.25	1,765.00	112.41	-517.75	53.90	0.00	0.00	0.00
Upper Pierre Base (SFC min depth)									
1,900.00	32.86	282.25	1,786.28	115.32	-531.18	55.30	0.00	0.00	0.00
2,000.00	32.86	282.25	1,870.28	126.83	-584.21	60.82	0.00	0.00	0.00
2,100.00	32.86	282.25	1,954.28	138.35	-637.23	66.34	0.00	0.00	0.00
2,200.00	32.86	282.25	2,038.28	149.86	-690.26	71.86	0.00	0.00	0.00
2,300.00	32.86	282.25	2,122.28	161.37	-743.28	77.38	0.00	0.00	0.00
2,400.00	32.86	282.25	2,206.28	172.88	-796.30	82.90	0.00	0.00	0.00
2,500.00	32.86	282.25	2,290.28	184.39	-849.33	88.42	0.00	0.00	0.00
2,600.00	32.86	282.25	2,374.28	195.90	-902.35	93.94	0.00	0.00	0.00
2,700.00	32.86	282.25	2,458.28	207.42	-955.38	99.46	0.00	0.00	0.00
2,800.00	32.86	282.25	2,542.28	218.93	-1,008.40	104.98	0.00	0.00	0.00
2,900.00	32.86	282.25	2,626.28	230.44	-1,061.42	110.50	0.00	0.00	0.00
3,000.00	32.86	282.25	2,710.28	241.95	-1,114.45	116.02	0.00	0.00	0.00
3,100.00	32.86	282.25	2,794.27	253.46	-1,167.47	121.54	0.00	0.00	0.00
3,200.00	32.86	282.25	2,878.27	264.98	-1,220.50	127.06	0.00	0.00	0.00
3,300.00	32.86	282.25	2,962.27	276.49	-1,273.52	132.58	0.00	0.00	0.00
3,400.00	32.86	282.25	3,046.27	288.00	-1,326.54	138.10	0.00	0.00	0.00
3,500.00	32.86	282.25	3,130.27	299.51	-1,379.57	143.62	0.00	0.00	0.00
3,600.00	32.86	282.25	3,214.27	311.02	-1,432.59	149.15	0.00	0.00	0.00
3,700.00	32.86	282.25	3,298.27	322.53	-1,485.62	154.67	0.00	0.00	0.00
3,800.00	32.86	282.25	3,382.27	334.05	-1,538.64	160.19	0.00	0.00	0.00
3,900.00	32.86	282.25	3,466.27	345.56	-1,591.66	165.71	0.00	0.00	0.00
3,905.63	32.86	282.25	3,471.00	346.21	-1,594.65	166.02	0.00	0.00	0.00
Richard Sandstone									

Planning Report

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Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 5021.20usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 5021.20usft
Site:	SEC 27-T9N-R60W	North Reference:	True
Well:	BASHOR FED 27-34-1HN	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)
4,000.00	32.86	282.25	3,550.27	357.07	-1,644.69	171.23	0.00	0.00	0.00
4,091.34	32.86	282.25	3,627.00	367.59	-1,693.12	176.27	0.00	0.00	0.00
Parkman Sandstone									
4,100.00	32.86	282.25	3,634.27	368.58	-1,697.71	176.75	0.00	0.00	0.00
4,200.00	32.86	282.25	3,718.27	380.09	-1,750.74	182.27	0.00	0.00	0.00
4,300.00	32.86	282.25	3,802.27	391.61	-1,803.76	187.79	0.00	0.00	0.00
4,400.00	32.86	282.25	3,886.27	403.12	-1,856.78	193.31	0.00	0.00	0.00
4,431.82	32.86	282.25	3,913.00	406.78	-1,873.66	195.06	0.00	0.00	0.00
Parkman Sandstone Base									
4,500.00	32.86	282.25	3,970.27	414.63	-1,909.81	198.83	0.00	0.00	0.00
4,600.00	32.86	282.25	4,054.27	426.14	-1,962.83	204.35	0.00	0.00	0.00
4,700.00	32.86	282.25	4,138.27	437.65	-2,015.86	209.87	0.00	0.00	0.00
4,800.00	32.86	282.25	4,222.27	449.16	-2,068.88	215.39	0.00	0.00	0.00
4,900.00	32.86	282.25	4,306.27	460.68	-2,121.90	220.91	0.00	0.00	0.00
5,000.00	32.86	282.25	4,390.27	472.19	-2,174.93	226.43	0.00	0.00	0.00
5,100.00	32.86	282.25	4,474.27	483.70	-2,227.95	231.95	0.00	0.00	0.00
5,200.00	32.86	282.25	4,558.27	495.21	-2,280.98	237.47	0.00	0.00	0.00
5,300.00	32.86	282.25	4,642.27	506.72	-2,334.00	242.99	0.00	0.00	0.00
5,400.00	32.86	282.25	4,726.27	518.23	-2,387.02	248.51	0.00	0.00	0.00
5,500.00	32.86	282.25	4,810.27	529.75	-2,440.05	254.03	0.00	0.00	0.00
5,600.00	32.86	282.25	4,894.26	541.26	-2,493.07	259.55	0.00	0.00	0.00
5,700.00	32.86	282.25	4,978.26	552.77	-2,546.10	265.07	0.00	0.00	0.00
5,800.00	32.86	282.25	5,062.26	564.28	-2,599.12	270.59	0.00	0.00	0.00
5,900.00	32.86	282.25	5,146.26	575.79	-2,652.14	276.11	0.00	0.00	0.00
6,000.00	32.86	282.25	5,230.26	587.31	-2,705.17	281.63	0.00	0.00	0.00
6,100.00	32.86	282.25	5,314.26	598.82	-2,758.19	287.15	0.00	0.00	0.00
6,200.00	32.86	282.25	5,398.26	610.33	-2,811.22	292.67	0.00	0.00	0.00
6,300.00	32.86	282.25	5,482.26	621.84	-2,864.24	298.19	0.00	0.00	0.00
6,400.00	32.86	282.25	5,566.26	633.35	-2,917.26	303.71	0.00	0.00	0.00
6,500.00	32.86	282.25	5,650.26	644.86	-2,970.29	309.23	0.00	0.00	0.00
6,600.00	32.86	282.25	5,734.26	656.38	-3,023.31	314.75	0.00	0.00	0.00
6,700.00	32.86	282.25	5,818.26	667.89	-3,076.34	320.27	0.00	0.00	0.00
6,717.38	32.86	282.25	5,832.86	669.89	-3,085.55	321.23	0.00	0.00	0.00
Start DLS 10.00 TFO -101.15									
6,750.00	32.37	276.26	5,860.34	672.72	-3,102.88	323.92	10.00	-1.50	-18.35
6,800.00	32.18	266.90	5,902.64	673.46	-3,129.50	331.48	10.00	-0.38	-18.73
6,850.00	32.68	257.62	5,944.87	669.84	-3,156.00	343.15	10.00	1.00	-18.57
6,900.00	33.84	248.74	5,986.70	661.89	-3,182.18	358.83	10.00	2.32	-17.75
6,950.00	35.60	240.51	6,027.82	649.68	-3,207.84	378.41	10.00	3.50	-16.46
7,000.00	37.86	233.05	6,067.92	633.28	-3,232.78	401.74	10.00	4.52	-14.93
7,050.00	40.54	226.37	6,106.68	612.83	-3,256.82	428.65	10.00	5.37	-13.36
7,100.00	43.57	220.42	6,143.81	588.49	-3,279.77	458.91	10.00	6.06	-11.89
7,150.00	46.87	215.13	6,179.04	560.43	-3,301.45	492.32	10.00	6.61	-10.58
7,157.29	47.37	214.41	6,184.00	556.04	-3,304.50	497.44	10.00	6.87	-9.91
Sharon Springs									
7,200.00	50.39	210.40	6,212.09	528.87	-3,321.71	528.60	10.00	7.07	-9.39
7,214.14	51.42	209.15	6,221.00	519.35	-3,327.16	539.35	10.00	7.28	-8.84
Niobrara Top									
7,250.00	54.09	206.14	6,242.71	494.06	-3,340.39	567.50	10.00	7.43	-8.41
7,300.00	57.92	202.26	6,270.67	456.25	-3,357.35	608.70	10.00	7.66	-7.75
7,350.00	61.86	198.70	6,295.75	415.74	-3,372.45	651.89	10.00	7.88	-7.12
7,400.00	65.89	195.39	6,317.77	372.83	-3,385.58	696.76	10.00	8.05	-6.61
7,450.00	69.98	192.29	6,336.56	327.86	-3,396.64	742.95	10.00	8.18	-6.20
7,500.00	74.12	189.35	6,351.97	281.15	-3,405.56	790.12	10.00	8.29	-5.89

Planning Report

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Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 5021.20usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 5021.20usft
Site:	SEC 27-T9N-R60W	North Reference:	True
Well:	BASHOR FED 27-34-1HN	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)
7,550.00	78.30	186.53	6,363.88	233.07	-3,412.25	837.90	10.00	8.36	-5.65
7,560.86	79.21	185.92	6,366.00	222.48	-3,413.40	848.33	10.00	8.40	-5.53
Niobrara B2 Chalk Top									
7,600.00	82.51	183.79	6,372.22	183.98	-3,416.67	885.93	10.00	8.42	-5.46
7,606.24	83.04	183.45	6,373.00	177.81	-3,417.06	891.92	10.00	8.44	-5.41
Niobrara B2 Chalk Target Top									
7,650.00	86.73	181.10	6,376.90	134.26	-3,418.79	933.85	10.00	8.45	-5.37
7,688.58	90.00	179.04	6,378.00	95.71	-3,418.84	970.52	10.00	8.46	-5.33
Start 10050.66 hold at 7688.58 MD - Niobrara B2 Chalk Target LP									
7,700.00	90.00	179.04	6,378.00	84.29	-3,418.65	981.31	0.00	0.00	0.00
7,800.00	90.00	179.04	6,378.00	-15.70	-3,416.98	1,075.84	0.00	0.00	0.00
7,900.00	90.00	179.04	6,378.00	-115.68	-3,415.31	1,170.36	0.00	0.00	0.00
8,000.00	90.00	179.04	6,378.00	-215.67	-3,413.64	1,264.89	0.00	0.00	0.00
8,100.00	90.00	179.04	6,378.00	-315.65	-3,411.97	1,359.42	0.00	0.00	0.00
8,200.00	90.00	179.04	6,378.00	-415.64	-3,410.30	1,453.94	0.00	0.00	0.00
8,300.00	90.00	179.04	6,378.00	-515.63	-3,408.63	1,548.47	0.00	0.00	0.00
8,400.00	90.00	179.04	6,378.00	-615.61	-3,406.96	1,643.00	0.00	0.00	0.00
8,500.00	90.00	179.04	6,378.00	-715.60	-3,405.29	1,737.52	0.00	0.00	0.00
8,600.00	90.00	179.04	6,378.00	-815.59	-3,403.62	1,832.05	0.00	0.00	0.00
8,700.00	90.00	179.04	6,378.00	-915.57	-3,401.96	1,926.58	0.00	0.00	0.00
8,800.00	90.00	179.04	6,378.00	-1,015.56	-3,400.29	2,021.10	0.00	0.00	0.00
8,900.00	90.00	179.04	6,378.00	-1,115.54	-3,398.62	2,115.63	0.00	0.00	0.00
9,000.00	90.00	179.04	6,378.00	-1,215.53	-3,396.95	2,210.15	0.00	0.00	0.00
9,100.00	90.00	179.04	6,378.00	-1,315.52	-3,395.28	2,304.68	0.00	0.00	0.00
9,200.00	90.00	179.04	6,378.00	-1,415.50	-3,393.61	2,399.21	0.00	0.00	0.00
9,300.00	90.00	179.04	6,378.00	-1,515.49	-3,391.94	2,493.73	0.00	0.00	0.00
9,400.00	90.00	179.04	6,378.00	-1,615.47	-3,390.27	2,588.26	0.00	0.00	0.00
9,500.00	90.00	179.04	6,378.00	-1,715.46	-3,388.60	2,682.79	0.00	0.00	0.00
9,600.00	90.00	179.04	6,378.00	-1,815.45	-3,386.93	2,777.31	0.00	0.00	0.00
9,700.00	90.00	179.04	6,378.00	-1,915.43	-3,385.27	2,871.84	0.00	0.00	0.00
9,800.00	90.00	179.04	6,378.00	-2,015.42	-3,383.60	2,966.37	0.00	0.00	0.00
9,900.00	90.00	179.04	6,378.00	-2,115.40	-3,381.93	3,060.89	0.00	0.00	0.00
10,000.00	90.00	179.04	6,378.00	-2,215.39	-3,380.26	3,155.42	0.00	0.00	0.00
10,100.00	90.00	179.04	6,378.00	-2,315.38	-3,378.59	3,249.95	0.00	0.00	0.00
10,200.00	90.00	179.04	6,378.00	-2,415.36	-3,376.92	3,344.47	0.00	0.00	0.00
10,300.00	90.00	179.04	6,378.00	-2,515.35	-3,375.25	3,439.00	0.00	0.00	0.00
10,400.00	90.00	179.04	6,378.00	-2,615.33	-3,373.58	3,533.52	0.00	0.00	0.00
10,500.00	90.00	179.04	6,378.00	-2,715.32	-3,371.91	3,628.05	0.00	0.00	0.00
10,600.00	90.00	179.04	6,378.00	-2,815.31	-3,370.25	3,722.58	0.00	0.00	0.00
10,700.00	90.00	179.04	6,378.00	-2,915.29	-3,368.58	3,817.10	0.00	0.00	0.00
10,800.00	90.00	179.04	6,378.00	-3,015.28	-3,366.91	3,911.63	0.00	0.00	0.00
10,900.00	90.00	179.04	6,378.00	-3,115.26	-3,365.24	4,006.16	0.00	0.00	0.00
11,000.00	90.00	179.04	6,378.00	-3,215.25	-3,363.57	4,100.68	0.00	0.00	0.00
11,100.00	90.00	179.04	6,378.00	-3,315.24	-3,361.90	4,195.21	0.00	0.00	0.00
11,200.00	90.00	179.04	6,378.00	-3,415.22	-3,360.23	4,289.74	0.00	0.00	0.00
11,300.00	90.00	179.04	6,378.00	-3,515.21	-3,358.56	4,384.26	0.00	0.00	0.00
11,400.00	90.00	179.04	6,378.00	-3,615.20	-3,356.89	4,478.79	0.00	0.00	0.00
11,500.00	90.00	179.04	6,378.00	-3,715.18	-3,355.22	4,573.32	0.00	0.00	0.00
11,600.00	90.00	179.04	6,378.00	-3,815.17	-3,353.56	4,667.84	0.00	0.00	0.00
11,700.00	90.00	179.04	6,378.00	-3,915.15	-3,351.89	4,762.37	0.00	0.00	0.00
11,800.00	90.00	179.04	6,378.00	-4,015.14	-3,350.22	4,856.89	0.00	0.00	0.00
11,900.00	90.00	179.04	6,378.00	-4,115.13	-3,348.55	4,951.42	0.00	0.00	0.00
12,000.00	90.00	179.04	6,378.00	-4,215.11	-3,346.88	5,045.95	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well BASHOR FED 27-34-1HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 5021.20usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 5021.20usft
Site:	SEC 27-T9N-R60W	North Reference:	True
Well:	BASHOR FED 27-34-1HN	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)
12,100.00	90.00	179.04	6,378.00	-4,315.10	-3,345.21	5,140.47	0.00	0.00	0.00
12,200.00	90.00	179.04	6,378.00	-4,415.08	-3,343.54	5,235.00	0.00	0.00	0.00
12,300.00	90.00	179.04	6,378.00	-4,515.07	-3,341.87	5,329.53	0.00	0.00	0.00
12,400.00	90.00	179.04	6,378.00	-4,615.06	-3,340.20	5,424.05	0.00	0.00	0.00
12,500.00	90.00	179.04	6,378.00	-4,715.04	-3,338.53	5,518.58	0.00	0.00	0.00
12,600.00	90.00	179.04	6,378.00	-4,815.03	-3,336.87	5,613.11	0.00	0.00	0.00
12,700.00	90.00	179.04	6,378.00	-4,915.01	-3,335.20	5,707.63	0.00	0.00	0.00
12,800.00	90.00	179.04	6,378.00	-5,015.00	-3,333.53	5,802.16	0.00	0.00	0.00
12,900.00	90.00	179.04	6,378.00	-5,114.99	-3,331.86	5,896.69	0.00	0.00	0.00
13,000.00	90.00	179.04	6,378.00	-5,214.97	-3,330.19	5,991.21	0.00	0.00	0.00
13,100.00	90.00	179.04	6,378.00	-5,314.96	-3,328.52	6,085.74	0.00	0.00	0.00
13,200.00	90.00	179.04	6,378.00	-5,414.94	-3,326.85	6,180.26	0.00	0.00	0.00
13,300.00	90.00	179.04	6,378.00	-5,514.93	-3,325.18	6,274.79	0.00	0.00	0.00
13,400.00	90.00	179.04	6,378.00	-5,614.92	-3,323.51	6,369.32	0.00	0.00	0.00
13,500.00	90.00	179.04	6,378.00	-5,714.90	-3,321.85	6,463.84	0.00	0.00	0.00
13,600.00	90.00	179.04	6,378.00	-5,814.89	-3,320.18	6,558.37	0.00	0.00	0.00
13,700.00	90.00	179.04	6,378.00	-5,914.87	-3,318.51	6,652.90	0.00	0.00	0.00
13,800.00	90.00	179.04	6,378.00	-6,014.86	-3,316.84	6,747.42	0.00	0.00	0.00
13,900.00	90.00	179.04	6,378.00	-6,114.85	-3,315.17	6,841.95	0.00	0.00	0.00
14,000.00	90.00	179.04	6,378.00	-6,214.83	-3,313.50	6,936.48	0.00	0.00	0.00
14,100.00	90.00	179.04	6,378.00	-6,314.82	-3,311.83	7,031.00	0.00	0.00	0.00
14,200.00	90.00	179.04	6,378.00	-6,414.81	-3,310.16	7,125.53	0.00	0.00	0.00
14,300.00	90.00	179.04	6,378.00	-6,514.79	-3,308.49	7,220.06	0.00	0.00	0.00
14,400.00	90.00	179.04	6,378.00	-6,614.78	-3,306.82	7,314.58	0.00	0.00	0.00
14,500.00	90.00	179.04	6,378.00	-6,714.76	-3,305.16	7,409.11	0.00	0.00	0.00
14,600.00	90.00	179.04	6,378.00	-6,814.75	-3,303.49	7,503.63	0.00	0.00	0.00
14,700.00	90.00	179.04	6,378.00	-6,914.74	-3,301.82	7,598.16	0.00	0.00	0.00
14,800.00	90.00	179.04	6,378.00	-7,014.72	-3,300.15	7,692.69	0.00	0.00	0.00
14,900.00	90.00	179.04	6,378.00	-7,114.71	-3,298.48	7,787.21	0.00	0.00	0.00
15,000.00	90.00	179.04	6,378.00	-7,214.69	-3,296.81	7,881.74	0.00	0.00	0.00
15,100.00	90.00	179.04	6,378.00	-7,314.68	-3,295.14	7,976.27	0.00	0.00	0.00
15,200.00	90.00	179.04	6,378.00	-7,414.67	-3,293.47	8,070.79	0.00	0.00	0.00
15,300.00	90.00	179.04	6,378.00	-7,514.65	-3,291.80	8,165.32	0.00	0.00	0.00
15,400.00	90.00	179.04	6,378.00	-7,614.64	-3,290.13	8,259.85	0.00	0.00	0.00
15,500.00	90.00	179.04	6,378.00	-7,714.62	-3,288.47	8,354.37	0.00	0.00	0.00
15,600.00	90.00	179.04	6,378.00	-7,814.61	-3,286.80	8,448.90	0.00	0.00	0.00
15,700.00	90.00	179.04	6,378.00	-7,914.60	-3,285.13	8,543.43	0.00	0.00	0.00
15,800.00	90.00	179.04	6,378.00	-8,014.58	-3,283.46	8,637.95	0.00	0.00	0.00
15,900.00	90.00	179.04	6,378.00	-8,114.57	-3,281.79	8,732.48	0.00	0.00	0.00
16,000.00	90.00	179.04	6,378.00	-8,214.55	-3,280.12	8,827.00	0.00	0.00	0.00
16,100.00	90.00	179.04	6,378.00	-8,314.54	-3,278.45	8,921.53	0.00	0.00	0.00
16,200.00	90.00	179.04	6,378.00	-8,414.53	-3,276.78	9,016.06	0.00	0.00	0.00
16,300.00	90.00	179.04	6,378.00	-8,514.51	-3,275.11	9,110.58	0.00	0.00	0.00
16,400.00	90.00	179.04	6,378.00	-8,614.50	-3,273.45	9,205.11	0.00	0.00	0.00
16,500.00	90.00	179.04	6,378.00	-8,714.48	-3,271.78	9,299.64	0.00	0.00	0.00
16,600.00	90.00	179.04	6,378.00	-8,814.47	-3,270.11	9,394.16	0.00	0.00	0.00
16,700.00	90.00	179.04	6,378.00	-8,914.46	-3,268.44	9,488.69	0.00	0.00	0.00
16,800.00	90.00	179.04	6,378.00	-9,014.44	-3,266.77	9,583.22	0.00	0.00	0.00
16,900.00	90.00	179.04	6,378.00	-9,114.43	-3,265.10	9,677.74	0.00	0.00	0.00
17,000.00	90.00	179.04	6,378.00	-9,214.42	-3,263.43	9,772.27	0.00	0.00	0.00
17,100.00	90.00	179.04	6,378.00	-9,314.40	-3,261.76	9,866.80	0.00	0.00	0.00
17,200.00	90.00	179.04	6,378.00	-9,414.39	-3,260.09	9,961.32	0.00	0.00	0.00
17,300.00	90.00	179.04	6,378.00	-9,514.37	-3,258.42	10,055.85	0.00	0.00	0.00
17,400.00	90.00	179.04	6,378.00	-9,614.36	-3,256.76	10,150.38	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well BASHOR FED 27-34-1HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 5021.20usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 5021.20usft
Site:	SEC 27-T9N-R60W	North Reference:	True
Well:	BASHOR FED 27-34-1HN	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)
17,500.00	90.00	179.04	6,378.00	-9,714.35	-3,255.09	10,244.90	0.00	0.00	0.00
17,600.00	90.00	179.04	6,378.00	-9,814.33	-3,253.42	10,339.43	0.00	0.00	0.00
17,700.00	90.00	179.04	6,378.00	-9,914.32	-3,251.75	10,433.95	0.00	0.00	0.00
17,739.24	90.00	179.04	6,378.00	-9,953.56	-3,251.09	10,471.05	0.00	0.00	0.00
TD at 17739.24									

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
BASHOR FED 27-34-1H - plan hits target center - Point	0.00	0.00	6,378.00	95.71	-3,418.84	1,510,940.63	3,391,638.98	40.727356°N	104.086925°W
BASHOR FED 27-34-1H - plan hits target center - Point	0.00	0.00	6,378.00	-9,953.56	-3,251.09	1,500,895.36	3,391,968.23	40.699773°N	104.086315°W

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
339.28	339.00	Laramie-Fox Hills Top				
651.40	648.00	Pierre Shale Top				
1,133.26	1,111.00	Upper Pierre Top				
1,874.67	1,765.00	Upper Pierre Base (SFC min depth)				
3,905.63	3,471.00	Richard Sandstone				
4,091.34	3,627.00	Parkman Sandstone				
4,431.82	3,913.00	Parkman Sandstone Base				
7,157.29	6,184.00	Sharon Springs				
7,214.14	6,221.00	Niobrara Top				
7,560.86	6,366.00	Niobrara B2 Chalk Top				
7,606.24	6,373.00	Niobrara B2 Chalk Target Top				
7,688.58	6,378.00	Niobrara B2 Chalk Target LP				

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
1,743.01	1,654.41	97.25	-447.94	Start 4974.37 hold at 1743.01 MD
6,717.38	5,832.86	669.89	-3,085.55	Start DLS 10.00 TFO -101.15
7,688.58	6,378.00	95.71	-3,418.84	Start 10050.66 hold at 7688.58 MD
17,739.24	6,378.00	-9,953.56	-3,251.09	TD at 17739.24