

MALLARD EXPLORATION

WELD COUNTY

SEC 22-T8N-R60W

BLUE TEAL FED 15-3-9HN

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

01 September, 2020



Project: WELD COUNTY
Site: SEC 22-T8N-R60W
Well: BLUE TEAL FED 15-3-9HN
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: 7.58°
Magnetic Field
Strength: 52238.1nT
Dip Angle: 66.99°
Date: 9/1/2020
Model: IGRF2020

WELL DETAILS: BLUE TEAL FED 15-3-9HN

+N/-S	+E/-W	Northing	Easting	4891.00	Latitude	Longitude	Slot
0.00	0.00	1484210.22	3395298.17		40.653835°N	104.075274°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	897.15	15.94	81.59	896.90	16.11	109.01	2.00	81.59	28.79	
4	5928.13	15.94	81.59	5724.37	218.12	1476.07	0.00	0.00	389.88	
5	6802.30	90.00	1.03	6251.00	787.72	1634.79	10.00	-80.92	974.18	BTfED 9HN - LP
6	22198.58	90.00	1.03	6251.00	16181.49	1912.71	0.00	0.00	16294.15	BTfED 9HN - PBHL

FORMATION TOP DETAILS

TVDPth	MDPath	Formation
440.00	440.80	Fox Hills Base
1443.00	1475.49	Pierre Shale Top
3301.00	3407.82	Richard Sandstone
3416.00	3527.42	Parkman Sandstone
4192.00	4334.46	Sussex Sandstone
4630.00	4789.98	Shannon Sandstone
5393.00	5583.50	TeePee Buttes
6068.00	6321.56	Sharon Springs
6108.00	6380.21	Niobrara Top
6238.00	6677.65	Niobrara B2 Chalk Target Top
6251.00	6802.30	Niobrara B2 Chalk Target Center

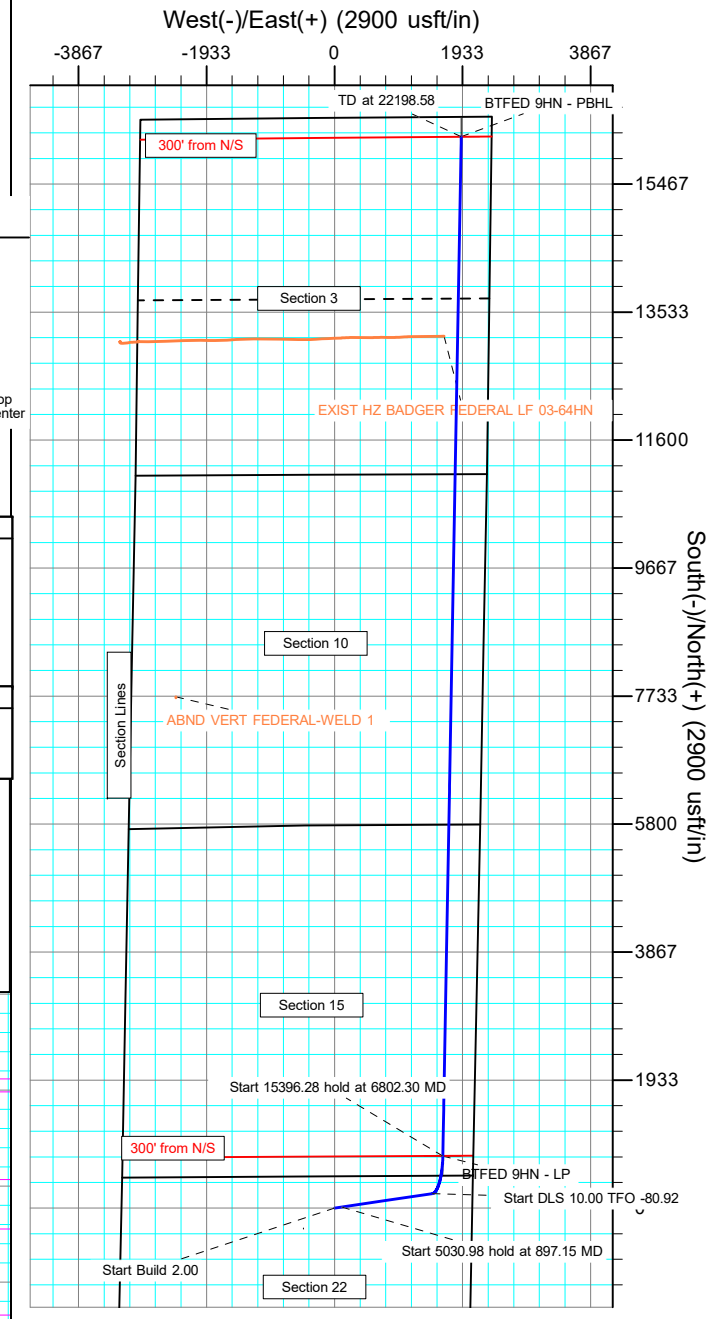
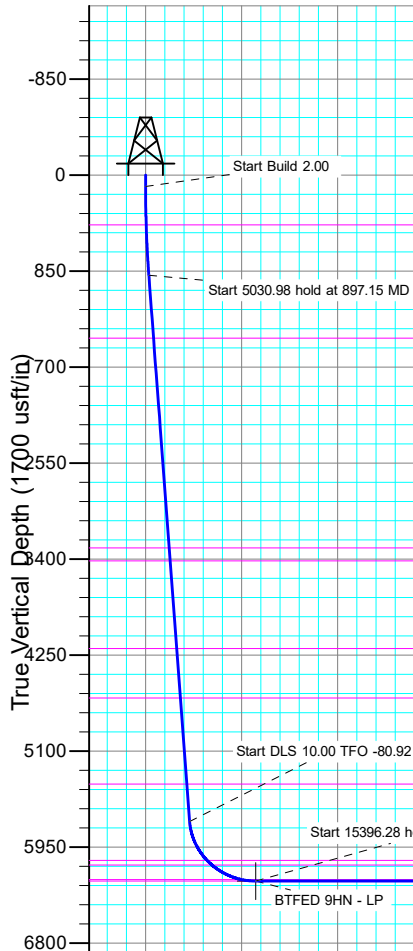
ANNOTATIONS

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
897.15	15.94	81.59	896.90	16.11	109.01	28.79	110.19	Start 5030.98 hold at 897.15 MD
5928.13	15.94	81.59	5724.37	218.12	1476.07	389.88	1492.10	Start DLS 10.00 TFO -80.92
6802.30	90.00	1.03	6251.00	787.72	1634.79	974.18	2105.41	Start 15396.28 hold at 6802.30 MD
22198.58	90.00	1.03	6251.00	16181.49	1912.71	16294.15	17501.69	TD at 22198.58

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BTfED 9HN - LP	6251.00	787.72	1634.79	1485024.11	3396920.09	40.655997°N	104.069382°W
BTfED 9HN - PBHL	6251.00	16181.49	1912.71	1500420.36	3396950.66	40.698250°N	104.068376°W

SHL:
479' FNL, 2079' FEL
Sec 22-T8N-R60W
LP:
300' FSL, 460' FEL
Sec 15-T8N-R60W
BHL:
300' FNL, 460' FEL
Sec 3-T8N-R60W



Vertical Section at 6.74° (1700 usft/in)

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well BLUE TEAL FED 15-3-9HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4918.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4918.00usft
Site:	SEC 22-T8N-R60W	North Reference:	True
Well:	BLUE TEAL FED 15-3-9HN	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 22-T8N-R60W				
Site Position:		Northing:	1,488,376.93	usft	Latitude:	40.665181°N
From:	Lat/Long	Easting:	3,397,319.63	usft	Longitude:	104.067747°W
Position Uncertainty:		0.00	usft	Slot Radius:	13.200	in

Well		BLUE TEAL FED 15-3-9HN				
Well Position	+N/-S	0.00 usft	Northing:	1,484,210.23 usft	Latitude:	40.653835°N
	+E/-W	0.00 usft	Easting:	3,395,298.16 usft	Longitude:	104.075274°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,891.00 usft
Grid Convergence:		0.92 °				

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	9/1/2020	7.58	66.99	52,238.12060724

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	6.74

Plan Survey Tool Program	Date	9/1/2020			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	22,198.58	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	
897.15	15.94	81.59	886.90	16.11	109.01	2.00	2.00	0.00	81.59	
5,928.13	15.94	81.59	5,724.37	218.12	1,476.07	0.00	0.00	0.00	0.00	
6,802.30	90.00	1.03	6,251.00	787.72	1,634.79	10.00	8.47	-9.22	-80.92	BLUE TEAL FED 15-3-9HN
22,198.58	90.00	1.03	6,251.00	16,181.50	1,912.71	0.00	0.00	0.00	0.00	BLUE TEAL FED 15-3-9HN

Planning Report

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Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4918.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4918.00usft
Site:	SEC 22-T8N-R60W	North Reference:	True
Well:	BLUE TEAL FED 15-3-9HN	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	81.59	199.98	0.26	1.73	0.46	2.00	2.00	0.00
300.00	4.00	81.59	299.84	1.02	6.90	1.82	2.00	2.00	0.00
400.00	6.00	81.59	399.45	2.29	15.53	4.10	2.00	2.00	0.00
440.80	6.82	81.59	440.00	2.96	20.03	5.29	2.00	2.00	0.00
Fox Hills Base									
500.00	8.00	81.59	498.70	4.08	27.58	7.29	2.00	2.00	0.00
600.00	10.00	81.59	597.47	6.36	43.06	11.37	2.00	2.00	0.00
700.00	12.00	81.59	695.62	9.15	61.93	16.36	2.00	2.00	0.00
800.00	14.00	81.59	793.06	12.44	84.18	22.24	2.00	2.00	0.00
897.15	15.94	81.59	886.90	16.11	109.01	28.79	2.00	2.00	0.00
Start 5030.98 hold at 897.15 MD									
900.00	15.94	81.59	889.64	16.22	109.78	29.00	0.00	0.00	0.00
1,000.00	15.94	81.59	985.80	20.24	136.96	36.18	0.00	0.00	0.00
1,100.00	15.94	81.59	1,081.95	24.25	164.13	43.35	0.00	0.00	0.00
1,200.00	15.94	81.59	1,178.10	28.27	191.30	50.53	0.00	0.00	0.00
1,300.00	15.94	81.59	1,274.26	32.28	218.48	57.71	0.00	0.00	0.00
1,400.00	15.94	81.59	1,370.41	36.30	245.65	64.88	0.00	0.00	0.00
1,475.49	15.94	81.59	1,443.00	39.33	266.16	70.30	0.00	0.00	0.00
Pierre Shale Top									
1,500.00	15.94	81.59	1,466.56	40.32	272.82	72.06	0.00	0.00	0.00
1,600.00	15.94	81.59	1,562.72	44.33	299.99	79.24	0.00	0.00	0.00
1,700.00	15.94	81.59	1,658.87	48.35	327.17	86.42	0.00	0.00	0.00
1,800.00	15.94	81.59	1,755.03	52.36	354.34	93.59	0.00	0.00	0.00
1,900.00	15.94	81.59	1,851.18	56.38	381.51	100.77	0.00	0.00	0.00
2,000.00	15.94	81.59	1,947.33	60.39	408.69	107.95	0.00	0.00	0.00
2,100.00	15.94	81.59	2,043.49	64.41	435.86	115.13	0.00	0.00	0.00
2,200.00	15.94	81.59	2,139.64	68.42	463.03	122.30	0.00	0.00	0.00
2,300.00	15.94	81.59	2,235.79	72.44	490.20	129.48	0.00	0.00	0.00
2,400.00	15.94	81.59	2,331.95	76.45	517.38	136.66	0.00	0.00	0.00
2,500.00	15.94	81.59	2,428.10	80.47	544.55	143.84	0.00	0.00	0.00
2,600.00	15.94	81.59	2,524.25	84.48	571.72	151.01	0.00	0.00	0.00
2,700.00	15.94	81.59	2,620.41	88.50	598.90	158.19	0.00	0.00	0.00
2,800.00	15.94	81.59	2,716.56	92.52	626.07	165.37	0.00	0.00	0.00
2,900.00	15.94	81.59	2,812.71	96.53	653.24	172.54	0.00	0.00	0.00
3,000.00	15.94	81.59	2,908.87	100.55	680.42	179.72	0.00	0.00	0.00
3,100.00	15.94	81.59	3,005.02	104.56	707.59	186.90	0.00	0.00	0.00
3,200.00	15.94	81.59	3,101.18	108.58	734.76	194.08	0.00	0.00	0.00
3,300.00	15.94	81.59	3,197.33	112.59	761.93	201.25	0.00	0.00	0.00
3,400.00	15.94	81.59	3,293.48	116.61	789.11	208.43	0.00	0.00	0.00
3,407.82	15.94	81.59	3,301.00	116.92	791.23	208.99	0.00	0.00	0.00
Richard Sandstone									
3,500.00	15.94	81.59	3,389.64	120.62	816.28	215.61	0.00	0.00	0.00
3,527.42	15.94	81.59	3,416.00	121.72	823.73	217.58	0.00	0.00	0.00
Parkman Sandstone									
3,600.00	15.94	81.59	3,485.79	124.64	843.45	222.79	0.00	0.00	0.00
3,700.00	15.94	81.59	3,581.94	128.65	870.63	229.96	0.00	0.00	0.00
3,800.00	15.94	81.59	3,678.10	132.67	897.80	237.14	0.00	0.00	0.00
3,900.00	15.94	81.59	3,774.25	136.68	924.97	244.32	0.00	0.00	0.00
4,000.00	15.94	81.59	3,870.40	140.70	952.14	251.50	0.00	0.00	0.00
4,100.00	15.94	81.59	3,966.56	144.72	979.32	258.67	0.00	0.00	0.00

Planning Report

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Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4918.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4918.00usft
Site:	SEC 22-T8N-R60W	North Reference:	True
Well:	BLUE TEAL FED 15-3-9HN	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)
4,200.00	15.94	81.59	4,062.71	148.73	1,006.49	265.85	0.00	0.00	0.00
4,300.00	15.94	81.59	4,158.86	152.75	1,033.66	273.03	0.00	0.00	0.00
4,334.46	15.94	81.59	4,192.00	154.13	1,043.03	275.50	0.00	0.00	0.00
Sussex Sandstone									
4,400.00	15.94	81.59	4,255.02	156.76	1,060.84	280.21	0.00	0.00	0.00
4,500.00	15.94	81.59	4,351.17	160.78	1,088.01	287.38	0.00	0.00	0.00
4,600.00	15.94	81.59	4,447.33	164.79	1,115.18	294.56	0.00	0.00	0.00
4,700.00	15.94	81.59	4,543.48	168.81	1,142.36	301.74	0.00	0.00	0.00
4,789.98	15.94	81.59	4,630.00	172.42	1,166.81	308.20	0.00	0.00	0.00
Shannon Sandstone									
4,800.00	15.94	81.59	4,639.63	172.82	1,169.53	308.91	0.00	0.00	0.00
4,900.00	15.94	81.59	4,735.79	176.84	1,196.70	316.09	0.00	0.00	0.00
5,000.00	15.94	81.59	4,831.94	180.85	1,223.87	323.27	0.00	0.00	0.00
5,100.00	15.94	81.59	4,928.09	184.87	1,251.05	330.45	0.00	0.00	0.00
5,200.00	15.94	81.59	5,024.25	188.88	1,278.22	337.62	0.00	0.00	0.00
5,300.00	15.94	81.59	5,120.40	192.90	1,305.39	344.80	0.00	0.00	0.00
5,400.00	15.94	81.59	5,216.55	196.91	1,332.57	351.98	0.00	0.00	0.00
5,500.00	15.94	81.59	5,312.71	200.93	1,359.74	359.16	0.00	0.00	0.00
5,583.50	15.94	81.59	5,393.00	204.28	1,382.43	365.15	0.00	0.00	0.00
TeePee Buttes									
5,600.00	15.94	81.59	5,408.86	204.95	1,386.91	366.33	0.00	0.00	0.00
5,700.00	15.94	81.59	5,505.01	208.96	1,414.08	373.51	0.00	0.00	0.00
5,800.00	15.94	81.59	5,601.17	212.98	1,441.26	380.69	0.00	0.00	0.00
5,900.00	15.94	81.59	5,697.32	216.99	1,468.43	387.87	0.00	0.00	0.00
5,928.13	15.94	81.59	5,724.37	218.12	1,476.07	389.88	0.00	0.00	0.00
Start DLS 10.00 TFO -80.92									
5,950.00	16.43	73.94	5,745.38	219.42	1,482.02	391.87	10.00	2.21	-35.01
6,000.00	18.46	58.63	5,793.10	225.50	1,495.58	399.50	10.00	4.06	-30.62
6,050.00	21.45	46.85	5,840.11	235.88	1,509.02	411.39	10.00	5.99	-23.56
6,100.00	25.07	38.07	5,886.05	250.48	1,522.23	427.44	10.00	7.23	-17.55
6,150.00	29.08	31.48	5,930.57	269.19	1,535.11	447.53	10.00	8.01	-13.18
6,200.00	33.33	26.40	5,973.34	291.87	1,547.58	471.52	10.00	8.51	-10.16
6,250.00	37.75	22.37	6,014.02	318.35	1,559.52	499.21	10.00	8.84	-8.06
6,300.00	42.28	19.09	6,052.30	348.42	1,570.85	530.41	10.00	9.06	-6.58
6,321.56	44.26	17.84	6,068.00	362.44	1,575.53	544.88	10.00	9.18	-5.77
Sharon Springs									
6,350.00	46.90	16.33	6,087.90	381.85	1,581.49	564.86	10.00	9.25	-5.32
6,380.21	49.71	14.86	6,108.00	403.58	1,587.55	587.15	10.00	9.32	-4.87
Niobrara Top									
6,400.00	51.56	13.96	6,120.55	418.40	1,591.35	602.31	10.00	9.36	-4.54
6,450.00	56.27	11.88	6,149.99	457.77	1,600.36	642.47	10.00	9.42	-4.16
6,500.00	61.01	10.02	6,176.00	499.68	1,608.45	685.04	10.00	9.48	-3.72
6,550.00	65.78	8.32	6,198.39	543.80	1,615.55	729.69	10.00	9.53	-3.40
6,600.00	70.56	6.74	6,216.98	589.80	1,621.62	776.08	10.00	9.56	-3.15
6,650.00	75.35	5.26	6,231.63	637.33	1,626.61	823.87	10.00	9.59	-2.97
6,677.65	78.01	4.47	6,238.00	664.14	1,628.89	850.76	10.00	9.60	-2.86
Niobrara B2 Chalk Target Top									
6,700.00	80.16	3.84	6,242.23	686.02	1,630.48	872.68	10.00	9.61	-2.81
6,750.00	84.97	2.46	6,248.70	735.51	1,633.20	922.14	10.00	9.62	-2.76
6,802.30	90.00	1.03	6,251.00	787.72	1,634.79	974.18	10.00	9.62	-2.72
Start 15396.28 hold at 6802.30 MD - Niobrara B2 Chalk Target Center									
6,900.00	90.00	1.03	6,251.00	885.40	1,636.55	1,071.39	0.00	0.00	0.00
7,000.00	90.00	1.03	6,251.00	985.39	1,638.35	1,170.90	0.00	0.00	0.00

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Project:	WELD COUNTY	MD Reference:	KB 27' @ 4918.00usft
Site:	SEC 22-T8N-R60W	North Reference:	True
Well:	BLUE TEAL FED 15-3-9HN	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	1.03	6,251.00	1,085.37	1,640.16	1,270.40	0.00	0.00	0.00
7,200.00	90.00	1.03	6,251.00	1,185.36	1,641.97	1,369.90	0.00	0.00	0.00
7,300.00	90.00	1.03	6,251.00	1,285.34	1,643.77	1,469.41	0.00	0.00	0.00
7,400.00	90.00	1.03	6,251.00	1,385.32	1,645.58	1,568.91	0.00	0.00	0.00
7,500.00	90.00	1.03	6,251.00	1,485.31	1,647.38	1,668.42	0.00	0.00	0.00
7,600.00	90.00	1.03	6,251.00	1,585.29	1,649.19	1,767.92	0.00	0.00	0.00
7,700.00	90.00	1.03	6,251.00	1,685.27	1,650.99	1,867.43	0.00	0.00	0.00
7,800.00	90.00	1.03	6,251.00	1,785.26	1,652.80	1,966.93	0.00	0.00	0.00
7,900.00	90.00	1.03	6,251.00	1,885.24	1,654.60	2,066.44	0.00	0.00	0.00
8,000.00	90.00	1.03	6,251.00	1,985.22	1,656.41	2,165.94	0.00	0.00	0.00
8,100.00	90.00	1.03	6,251.00	2,085.21	1,658.21	2,265.44	0.00	0.00	0.00
8,200.00	90.00	1.03	6,251.00	2,185.19	1,660.02	2,364.95	0.00	0.00	0.00
8,300.00	90.00	1.03	6,251.00	2,285.18	1,661.82	2,464.45	0.00	0.00	0.00
8,400.00	90.00	1.03	6,251.00	2,385.16	1,663.63	2,563.96	0.00	0.00	0.00
8,500.00	90.00	1.03	6,251.00	2,485.14	1,665.43	2,663.46	0.00	0.00	0.00
8,600.00	90.00	1.03	6,251.00	2,585.13	1,667.24	2,762.97	0.00	0.00	0.00
8,700.00	90.00	1.03	6,251.00	2,685.11	1,669.04	2,862.47	0.00	0.00	0.00
8,800.00	90.00	1.03	6,251.00	2,785.09	1,670.85	2,961.97	0.00	0.00	0.00
8,900.00	90.00	1.03	6,251.00	2,885.08	1,672.65	3,061.48	0.00	0.00	0.00
9,000.00	90.00	1.03	6,251.00	2,985.06	1,674.46	3,160.98	0.00	0.00	0.00
9,100.00	90.00	1.03	6,251.00	3,085.05	1,676.26	3,260.49	0.00	0.00	0.00
9,200.00	90.00	1.03	6,251.00	3,185.03	1,678.07	3,359.99	0.00	0.00	0.00
9,300.00	90.00	1.03	6,251.00	3,285.01	1,679.87	3,459.50	0.00	0.00	0.00
9,400.00	90.00	1.03	6,251.00	3,385.00	1,681.68	3,559.00	0.00	0.00	0.00
9,500.00	90.00	1.03	6,251.00	3,484.98	1,683.48	3,658.50	0.00	0.00	0.00
9,600.00	90.00	1.03	6,251.00	3,584.96	1,685.29	3,758.01	0.00	0.00	0.00
9,700.00	90.00	1.03	6,251.00	3,684.95	1,687.09	3,857.51	0.00	0.00	0.00
9,800.00	90.00	1.03	6,251.00	3,784.93	1,688.90	3,957.02	0.00	0.00	0.00
9,900.00	90.00	1.03	6,251.00	3,884.92	1,690.70	4,056.52	0.00	0.00	0.00
10,000.00	90.00	1.03	6,251.00	3,984.90	1,692.51	4,156.03	0.00	0.00	0.00
10,100.00	90.00	1.03	6,251.00	4,084.88	1,694.31	4,255.53	0.00	0.00	0.00
10,200.00	90.00	1.03	6,251.00	4,184.87	1,696.12	4,355.04	0.00	0.00	0.00
10,300.00	90.00	1.03	6,251.00	4,284.85	1,697.92	4,454.54	0.00	0.00	0.00
10,400.00	90.00	1.03	6,251.00	4,384.83	1,699.73	4,554.04	0.00	0.00	0.00
10,500.00	90.00	1.03	6,251.00	4,484.82	1,701.54	4,653.55	0.00	0.00	0.00
10,600.00	90.00	1.03	6,251.00	4,584.80	1,703.34	4,753.05	0.00	0.00	0.00
10,700.00	90.00	1.03	6,251.00	4,684.79	1,705.15	4,852.56	0.00	0.00	0.00
10,800.00	90.00	1.03	6,251.00	4,784.77	1,706.95	4,952.06	0.00	0.00	0.00
10,900.00	90.00	1.03	6,251.00	4,884.75	1,708.76	5,051.57	0.00	0.00	0.00
11,000.00	90.00	1.03	6,251.00	4,984.74	1,710.56	5,151.07	0.00	0.00	0.00
11,100.00	90.00	1.03	6,251.00	5,084.72	1,712.37	5,250.57	0.00	0.00	0.00
11,200.00	90.00	1.03	6,251.00	5,184.70	1,714.17	5,350.08	0.00	0.00	0.00
11,300.00	90.00	1.03	6,251.00	5,284.69	1,715.98	5,449.58	0.00	0.00	0.00
11,400.00	90.00	1.03	6,251.00	5,384.67	1,717.78	5,549.09	0.00	0.00	0.00
11,500.00	90.00	1.03	6,251.00	5,484.65	1,719.59	5,648.59	0.00	0.00	0.00
11,600.00	90.00	1.03	6,251.00	5,584.64	1,721.39	5,748.10	0.00	0.00	0.00
11,700.00	90.00	1.03	6,251.00	5,684.62	1,723.20	5,847.60	0.00	0.00	0.00
11,800.00	90.00	1.03	6,251.00	5,784.61	1,725.00	5,947.10	0.00	0.00	0.00
11,900.00	90.00	1.03	6,251.00	5,884.59	1,726.81	6,046.61	0.00	0.00	0.00
12,000.00	90.00	1.03	6,251.00	5,984.57	1,728.61	6,146.11	0.00	0.00	0.00
12,100.00	90.00	1.03	6,251.00	6,084.56	1,730.42	6,245.62	0.00	0.00	0.00
12,200.00	90.00	1.03	6,251.00	6,184.54	1,732.22	6,345.12	0.00	0.00	0.00
12,300.00	90.00	1.03	6,251.00	6,284.52	1,734.03	6,444.63	0.00	0.00	0.00
12,400.00	90.00	1.03	6,251.00	6,384.51	1,735.83	6,544.13	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well BLUE TEAL FED 15-3-9HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4918.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4918.00usft
Site:	SEC 22-T8N-R60W	North Reference:	True
Well:	BLUE TEAL FED 15-3-9HN	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	1.03	6,251.00	6,484.49	1,737.64	6,643.64	0.00	0.00	0.00
12,600.00	90.00	1.03	6,251.00	6,584.48	1,739.44	6,743.14	0.00	0.00	0.00
12,700.00	90.00	1.03	6,251.00	6,684.46	1,741.25	6,842.64	0.00	0.00	0.00
12,800.00	90.00	1.03	6,251.00	6,784.44	1,743.05	6,942.15	0.00	0.00	0.00
12,900.00	90.00	1.03	6,251.00	6,884.43	1,744.86	7,041.65	0.00	0.00	0.00
13,000.00	90.00	1.03	6,251.00	6,984.41	1,746.66	7,141.16	0.00	0.00	0.00
13,100.00	90.00	1.03	6,251.00	7,084.39	1,748.47	7,240.66	0.00	0.00	0.00
13,200.00	90.00	1.03	6,251.00	7,184.38	1,750.27	7,340.17	0.00	0.00	0.00
13,300.00	90.00	1.03	6,251.00	7,284.36	1,752.08	7,439.67	0.00	0.00	0.00
13,400.00	90.00	1.03	6,251.00	7,384.35	1,753.88	7,539.17	0.00	0.00	0.00
13,500.00	90.00	1.03	6,251.00	7,484.33	1,755.69	7,638.68	0.00	0.00	0.00
13,600.00	90.00	1.03	6,251.00	7,584.31	1,757.49	7,738.18	0.00	0.00	0.00
13,700.00	90.00	1.03	6,251.00	7,684.30	1,759.30	7,837.69	0.00	0.00	0.00
13,800.00	90.00	1.03	6,251.00	7,784.28	1,761.11	7,937.19	0.00	0.00	0.00
13,900.00	90.00	1.03	6,251.00	7,884.26	1,762.91	8,036.70	0.00	0.00	0.00
14,000.00	90.00	1.03	6,251.00	7,984.25	1,764.72	8,136.20	0.00	0.00	0.00
14,100.00	90.00	1.03	6,251.00	8,084.23	1,766.52	8,235.70	0.00	0.00	0.00
14,200.00	90.00	1.03	6,251.00	8,184.21	1,768.33	8,335.21	0.00	0.00	0.00
14,300.00	90.00	1.03	6,251.00	8,284.20	1,770.13	8,434.71	0.00	0.00	0.00
14,400.00	90.00	1.03	6,251.00	8,384.18	1,771.94	8,534.22	0.00	0.00	0.00
14,500.00	90.00	1.03	6,251.00	8,484.17	1,773.74	8,633.72	0.00	0.00	0.00
14,600.00	90.00	1.03	6,251.00	8,584.15	1,775.55	8,733.23	0.00	0.00	0.00
14,700.00	90.00	1.03	6,251.00	8,684.13	1,777.35	8,832.73	0.00	0.00	0.00
14,800.00	90.00	1.03	6,251.00	8,784.12	1,779.16	8,932.24	0.00	0.00	0.00
14,900.00	90.00	1.03	6,251.00	8,884.10	1,780.96	9,031.74	0.00	0.00	0.00
15,000.00	90.00	1.03	6,251.00	8,984.08	1,782.77	9,131.24	0.00	0.00	0.00
15,100.00	90.00	1.03	6,251.00	9,084.07	1,784.57	9,230.75	0.00	0.00	0.00
15,200.00	90.00	1.03	6,251.00	9,184.05	1,786.38	9,330.25	0.00	0.00	0.00
15,300.00	90.00	1.03	6,251.00	9,284.04	1,788.18	9,429.76	0.00	0.00	0.00
15,400.00	90.00	1.03	6,251.00	9,384.02	1,789.99	9,529.26	0.00	0.00	0.00
15,500.00	90.00	1.03	6,251.00	9,484.00	1,791.79	9,628.77	0.00	0.00	0.00
15,600.00	90.00	1.03	6,251.00	9,583.99	1,793.60	9,728.27	0.00	0.00	0.00
15,700.00	90.00	1.03	6,251.00	9,683.97	1,795.40	9,827.77	0.00	0.00	0.00
15,800.00	90.00	1.03	6,251.00	9,783.95	1,797.21	9,927.28	0.00	0.00	0.00
15,900.00	90.00	1.03	6,251.00	9,883.94	1,799.01	10,026.78	0.00	0.00	0.00
16,000.00	90.00	1.03	6,251.00	9,983.92	1,800.82	10,126.29	0.00	0.00	0.00
16,100.00	90.00	1.03	6,251.00	10,083.91	1,802.62	10,225.79	0.00	0.00	0.00
16,200.00	90.00	1.03	6,251.00	10,183.89	1,804.43	10,325.30	0.00	0.00	0.00
16,300.00	90.00	1.03	6,251.00	10,283.87	1,806.23	10,424.80	0.00	0.00	0.00
16,400.00	90.00	1.03	6,251.00	10,383.86	1,808.04	10,524.30	0.00	0.00	0.00
16,500.00	90.00	1.03	6,251.00	10,483.84	1,809.84	10,623.81	0.00	0.00	0.00
16,600.00	90.00	1.03	6,251.00	10,583.82	1,811.65	10,723.31	0.00	0.00	0.00
16,700.00	90.00	1.03	6,251.00	10,683.81	1,813.45	10,822.82	0.00	0.00	0.00
16,800.00	90.00	1.03	6,251.00	10,783.79	1,815.26	10,922.32	0.00	0.00	0.00
16,900.00	90.00	1.03	6,251.00	10,883.77	1,817.06	11,021.83	0.00	0.00	0.00
17,000.00	90.00	1.03	6,251.00	10,983.76	1,818.87	11,121.33	0.00	0.00	0.00
17,100.00	90.00	1.03	6,251.00	11,083.74	1,820.68	11,220.84	0.00	0.00	0.00
17,200.00	90.00	1.03	6,251.00	11,183.73	1,822.48	11,320.34	0.00	0.00	0.00
17,300.00	90.00	1.03	6,251.00	11,283.71	1,824.29	11,419.84	0.00	0.00	0.00
17,400.00	90.00	1.03	6,251.00	11,383.69	1,826.09	11,519.35	0.00	0.00	0.00
17,500.00	90.00	1.03	6,251.00	11,483.68	1,827.90	11,618.85	0.00	0.00	0.00
17,600.00	90.00	1.03	6,251.00	11,583.66	1,829.70	11,718.36	0.00	0.00	0.00
17,700.00	90.00	1.03	6,251.00	11,683.64	1,831.51	11,817.86	0.00	0.00	0.00
17,800.00	90.00	1.03	6,251.00	11,783.63	1,833.31	11,917.37	0.00	0.00	0.00

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well BLUE TEAL FED 15-3-9HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4918.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4918.00usft
Site:	SEC 22-T8N-R60W	North Reference:	True
Well:	BLUE TEAL FED 15-3-9HN	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)	
17,900.00	90.00	1.03	6,251.00	11,883.61	1,835.12	12,016.87	0.00	0.00	0.00	
18,000.00	90.00	1.03	6,251.00	11,983.60	1,836.92	12,116.37	0.00	0.00	0.00	
18,100.00	90.00	1.03	6,251.00	12,083.58	1,838.73	12,215.88	0.00	0.00	0.00	
18,200.00	90.00	1.03	6,251.00	12,183.56	1,840.53	12,315.38	0.00	0.00	0.00	
18,300.00	90.00	1.03	6,251.00	12,283.55	1,842.34	12,414.89	0.00	0.00	0.00	
18,400.00	90.00	1.03	6,251.00	12,383.53	1,844.14	12,514.39	0.00	0.00	0.00	
18,500.00	90.00	1.03	6,251.00	12,483.51	1,845.95	12,613.90	0.00	0.00	0.00	
18,600.00	90.00	1.03	6,251.00	12,583.50	1,847.75	12,713.40	0.00	0.00	0.00	
18,700.00	90.00	1.03	6,251.00	12,683.48	1,849.56	12,812.91	0.00	0.00	0.00	
18,800.00	90.00	1.03	6,251.00	12,783.47	1,851.36	12,912.41	0.00	0.00	0.00	
18,900.00	90.00	1.03	6,251.00	12,883.45	1,853.17	13,011.91	0.00	0.00	0.00	
19,000.00	90.00	1.03	6,251.00	12,983.43	1,854.97	13,111.42	0.00	0.00	0.00	
19,100.00	90.00	1.03	6,251.00	13,083.42	1,856.78	13,210.92	0.00	0.00	0.00	
19,200.00	90.00	1.03	6,251.00	13,183.40	1,858.58	13,310.43	0.00	0.00	0.00	
19,300.00	90.00	1.03	6,251.00	13,283.38	1,860.39	13,409.93	0.00	0.00	0.00	
19,400.00	90.00	1.03	6,251.00	13,383.37	1,862.19	13,509.44	0.00	0.00	0.00	
19,500.00	90.00	1.03	6,251.00	13,483.35	1,864.00	13,608.94	0.00	0.00	0.00	
19,600.00	90.00	1.03	6,251.00	13,583.34	1,865.80	13,708.44	0.00	0.00	0.00	
19,700.00	90.00	1.03	6,251.00	13,683.32	1,867.61	13,807.95	0.00	0.00	0.00	
19,800.00	90.00	1.03	6,251.00	13,783.30	1,869.41	13,907.45	0.00	0.00	0.00	
19,900.00	90.00	1.03	6,251.00	13,883.29	1,871.22	14,006.96	0.00	0.00	0.00	
20,000.00	90.00	1.03	6,251.00	13,983.27	1,873.02	14,106.46	0.00	0.00	0.00	
20,100.00	90.00	1.03	6,251.00	14,083.25	1,874.83	14,205.97	0.00	0.00	0.00	
20,200.00	90.00	1.03	6,251.00	14,183.24	1,876.63	14,305.47	0.00	0.00	0.00	
20,300.00	90.00	1.03	6,251.00	14,283.22	1,878.44	14,404.97	0.00	0.00	0.00	
20,400.00	90.00	1.03	6,251.00	14,383.20	1,880.25	14,504.48	0.00	0.00	0.00	
20,500.00	90.00	1.03	6,251.00	14,483.19	1,882.05	14,603.98	0.00	0.00	0.00	
20,600.00	90.00	1.03	6,251.00	14,583.17	1,883.86	14,703.49	0.00	0.00	0.00	
20,700.00	90.00	1.03	6,251.00	14,683.16	1,885.66	14,802.99	0.00	0.00	0.00	
20,800.00	90.00	1.03	6,251.00	14,783.14	1,887.47	14,902.50	0.00	0.00	0.00	
20,900.00	90.00	1.03	6,251.00	14,883.12	1,889.27	15,002.00	0.00	0.00	0.00	
21,000.00	90.00	1.03	6,251.00	14,983.11	1,891.08	15,101.51	0.00	0.00	0.00	
21,100.00	90.00	1.03	6,251.00	15,083.09	1,892.88	15,201.01	0.00	0.00	0.00	
21,200.00	90.00	1.03	6,251.00	15,183.07	1,894.69	15,300.51	0.00	0.00	0.00	
21,300.00	90.00	1.03	6,251.00	15,283.06	1,896.49	15,400.02	0.00	0.00	0.00	
21,400.00	90.00	1.03	6,251.00	15,383.04	1,898.30	15,499.52	0.00	0.00	0.00	
21,500.00	90.00	1.03	6,251.00	15,483.03	1,900.10	15,599.03	0.00	0.00	0.00	
21,600.00	90.00	1.03	6,251.00	15,583.01	1,901.91	15,698.53	0.00	0.00	0.00	
21,700.00	90.00	1.03	6,251.00	15,682.99	1,903.71	15,798.04	0.00	0.00	0.00	
21,800.00	90.00	1.03	6,251.00	15,782.98	1,905.52	15,897.54	0.00	0.00	0.00	
21,900.00	90.00	1.03	6,251.00	15,882.96	1,907.32	15,997.04	0.00	0.00	0.00	
22,000.00	90.00	1.03	6,251.00	15,982.94	1,909.13	16,096.55	0.00	0.00	0.00	
22,100.00	90.00	1.03	6,251.00	16,082.93	1,910.93	16,196.05	0.00	0.00	0.00	
22,198.58	90.00	1.03	6,251.00	16,181.50	1,912.71	16,294.15	0.00	0.00	0.00	
TD at 22198.58										

Planning Report

Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well BLUE TEAL FED 15-3-9HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4918.00usft
Project:	WELD COUNTY	MD Reference:	KB 27' @ 4918.00usft
Site:	SEC 22-T8N-R60W	North Reference:	True
Well:	BLUE TEAL FED 15-3-9HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
BLUE TEAL FED 15-3-9	0.00	0.00	6,251.00	787.72	1,634.79	1,485,024.11	3,396,920.08	40.655997°N	104.069382°W
- plan hits target center									
- Point									
BLUE TEAL FED 15-3-9	0.00	0.00	6,251.00	16,181.50	1,912.71	1,500,420.36	3,396,950.66	40.698250°N	104.068376°W
- plan hits target center									
- Point									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
440.80	440.00	Fox Hills Base				
1,475.49	1,443.00	Pierre Shale Top				
3,407.82	3,301.00	Richard Sandstone				
3,527.42	3,416.00	Parkman Sandstone				
4,334.46	4,192.00	Sussex Sandstone				
4,789.98	4,630.00	Shannon Sandstone				
5,583.50	5,393.00	TeePee Buttes				
6,321.56	6,068.00	Sharon Springs				
6,380.21	6,108.00	Niobrara Top				
6,677.65	6,238.00	Niobrara B2 Chalk Target Top				
6,802.30	6,251.00	Niobrara B2 Chalk Target Center				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(usft)	(usft)	+N/-S	+E/-W	Comment	
(usft)	(usft)	(usft)	(usft)		
100.00	100.00	0.00	0.00	Start Build 2.00	
897.15	886.90	16.11	109.01	Start 5030.98 hold at 897.15 MD	
5,928.13	5,724.37	218.12	1,476.07	Start DLS 10.00 TFO -80.92	
6,802.30	6,251.00	787.72	1,634.79	Start 15396.28 hold at 6802.30 MD	
22,198.58	6,251.00	16,181.50	1,912.71	TD at 22198.58	