

# **MALLARD EXPLORATION**

**WELD COUNTY**

**SEC 22-T8N-R60W**

**BLUE TEAL FED 15-3-2HN**

**ORIGINAL WELLBORE**

**Plan: PROPOSAL 1**

## **Standard Planning Report**

**01 September, 2020**



Project: WELD COUNTY  
Site: SEC 22-T8N-R60W  
Well: BLUE TEAL FED 15-3-2HN  
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: 52254.5nT  
Dip Angle: 66.99°  
Date: 7/6/2020  
Model: IGRF2020

WELL DETAILS: BLUE TEAL FED 15-3-2HN

+N/-S	+E/-W	Northing	Easting	4894.00	Latitude	Longitude	Slot
0.00	0.00	1484204.84	3395076.25		40.653830°N	104.076074°W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	1182.97	19.66	275.94	1163.90	17.29	-166.09	2.00	275.94	40.25	
4	6187.62	19.66	275.94	5876.72	191.67	-1840.75	0.00	0.00	446.04	
5	7071.16	90.00	1.05	6401.00	767.71	-2016.85	10.00	85.39	1040.98	BTfED 2HN - LP
6	19087.80	90.00	1.05	6401.00	12782.33	-1796.78	0.00	0.00	12908.00	BTfED 2HN- PBHL

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
533.00	533.75	Fox Hills Base
1536.00	1578.21	Pierre Shale Top
3394.00	3551.22	Richard Sandstone
3509.00	3673.34	Parkman Sandstone
4285.00	4497.38	Sussex Sandstone
4723.00	4962.49	Shannon Sandstone
5486.00	5772.72	TeePee Buttes
6161.00	6508.53	Sharon Springs
6201.00	6561.28	Niobrara Top
6296.00	6707.73	Niobrara B2 Chalk Top
6331.00	6776.12	Niobrara C Chalk Target Top
6401.00	7071.16	Niobrara C Chalk Target Center

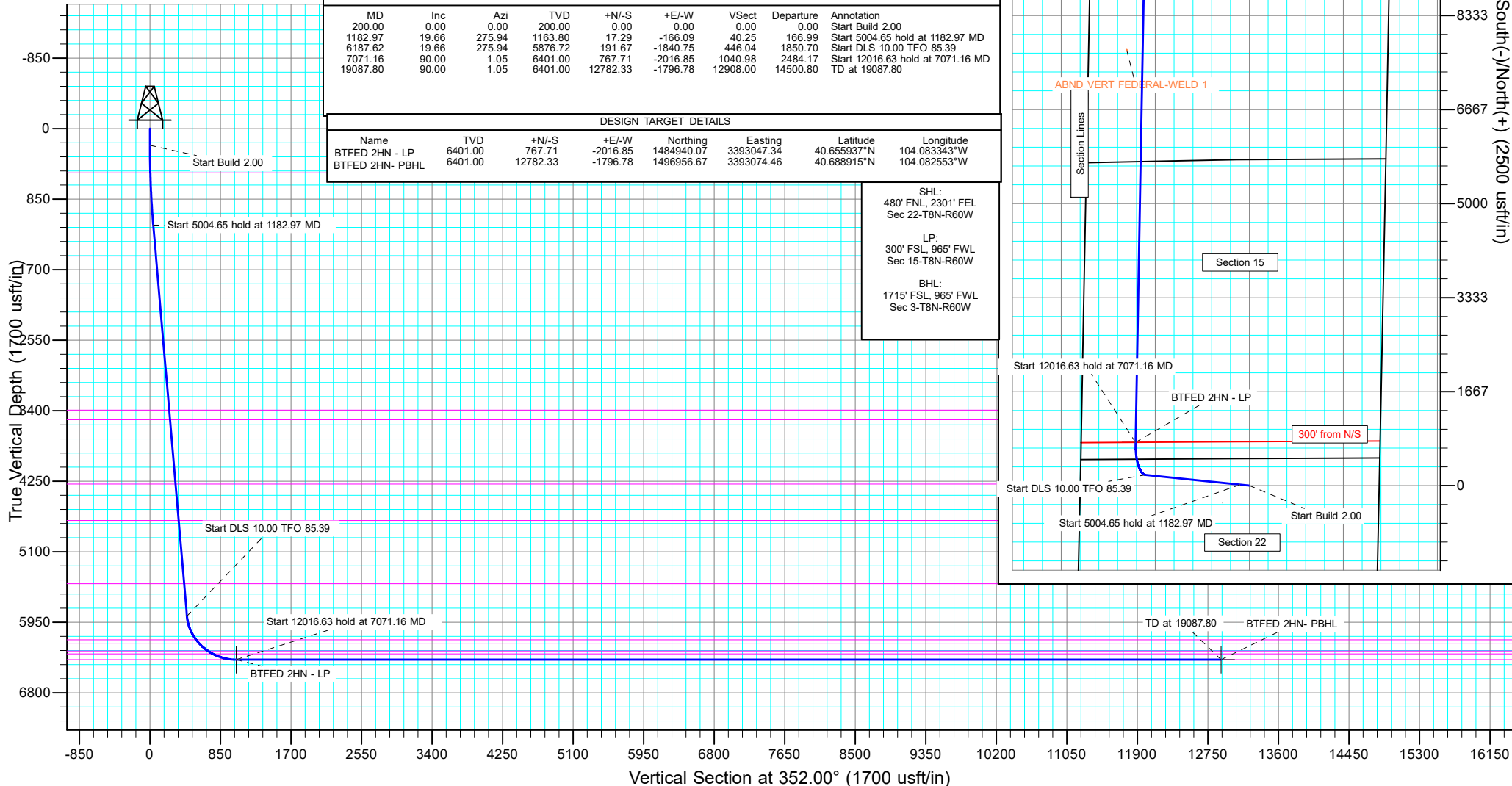
ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	Start Build 2.00
1182.97	19.66	275.94	1163.90	17.29	-166.09	40.25	166.99	Start 5004.65 hold at 1182.97 MD
6187.62	19.66	275.94	5876.72	191.67	-1840.75	446.04	1850.70	Start DLS 10.00 TFO 85.39
7071.16	90.00	1.05	6401.00	767.71	-2016.85	1040.98	2484.17	Start 12016.63 hold at 7071.16 MD
19087.80	90.00	1.05	6401.00	12782.33	-1796.78	12908.00	14500.80	TD at 19087.80

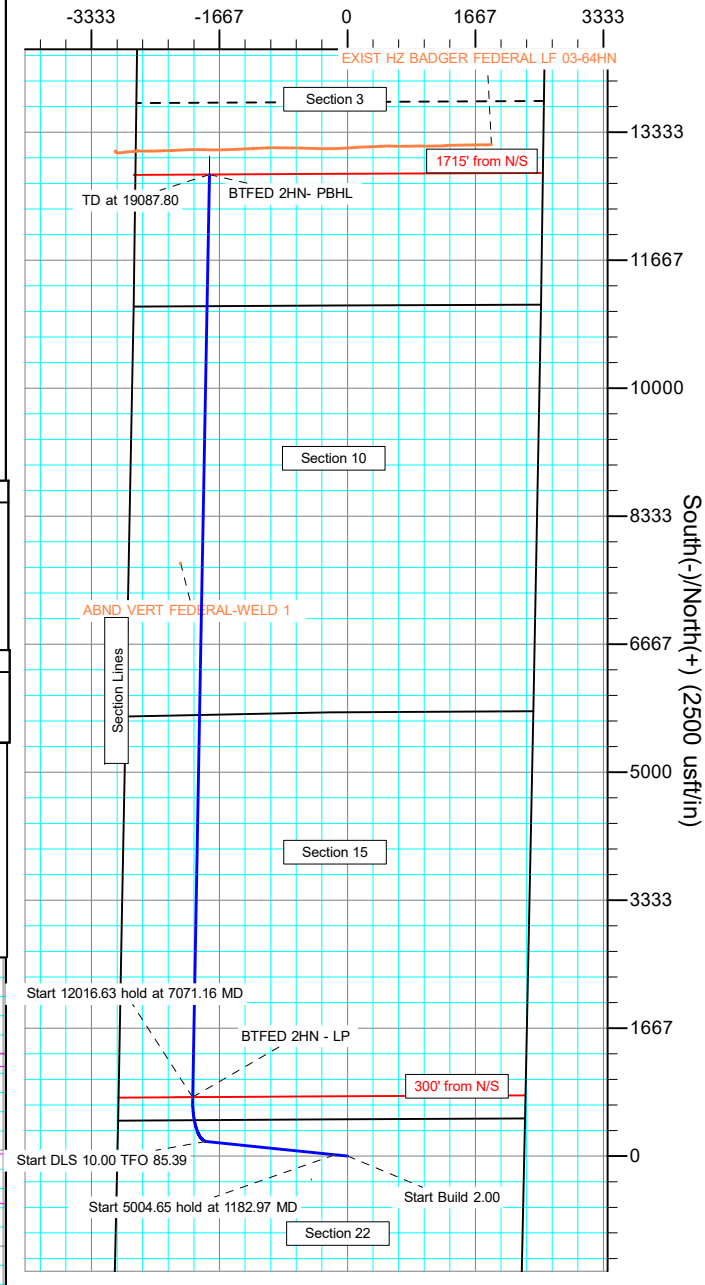
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BTfED 2HN - LP	6401.00	767.71	-2016.85	1484940.07	3393047.34	40.655937°N	104.083343°W
BTfED 2HN- PBHL	6401.00	12782.33	-1796.78	1496956.67	3393074.46	40.688915°N	104.082553°W

SHL:  
480' FNL, 2301' FEL  
Sec 22-T8N-R60W  
LP:  
300' FSL, 965' FWL  
Sec 15-T8N-R60W  
BHL:  
1715' FSL, 965' FWL  
Sec 3-T8N-R60W



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



## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-3-2HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4921.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4921.00usft
<b>Site:</b>	SEC 22-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-3-2HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

<b>Project</b>	WELD COUNTY		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 15-3-2HN				
Well Position	+N/-S	0.00 usft	Northing:	1,484,204.84 usft	Latitude:	40.653830°N
	+E/-W	0.00 usft	Easting:	3,395,076.25 usft	Longitude:	104.076074°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,894.00 usft
Grid Convergence:		0.92 °				

<b>Wellbore</b>	ORIGINAL WELLBORE				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2020	7/6/2020	7.60	66.99	52,254.50385150

<b>Design</b>	PROPOSAL 1				
<b>Audit Notes:</b>					
<b>Version:</b>		<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>		<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
		0.00	0.00	0.00	352.00

<b>Plan Survey Tool Program</b>	<b>Date</b>	9/1/2020			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	19,087.80	PROPOSAL 1 (ORIGINAL WELL	MWD	
			OWSG MWD - Standard		

<b>Plan Sections</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	<b>TFO (°)</b>	<b>Target</b>
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,182.97	19.66	275.94	1,163.80	17.29	-166.09	2.00	2.00	0.00	275.94	
6,187.62	19.66	275.94	5,876.72	191.67	-1,840.75	0.00	0.00	0.00	0.00	
7,071.16	90.00	1.05	6,401.00	767.71	-2,016.85	10.00	7.96	9.63	85.39	BLUE TEAL FED 15-3
19,087.80	90.00	1.05	6,401.00	12,782.33	-1,796.78	0.00	0.00	0.00	0.00	BLUE TEAL FED 15-3

# Planning Report

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<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4921.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4921.00usft
<b>Site:</b>	SEC 22-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-3-2HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
300.00	2.00	275.94	299.98	0.18	-1.74	0.42	2.00	2.00	0.00
400.00	4.00	275.94	399.84	0.72	-6.94	1.68	2.00	2.00	0.00
500.00	6.00	275.94	499.45	1.63	-15.61	3.78	2.00	2.00	0.00
533.75	6.68	275.94	533.00	2.01	-19.32	4.68	2.00	2.00	0.00
Fox Hills Base									
600.00	8.00	275.94	598.70	2.89	-27.73	6.72	2.00	2.00	0.00
700.00	10.00	275.94	697.47	4.51	-43.29	10.49	2.00	2.00	0.00
800.00	12.00	275.94	795.62	6.48	-62.27	15.09	2.00	2.00	0.00
900.00	14.00	275.94	893.06	8.81	-84.64	20.51	2.00	2.00	0.00
1,000.00	16.00	275.94	989.64	11.49	-110.38	26.75	2.00	2.00	0.00
1,100.00	18.00	275.94	1,085.27	14.52	-139.46	33.79	2.00	2.00	0.00
1,182.97	19.66	275.94	1,163.80	17.29	-166.09	40.25	2.00	2.00	0.00
Start 5004.65 hold at 1182.97 MD									
1,200.00	19.66	275.94	1,179.83	17.89	-171.79	41.63	0.00	0.00	0.00
1,300.00	19.66	275.94	1,274.00	21.37	-205.25	49.74	0.00	0.00	0.00
1,400.00	19.66	275.94	1,368.17	24.86	-238.72	57.84	0.00	0.00	0.00
1,500.00	19.66	275.94	1,462.35	28.34	-272.18	65.95	0.00	0.00	0.00
1,578.21	19.66	275.94	1,536.00	31.07	-298.35	72.29	0.00	0.00	0.00
Pierre Shale Top									
1,600.00	19.66	275.94	1,556.52	31.83	-305.64	74.06	0.00	0.00	0.00
1,700.00	19.66	275.94	1,650.69	35.31	-339.10	82.17	0.00	0.00	0.00
1,800.00	19.66	275.94	1,744.86	38.79	-372.56	90.28	0.00	0.00	0.00
1,900.00	19.66	275.94	1,839.03	42.28	-406.03	98.39	0.00	0.00	0.00
2,000.00	19.66	275.94	1,933.20	45.76	-439.49	106.49	0.00	0.00	0.00
2,100.00	19.66	275.94	2,027.37	49.25	-472.95	114.60	0.00	0.00	0.00
2,200.00	19.66	275.94	2,121.54	52.73	-506.41	122.71	0.00	0.00	0.00
2,300.00	19.66	275.94	2,215.71	56.22	-539.87	130.82	0.00	0.00	0.00
2,400.00	19.66	275.94	2,309.88	59.70	-573.34	138.93	0.00	0.00	0.00
2,500.00	19.66	275.94	2,404.05	63.18	-606.80	147.03	0.00	0.00	0.00
2,600.00	19.66	275.94	2,498.22	66.67	-640.26	155.14	0.00	0.00	0.00
2,700.00	19.66	275.94	2,592.40	70.15	-673.72	163.25	0.00	0.00	0.00
2,800.00	19.66	275.94	2,686.57	73.64	-707.18	171.36	0.00	0.00	0.00
2,900.00	19.66	275.94	2,780.74	77.12	-740.65	179.47	0.00	0.00	0.00
3,000.00	19.66	275.94	2,874.91	80.61	-774.11	187.58	0.00	0.00	0.00
3,100.00	19.66	275.94	2,969.08	84.09	-807.57	195.68	0.00	0.00	0.00
3,200.00	19.66	275.94	3,063.25	87.57	-841.03	203.79	0.00	0.00	0.00
3,300.00	19.66	275.94	3,157.42	91.06	-874.49	211.90	0.00	0.00	0.00
3,400.00	19.66	275.94	3,251.59	94.54	-907.96	220.01	0.00	0.00	0.00
3,500.00	19.66	275.94	3,345.76	98.03	-941.42	228.12	0.00	0.00	0.00
3,551.22	19.66	275.94	3,394.00	99.81	-958.56	232.27	0.00	0.00	0.00
Richard Sandstone									
3,600.00	19.66	275.94	3,439.93	101.51	-974.88	236.23	0.00	0.00	0.00
3,673.34	19.66	275.94	3,509.00	104.07	-999.42	242.17	0.00	0.00	0.00
Parkman Sandstone									
3,700.00	19.66	275.94	3,534.10	105.00	-1,008.34	244.33	0.00	0.00	0.00
3,800.00	19.66	275.94	3,628.28	108.48	-1,041.80	252.44	0.00	0.00	0.00
3,900.00	19.66	275.94	3,722.45	111.96	-1,075.27	260.55	0.00	0.00	0.00
4,000.00	19.66	275.94	3,816.62	115.45	-1,108.73	268.66	0.00	0.00	0.00
4,100.00	19.66	275.94	3,910.79	118.93	-1,142.19	276.77	0.00	0.00	0.00

# Planning Report

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<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4921.00usft
<b>Site:</b>	SEC 22-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-3-2HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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	19.66	275.94	4,004.96	122.42	-1,175.65	284.88	0.00	0.00	0.00	
4,300.00	19.66	275.94	4,099.13	125.90	-1,209.11	292.98	0.00	0.00	0.00	
4,400.00	19.66	275.94	4,193.30	129.39	-1,242.58	301.09	0.00	0.00	0.00	
4,497.38	19.66	275.94	4,285.00	132.78	-1,275.16	308.99	0.00	0.00	0.00	
<b>Sussex Sandstone</b>										
4,500.00	19.66	275.94	4,287.47	132.87	-1,276.04	309.20	0.00	0.00	0.00	
4,600.00	19.66	275.94	4,381.64	136.35	-1,309.50	317.31	0.00	0.00	0.00	
4,700.00	19.66	275.94	4,475.81	139.84	-1,342.96	325.42	0.00	0.00	0.00	
4,800.00	19.66	275.94	4,569.98	143.32	-1,376.42	333.52	0.00	0.00	0.00	
4,900.00	19.66	275.94	4,664.15	146.81	-1,409.89	341.63	0.00	0.00	0.00	
4,962.49	19.66	275.94	4,723.00	148.99	-1,430.80	346.70	0.00	0.00	0.00	
<b>Shannon Sandstone</b>										
5,000.00	19.66	275.94	4,758.33	150.29	-1,443.35	349.74	0.00	0.00	0.00	
5,100.00	19.66	275.94	4,852.50	153.78	-1,476.81	357.85	0.00	0.00	0.00	
5,200.00	19.66	275.94	4,946.67	157.26	-1,510.27	365.96	0.00	0.00	0.00	
5,300.00	19.66	275.94	5,040.84	160.75	-1,543.73	374.07	0.00	0.00	0.00	
5,400.00	19.66	275.94	5,135.01	164.23	-1,577.20	382.17	0.00	0.00	0.00	
5,500.00	19.66	275.94	5,229.18	167.71	-1,610.66	390.28	0.00	0.00	0.00	
5,600.00	19.66	275.94	5,323.35	171.20	-1,644.12	398.39	0.00	0.00	0.00	
5,700.00	19.66	275.94	5,417.52	174.68	-1,677.58	406.50	0.00	0.00	0.00	
5,772.72	19.66	275.94	5,486.00	177.22	-1,701.91	412.40	0.00	0.00	0.00	
<b>TeePee Buttes</b>										
5,800.00	19.66	275.94	5,511.69	178.17	-1,711.04	414.61	0.00	0.00	0.00	
5,900.00	19.66	275.94	5,605.86	181.65	-1,744.51	422.72	0.00	0.00	0.00	
6,000.00	19.66	275.94	5,700.03	185.14	-1,777.97	430.82	0.00	0.00	0.00	
6,100.00	19.66	275.94	5,794.21	188.62	-1,811.43	438.93	0.00	0.00	0.00	
6,187.62	19.66	275.94	5,876.72	191.67	-1,840.75	446.04	0.00	0.00	0.00	
<b>Start DLS 10.00 TFO 85.39</b>										
6,200.00	19.80	279.59	5,888.37	192.24	-1,844.89	447.17	10.00	1.10	29.45	
6,250.00	21.06	293.49	5,935.25	197.23	-1,861.49	454.43	10.00	2.53	27.79	
6,300.00	23.31	305.35	5,981.57	206.54	-1,877.81	465.92	10.00	4.50	23.72	
6,350.00	26.29	314.95	6,026.98	220.09	-1,893.72	481.56	10.00	5.96	19.20	
6,400.00	29.78	322.58	6,071.12	237.79	-1,909.11	501.22	10.00	6.98	15.27	
6,450.00	33.62	328.68	6,113.66	259.49	-1,923.86	524.76	10.00	7.68	12.20	
6,500.00	37.71	333.63	6,154.28	285.03	-1,937.86	552.00	10.00	8.17	9.90	
6,508.53	38.42	334.39	6,161.00	289.76	-1,940.16	557.01	10.00	8.39	8.82	
<b>Sharon Springs</b>										
6,550.00	41.96	337.73	6,192.68	314.22	-1,950.99	582.74	10.00	8.54	8.07	
6,561.28	42.94	338.56	6,201.00	321.29	-1,953.82	590.13	10.00	8.68	7.36	
<b>Niobrara Top</b>										
6,600.00	46.35	341.20	6,228.55	346.83	-1,963.16	616.73	10.00	8.79	6.80	
6,650.00	50.82	344.18	6,261.62	382.62	-1,974.28	653.71	10.00	8.94	5.97	
6,700.00	55.35	346.81	6,291.65	421.32	-1,984.26	693.42	10.00	9.08	5.25	
6,707.73	56.06	347.19	6,296.00	427.54	-1,985.70	699.78	10.00	9.14	4.91	
<b>Niobrara B2 Chalk Top</b>										
6,750.00	59.94	349.16	6,318.40	462.62	-1,993.03	735.54	10.00	9.18	4.67	
6,776.12	62.36	350.30	6,331.00	485.13	-1,997.10	758.40	10.00	9.24	4.37	
<b>Niobrara C Chalk Target Top</b>										
6,800.00	64.57	351.31	6,341.67	506.22	-2,000.52	779.76	10.00	9.27	4.19	
6,850.00	69.23	353.29	6,361.28	551.78	-2,006.66	825.73	10.00	9.31	3.97	
6,900.00	73.90	355.15	6,377.09	598.96	-2,011.43	873.11	10.00	9.35	3.73	
6,950.00	78.59	356.93	6,388.98	647.39	-2,014.77	921.54	10.00	9.38	3.56	
7,000.00	83.30	358.65	6,396.84	696.72	-2,016.67	970.65	10.00	9.41	3.44	

# Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-3-2HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4921.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4921.00usft
<b>Site:</b>	SEC 22-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-3-2HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)
7,050.00	88.01	0.34	6,400.63	746.56	-2,017.11	1,020.07	10.00	9.42	3.37
7,071.16	90.00	1.05	6,401.00	767.71	-2,016.85	1,040.98	10.00	9.42	3.35
Start 12016.63 hold at 7071.16 MD - Niobrara C Chalk Target Center									
7,100.00	90.00	1.05	6,401.00	796.55	-2,016.32	1,069.46	0.00	0.00	0.00
7,200.00	90.00	1.05	6,401.00	896.53	-2,014.49	1,168.21	0.00	0.00	0.00
7,300.00	90.00	1.05	6,401.00	996.51	-2,012.66	1,266.97	0.00	0.00	0.00
7,400.00	90.00	1.05	6,401.00	1,096.49	-2,010.83	1,365.72	0.00	0.00	0.00
7,500.00	90.00	1.05	6,401.00	1,196.48	-2,008.99	1,464.48	0.00	0.00	0.00
7,600.00	90.00	1.05	6,401.00	1,296.46	-2,007.16	1,563.23	0.00	0.00	0.00
7,700.00	90.00	1.05	6,401.00	1,396.44	-2,005.33	1,661.99	0.00	0.00	0.00
7,800.00	90.00	1.05	6,401.00	1,496.43	-2,003.50	1,760.74	0.00	0.00	0.00
7,900.00	90.00	1.05	6,401.00	1,596.41	-2,001.67	1,859.50	0.00	0.00	0.00
8,000.00	90.00	1.05	6,401.00	1,696.39	-1,999.84	1,958.25	0.00	0.00	0.00
8,100.00	90.00	1.05	6,401.00	1,796.38	-1,998.01	2,057.01	0.00	0.00	0.00
8,200.00	90.00	1.05	6,401.00	1,896.36	-1,996.18	2,155.76	0.00	0.00	0.00
8,300.00	90.00	1.05	6,401.00	1,996.34	-1,994.34	2,254.52	0.00	0.00	0.00
8,400.00	90.00	1.05	6,401.00	2,096.33	-1,992.51	2,353.27	0.00	0.00	0.00
8,500.00	90.00	1.05	6,401.00	2,196.31	-1,990.68	2,452.03	0.00	0.00	0.00
8,600.00	90.00	1.05	6,401.00	2,296.29	-1,988.85	2,550.78	0.00	0.00	0.00
8,700.00	90.00	1.05	6,401.00	2,396.28	-1,987.02	2,649.54	0.00	0.00	0.00
8,800.00	90.00	1.05	6,401.00	2,496.26	-1,985.19	2,748.29	0.00	0.00	0.00
8,900.00	90.00	1.05	6,401.00	2,596.24	-1,983.36	2,847.05	0.00	0.00	0.00
9,000.00	90.00	1.05	6,401.00	2,696.23	-1,981.52	2,945.80	0.00	0.00	0.00
9,100.00	90.00	1.05	6,401.00	2,796.21	-1,979.69	3,044.56	0.00	0.00	0.00
9,200.00	90.00	1.05	6,401.00	2,896.19	-1,977.86	3,143.31	0.00	0.00	0.00
9,300.00	90.00	1.05	6,401.00	2,996.18	-1,976.03	3,242.07	0.00	0.00	0.00
9,400.00	90.00	1.05	6,401.00	3,096.16	-1,974.20	3,340.82	0.00	0.00	0.00
9,500.00	90.00	1.05	6,401.00	3,196.14	-1,972.37	3,439.58	0.00	0.00	0.00
9,600.00	90.00	1.05	6,401.00	3,296.13	-1,970.54	3,538.33	0.00	0.00	0.00
9,700.00	90.00	1.05	6,401.00	3,396.11	-1,968.70	3,637.09	0.00	0.00	0.00
9,800.00	90.00	1.05	6,401.00	3,496.09	-1,966.87	3,735.84	0.00	0.00	0.00
9,900.00	90.00	1.05	6,401.00	3,596.08	-1,965.04	3,834.60	0.00	0.00	0.00
10,000.00	90.00	1.05	6,401.00	3,696.06	-1,963.21	3,933.35	0.00	0.00	0.00
10,100.00	90.00	1.05	6,401.00	3,796.04	-1,961.38	4,032.11	0.00	0.00	0.00
10,200.00	90.00	1.05	6,401.00	3,896.03	-1,959.55	4,130.86	0.00	0.00	0.00
10,300.00	90.00	1.05	6,401.00	3,996.01	-1,957.72	4,229.62	0.00	0.00	0.00
10,400.00	90.00	1.05	6,401.00	4,095.99	-1,955.88	4,328.37	0.00	0.00	0.00
10,500.00	90.00	1.05	6,401.00	4,195.97	-1,954.05	4,427.13	0.00	0.00	0.00
10,600.00	90.00	1.05	6,401.00	4,295.96	-1,952.22	4,525.88	0.00	0.00	0.00
10,700.00	90.00	1.05	6,401.00	4,395.94	-1,950.39	4,624.64	0.00	0.00	0.00
10,800.00	90.00	1.05	6,401.00	4,495.92	-1,948.56	4,723.39	0.00	0.00	0.00
10,900.00	90.00	1.05	6,401.00	4,595.91	-1,946.73	4,822.15	0.00	0.00	0.00
11,000.00	90.00	1.05	6,401.00	4,695.89	-1,944.90	4,920.90	0.00	0.00	0.00
11,100.00	90.00	1.05	6,401.00	4,795.87	-1,943.07	5,019.66	0.00	0.00	0.00
11,200.00	90.00	1.05	6,401.00	4,895.86	-1,941.23	5,118.41	0.00	0.00	0.00
11,300.00	90.00	1.05	6,401.00	4,995.84	-1,939.40	5,217.17	0.00	0.00	0.00
11,400.00	90.00	1.05	6,401.00	5,095.82	-1,937.57	5,315.92	0.00	0.00	0.00
11,500.00	90.00	1.05	6,401.00	5,195.81	-1,935.74	5,414.68	0.00	0.00	0.00
11,600.00	90.00	1.05	6,401.00	5,295.79	-1,933.91	5,513.43	0.00	0.00	0.00
11,700.00	90.00	1.05	6,401.00	5,395.77	-1,932.08	5,612.19	0.00	0.00	0.00
11,800.00	90.00	1.05	6,401.00	5,495.76	-1,930.25	5,710.94	0.00	0.00	0.00
11,900.00	90.00	1.05	6,401.00	5,595.74	-1,928.41	5,809.70	0.00	0.00	0.00
12,000.00	90.00	1.05	6,401.00	5,695.72	-1,926.58	5,908.45	0.00	0.00	0.00
12,100.00	90.00	1.05	6,401.00	5,795.71	-1,924.75	6,007.21	0.00	0.00	0.00

# Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-3-2HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4921.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4921.00usft
<b>Site:</b>	SEC 22-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-3-2HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)
12,200.00	90.00	1.05	6,401.00	5,895.69	-1,922.92	6,105.96	0.00	0.00	0.00
12,300.00	90.00	1.05	6,401.00	5,995.67	-1,921.09	6,204.72	0.00	0.00	0.00
12,400.00	90.00	1.05	6,401.00	6,095.66	-1,919.26	6,303.47	0.00	0.00	0.00
12,500.00	90.00	1.05	6,401.00	6,195.64	-1,917.43	6,402.23	0.00	0.00	0.00
12,600.00	90.00	1.05	6,401.00	6,295.62	-1,915.59	6,500.98	0.00	0.00	0.00
12,700.00	90.00	1.05	6,401.00	6,395.61	-1,913.76	6,599.73	0.00	0.00	0.00
12,800.00	90.00	1.05	6,401.00	6,495.59	-1,911.93	6,698.49	0.00	0.00	0.00
12,900.00	90.00	1.05	6,401.00	6,595.57	-1,910.10	6,797.24	0.00	0.00	0.00
13,000.00	90.00	1.05	6,401.00	6,695.56	-1,908.27	6,896.00	0.00	0.00	0.00
13,100.00	90.00	1.05	6,401.00	6,795.54	-1,906.44	6,994.75	0.00	0.00	0.00
13,200.00	90.00	1.05	6,401.00	6,895.52	-1,904.61	7,093.51	0.00	0.00	0.00
13,300.00	90.00	1.05	6,401.00	6,995.51	-1,902.77	7,192.26	0.00	0.00	0.00
13,400.00	90.00	1.05	6,401.00	7,095.49	-1,900.94	7,291.02	0.00	0.00	0.00
13,500.00	90.00	1.05	6,401.00	7,195.47	-1,899.11	7,389.77	0.00	0.00	0.00
13,600.00	90.00	1.05	6,401.00	7,295.46	-1,897.28	7,488.53	0.00	0.00	0.00
13,700.00	90.00	1.05	6,401.00	7,395.44	-1,895.45	7,587.28	0.00	0.00	0.00
13,800.00	90.00	1.05	6,401.00	7,495.42	-1,893.62	7,686.04	0.00	0.00	0.00
13,900.00	90.00	1.05	6,401.00	7,595.40	-1,891.79	7,784.79	0.00	0.00	0.00
14,000.00	90.00	1.05	6,401.00	7,695.39	-1,889.96	7,883.55	0.00	0.00	0.00
14,100.00	90.00	1.05	6,401.00	7,795.37	-1,888.12	7,982.30	0.00	0.00	0.00
14,200.00	90.00	1.05	6,401.00	7,895.35	-1,886.29	8,081.06	0.00	0.00	0.00
14,300.00	90.00	1.05	6,401.00	7,995.34	-1,884.46	8,179.81	0.00	0.00	0.00
14,400.00	90.00	1.05	6,401.00	8,095.32	-1,882.63	8,278.57	0.00	0.00	0.00
14,500.00	90.00	1.05	6,401.00	8,195.30	-1,880.80	8,377.32	0.00	0.00	0.00
14,600.00	90.00	1.05	6,401.00	8,295.29	-1,878.97	8,476.08	0.00	0.00	0.00
14,700.00	90.00	1.05	6,401.00	8,395.27	-1,877.14	8,574.83	0.00	0.00	0.00
14,800.00	90.00	1.05	6,401.00	8,495.25	-1,875.30	8,673.59	0.00	0.00	0.00
14,900.00	90.00	1.05	6,401.00	8,595.24	-1,873.47	8,772.34	0.00	0.00	0.00
15,000.00	90.00	1.05	6,401.00	8,695.22	-1,871.64	8,871.10	0.00	0.00	0.00
15,100.00	90.00	1.05	6,401.00	8,795.20	-1,869.81	8,969.85	0.00	0.00	0.00
15,200.00	90.00	1.05	6,401.00	8,895.19	-1,867.98	9,068.61	0.00	0.00	0.00
15,300.00	90.00	1.05	6,401.00	8,995.17	-1,866.15	9,167.36	0.00	0.00	0.00
15,400.00	90.00	1.05	6,401.00	9,095.15	-1,864.32	9,266.12	0.00	0.00	0.00
15,500.00	90.00	1.05	6,401.00	9,195.14	-1,862.48	9,364.87	0.00	0.00	0.00
15,600.00	90.00	1.05	6,401.00	9,295.12	-1,860.65	9,463.63	0.00	0.00	0.00
15,700.00	90.00	1.05	6,401.00	9,395.10	-1,858.82	9,562.38	0.00	0.00	0.00
15,800.00	90.00	1.05	6,401.00	9,495.09	-1,856.99	9,661.14	0.00	0.00	0.00
15,900.00	90.00	1.05	6,401.00	9,595.07	-1,855.16	9,759.89	0.00	0.00	0.00
16,000.00	90.00	1.05	6,401.00	9,695.05	-1,853.33	9,858.65	0.00	0.00	0.00
16,100.00	90.00	1.05	6,401.00	9,795.04	-1,851.50	9,957.40	0.00	0.00	0.00
16,200.00	90.00	1.05	6,401.00	9,895.02	-1,849.66	10,056.16	0.00	0.00	0.00
16,300.00	90.00	1.05	6,401.00	9,995.00	-1,847.83	10,154.91	0.00	0.00	0.00
16,400.00	90.00	1.05	6,401.00	10,094.99	-1,846.00	10,253.67	0.00	0.00	0.00
16,500.00	90.00	1.05	6,401.00	10,194.97	-1,844.17	10,352.42	0.00	0.00	0.00
16,600.00	90.00	1.05	6,401.00	10,294.95	-1,842.34	10,451.18	0.00	0.00	0.00
16,700.00	90.00	1.05	6,401.00	10,394.94	-1,840.51	10,549.93	0.00	0.00	0.00
16,800.00	90.00	1.05	6,401.00	10,494.92	-1,838.68	10,648.69	0.00	0.00	0.00
16,900.00	90.00	1.05	6,401.00	10,594.90	-1,836.85	10,747.44	0.00	0.00	0.00
17,000.00	90.00	1.05	6,401.00	10,694.88	-1,835.01	10,846.20	0.00	0.00	0.00
17,100.00	90.00	1.05	6,401.00	10,794.87	-1,833.18	10,944.95	0.00	0.00	0.00
17,200.00	90.00	1.05	6,401.00	10,894.85	-1,831.35	11,043.71	0.00	0.00	0.00
17,300.00	90.00	1.05	6,401.00	10,994.83	-1,829.52	11,142.46	0.00	0.00	0.00
17,400.00	90.00	1.05	6,401.00	11,094.82	-1,827.69	11,241.22	0.00	0.00	0.00
17,500.00	90.00	1.05	6,401.00	11,194.80	-1,825.86	11,339.97	0.00	0.00	0.00

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-3-2HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4921.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4921.00usft
<b>Site:</b>	SEC 22-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-3-2HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)
17,600.00	90.00	1.05	6,401.00	11,294.78	-1,824.03	11,438.73	0.00	0.00	0.00
17,700.00	90.00	1.05	6,401.00	11,394.77	-1,822.19	11,537.48	0.00	0.00	0.00
17,800.00	90.00	1.05	6,401.00	11,494.75	-1,820.36	11,636.24	0.00	0.00	0.00
17,900.00	90.00	1.05	6,401.00	11,594.73	-1,818.53	11,734.99	0.00	0.00	0.00
18,000.00	90.00	1.05	6,401.00	11,694.72	-1,816.70	11,833.75	0.00	0.00	0.00
18,100.00	90.00	1.05	6,401.00	11,794.70	-1,814.87	11,932.50	0.00	0.00	0.00
18,200.00	90.00	1.05	6,401.00	11,894.68	-1,813.04	12,031.26	0.00	0.00	0.00
18,300.00	90.00	1.05	6,401.00	11,994.67	-1,811.21	12,130.01	0.00	0.00	0.00
18,400.00	90.00	1.05	6,401.00	12,094.65	-1,809.37	12,228.76	0.00	0.00	0.00
18,500.00	90.00	1.05	6,401.00	12,194.63	-1,807.54	12,327.52	0.00	0.00	0.00
18,600.00	90.00	1.05	6,401.00	12,294.62	-1,805.71	12,426.27	0.00	0.00	0.00
18,700.00	90.00	1.05	6,401.00	12,394.60	-1,803.88	12,525.03	0.00	0.00	0.00
18,800.00	90.00	1.05	6,401.00	12,494.58	-1,802.05	12,623.78	0.00	0.00	0.00
18,900.00	90.00	1.05	6,401.00	12,594.57	-1,800.22	12,722.54	0.00	0.00	0.00
19,000.00	90.00	1.05	6,401.00	12,694.55	-1,798.39	12,821.29	0.00	0.00	0.00
19,087.80	90.00	1.05	6,401.00	12,782.33	-1,796.78	12,908.00	0.00	0.00	0.00
TD at 19087.80									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
BLUE TEAL FED 15-3-2	0.00	0.00	6,401.00	12,782.33	-1,796.78	1,496,956.67	3,393,074.45	40.688915°N	104.082553°W
- plan hits target center									
- Point									
BLUE TEAL FED 15-3-2	0.00	0.00	6,401.00	767.71	-2,016.85	1,484,940.07	3,393,047.33	40.655937°N	104.083343°W
- plan hits target center									
- Point									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
533.75	533.00	Fox Hills Base				
1,578.21	1,536.00	Pierre Shale Top				
3,551.22	3,394.00	Richard Sandstone				
3,673.34	3,509.00	Parkman Sandstone				
4,497.38	4,285.00	Sussex Sandstone				
4,962.49	4,723.00	Shannon Sandstone				
5,772.72	5,486.00	TeePee Buttes				
6,508.53	6,161.00	Sharon Springs				
6,561.28	6,201.00	Niobrara Top				
6,707.73	6,296.00	Niobrara B2 Chalk Top				
6,776.12	6,331.00	Niobrara C Chalk Target Top				
7,071.16	6,401.00	Niobrara C Chalk Target Center				



## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-3-2HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4921.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4921.00usft
<b>Site:</b>	SEC 22-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-3-2HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.00	200.00	0.00	0.00	Start Build 2.00
1,182.97	1,163.80	17.29	-166.09	Start 5004.65 hold at 1182.97 MD
6,187.62	5,876.72	191.67	-1,840.75	Start DLS 10.00 TFO 85.39
7,071.16	6,401.00	767.71	-2,016.85	Start 12016.63 hold at 7071.16 MD
19,087.80	6,401.00	12,782.33	-1,796.78	TD at 19087.80