

# **MALLARD EXPLORATION**

**WELD COUNTY**

**SEC 6-T7N-R60W**

**SHELDUCK 6-5-1HN**

**OWB**

**Plan: PROPOSAL 1**

## **Standard Planning Report**

**28 May, 2022**



Project: WELD COUNTY  
Site: SEC 6-T7N-R60W  
Well: SHELDUCK 6-5-1HN  
Wellbore: OWB  
Design: PROPOSAL 1



Azimuths to True North  
Magnetic North: 7.44°

Magnetic Field  
Strength: 52019.8nT  
Dip Angle: 66.86°  
Date: 5/28/2022  
Model: IGRF2020

#### WELL DETAILS: SHELDUCK 6-5-1HN

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1464630.90	3376813.02	40.600895°N	04.142967°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	1764.48	33.29	345.84	1672.40	455.80	-115.04	2.00	345.84	49.75	
4	6902.51	33.29	345.84	5967.30	3190.18	-805.15	0.00	0.00	348.22	
5	7879.14	90.00	89.90	6515.00	3540.06	-237.94	10.00	101.82	1001.44	SHELDUCK 6-5-1HN-LP
6	17766.64	90.00	89.90	6515.00	3557.98	9649.55	0.00	0.00	10284.60	SHELDUCK 6-5-1HN-PBHL

#### 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
1764.48	33.29	345.84	1672.40	455.80	-115.04	49.75	470.09	Start 5138.02 hold at 1764.48 MD
6902.51	33.29	345.84	5967.30	3190.18	-805.15	348.22	3290.22	Start DLS 10.00 TFO 101.82
7879.14	90.00	89.90	6515.00	3540.06	-237.94	1001.44	4039.49	Start 9887.51 hold at 7879.14 MD
17766.64	90.00	89.90	6515.00	3557.98	9649.55	10284.60	13926.99	TD at 17766.64

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
SHELDUCK 6-5-1HN-LP - plan hits target center	6515.00	3540.06	-237.94	1468166.90	3376520.93	40.610612°N	104.143824°W	Point
SHELDUCK 6-5-1HN-PBHL - plan hits target center	6515.00	3557.98	9649.55	1468336.13	3386406.99	40.610656°N	104.108212°W	Point

#### FORMATION TOP DETAILS

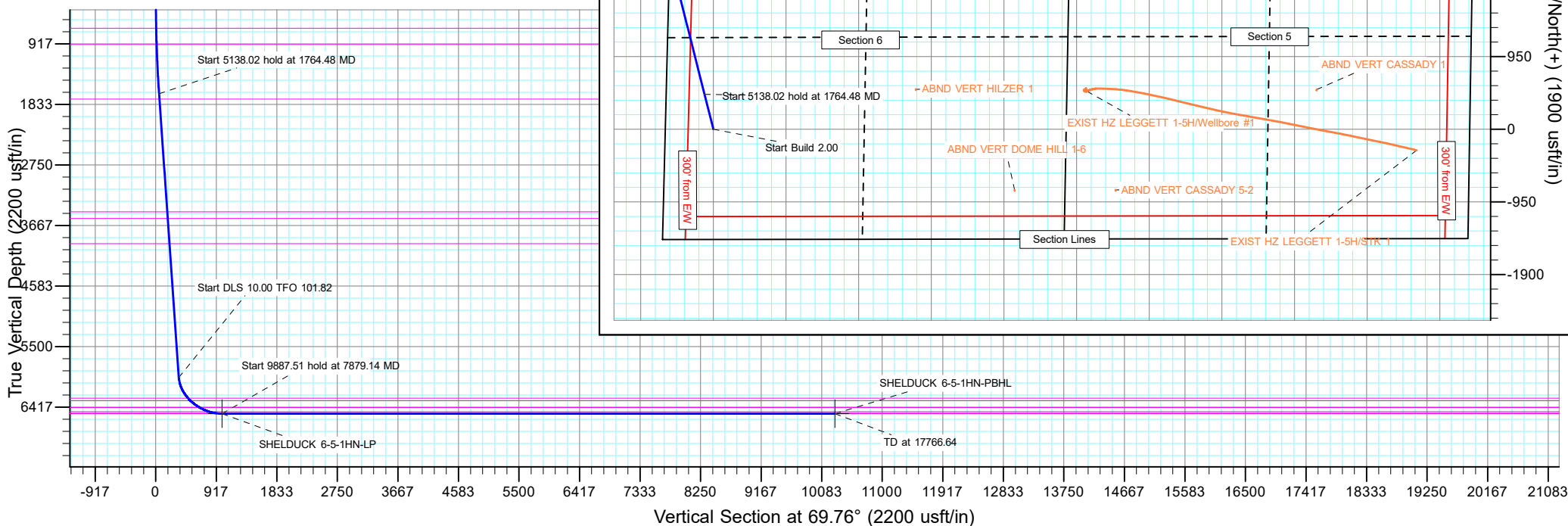
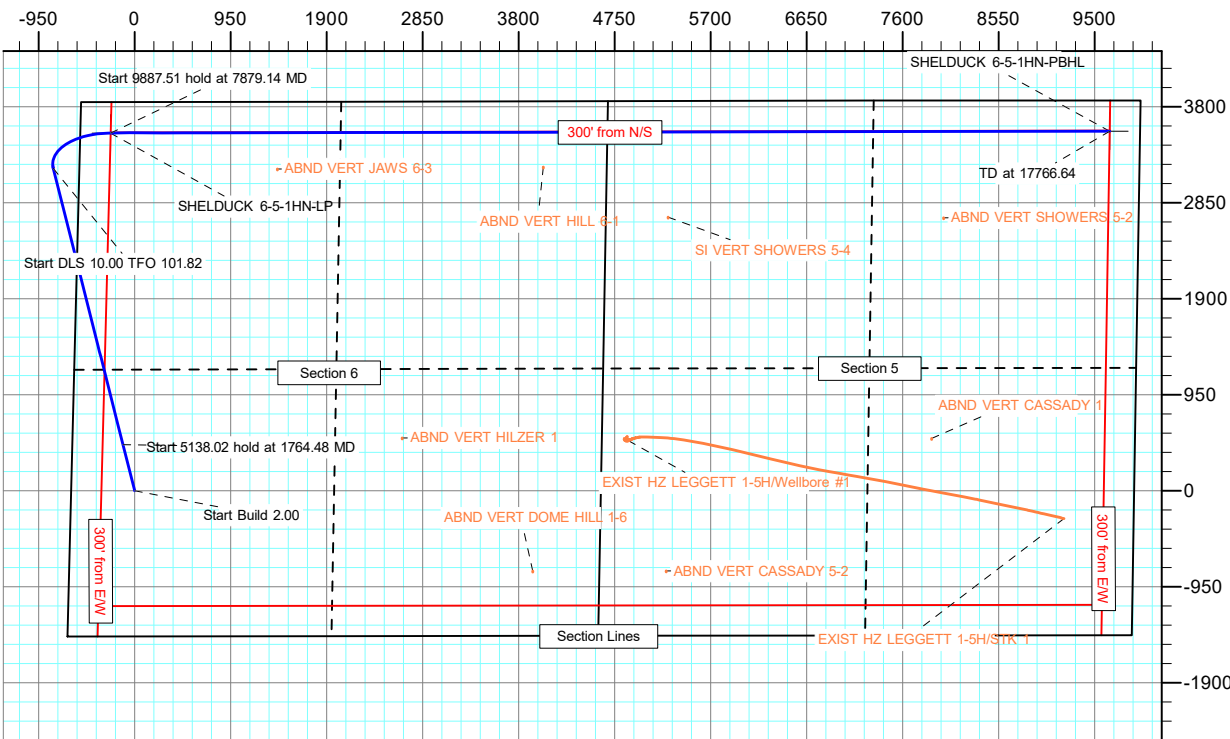
TVDPath	MDPath	Formation
226.00	226.04	Laramie Base
681.00	685.06	Laramie Fox Hills Base
926.00	937.90	Pierre Shale Base
1751.00	1858.51	Upper Pierre Shale Base*
3460.00	3903.00	Richard Sandstone
3561.00	4023.83	Parkman Sandstone
3941.00	4478.42	Parkman Sandstone Base
6282.00	7291.02	Sharon Springs
6319.00	7343.85	Niobrara Top
6422.00	7517.71	Niobrara B2 Chalk Reservoir Top
6483.00	7669.46	Niobrara C Chalk Reservoir Top
6507.00	7774.74	Niobrara C Chalk Target Top
6515.00	7879.11	Niobrara C Chalk Target Center Line (LP)

#### 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:  
1442' FSL, 628' FWL  
Sec 6-T7N-R60W  
LP:  
305' FNL, 300' FWL  
Sec 6-T7N-R60W  
BHL:  
305' FNL, 300' FEL  
Sec 5-T7N-R60W

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



## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well SHELDUCK 6-5-1HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4981.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4981.00usft
<b>Site:</b>	SEC 6-T7N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	SHELDUCK 6-5-1HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<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 6-T7N-R60W				
Site Position:		Northing:	1,463,178.22	usft	Latitude:	40.596935°N
From:	Lat/Long	Easting:	3,376,169.80	usft	Longitude:	104.145363°W
Position Uncertainty:		0.00	usft	Slot Radius:	13.200	in

Well		SHELDUCK 6-5-1HN				
Well Position	+N/-S	0.00 usft	Northing:	1,464,630.90 usft	Latitude:	40.600895°N
	+E/-W	0.00 usft	Easting:	3,376,813.01 usft	Longitude:	104.142967°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,954.00 usft
Grid Convergence:		0.88 °				

<b>Wellbore</b>	OWB				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2020	5/28/2022	7.44	66.86	52,019.83339441

<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	69.76	

<b>Plan Survey Tool Program</b>	<b>Date</b>	5/28/2022			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	17,766.64 PROPOSAL 1 (OWB)	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	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,764.48	33.29	345.84	1,672.40	455.80	-115.04	2.00	2.00	0.00	345.84	
6,902.51	33.29	345.84	5,967.30	3,190.18	-805.15	0.00	0.00	0.00	0.00	
7,879.14	90.00	89.90	6,515.00	3,540.06	-237.94	10.00	5.81	10.66	101.82	SHELDUCK 6-5-1HN
17,766.64	90.00	89.90	6,515.00	3,557.98	9,649.55	0.00	0.00	0.00	0.00	SHELDUCK 6-5-1HN

# Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well SHELDUCK 6-5-1HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4981.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4981.00usft
<b>Site:</b>	SEC 6-T7N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	SHELDUCK 6-5-1HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<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
Start Build 2.00									
200.00	2.00	345.84	199.98	1.69	-0.43	0.18	2.00	2.00	0.00
226.04	2.52	345.84	226.00	2.69	-0.68	0.29	2.00	2.00	0.00
Laramie Base									
300.00	4.00	345.84	299.84	6.77	-1.71	0.74	2.00	2.00	0.00
400.00	6.00	345.84	399.45	15.22	-3.84	1.66	2.00	2.00	0.00
500.00	8.00	345.84	498.70	27.03	-6.82	2.95	2.00	2.00	0.00
600.00	10.00	345.84	597.47	42.20	-10.65	4.61	2.00	2.00	0.00
685.06	11.70	345.84	681.00	57.72	-14.57	6.30	2.00	2.00	0.00
Laramie Fox Hills Base									
700.00	12.00	345.84	695.62	60.70	-15.32	6.63	2.00	2.00	0.00
800.00	14.00	345.84	793.06	82.51	-20.82	9.01	2.00	2.00	0.00
900.00	16.00	345.84	889.64	107.60	-27.16	11.75	2.00	2.00	0.00
937.90	16.76	345.84	926.00	117.96	-29.77	12.88	2.00	2.00	0.00
Pierre Shale Base									
1,000.00	18.00	345.84	985.27	135.95	-34.31	14.84	2.00	2.00	0.00
1,100.00	20.00	345.84	1,079.82	167.52	-42.28	18.28	2.00	2.00	0.00
1,200.00	22.00	345.84	1,173.17	202.26	-51.05	22.08	2.00	2.00	0.00
1,300.00	24.00	345.84	1,265.21	240.14	-60.61	26.21	2.00	2.00	0.00
1,400.00	26.00	345.84	1,355.84	281.12	-70.95	30.69	2.00	2.00	0.00
1,500.00	28.00	345.84	1,444.94	325.14	-82.06	35.49	2.00	2.00	0.00
1,600.00	30.00	345.84	1,532.39	372.14	-93.92	40.62	2.00	2.00	0.00
1,700.00	32.00	345.84	1,618.11	422.08	-106.52	46.07	2.00	2.00	0.00
1,764.48	33.29	345.84	1,672.40	455.80	-115.04	49.75	2.00	2.00	0.00
Start 5138.02 hold at 1764.48 MD									
1,800.00	33.29	345.84	1,702.09	474.70	-119.81	51.82	0.00	0.00	0.00
1,858.51	33.29	345.84	1,751.00	505.84	-127.67	55.21	0.00	0.00	0.00
Upper Pierre Shale Base*									
1,900.00	33.29	345.84	1,785.68	527.92	-133.24	57.62	0.00	0.00	0.00
2,000.00	33.29	345.84	1,869.27	581.14	-146.67	63.43	0.00	0.00	0.00
2,100.00	33.29	345.84	1,952.86	634.36	-160.10	69.24	0.00	0.00	0.00
2,200.00	33.29	345.84	2,036.45	687.58	-173.53	75.05	0.00	0.00	0.00
2,300.00	33.29	345.84	2,120.04	740.80	-186.96	80.86	0.00	0.00	0.00
2,400.00	33.29	345.84	2,203.63	794.01	-200.40	86.67	0.00	0.00	0.00
2,500.00	33.29	345.84	2,287.22	847.23	-213.83	92.48	0.00	0.00	0.00
2,600.00	33.29	345.84	2,370.82	900.45	-227.26	98.29	0.00	0.00	0.00
2,700.00	33.29	345.84	2,454.41	953.67	-240.69	104.10	0.00	0.00	0.00
2,800.00	33.29	345.84	2,538.00	1,006.89	-254.12	109.91	0.00	0.00	0.00
2,900.00	33.29	345.84	2,621.59	1,060.11	-267.55	115.71	0.00	0.00	0.00
3,000.00	33.29	345.84	2,705.18	1,113.33	-280.98	121.52	0.00	0.00	0.00
3,100.00	33.29	345.84	2,788.77	1,166.54	-294.42	127.33	0.00	0.00	0.00
3,200.00	33.29	345.84	2,872.36	1,219.76	-307.85	133.14	0.00	0.00	0.00
3,300.00	33.29	345.84	2,955.95	1,272.98	-321.28	138.95	0.00	0.00	0.00
3,400.00	33.29	345.84	3,039.54	1,326.20	-334.71	144.76	0.00	0.00	0.00
3,500.00	33.29	345.84	3,123.13	1,379.42	-348.14	150.57	0.00	0.00	0.00
3,600.00	33.29	345.84	3,206.72	1,432.64	-361.57	156.38	0.00	0.00	0.00
3,700.00	33.29	345.84	3,290.31	1,485.86	-375.00	162.19	0.00	0.00	0.00
3,800.00	33.29	345.84	3,373.90	1,539.07	-388.44	168.00	0.00	0.00	0.00
3,900.00	33.29	345.84	3,457.49	1,592.29	-401.87	173.80	0.00	0.00	0.00
3,903.00	33.29	345.84	3,460.00	1,593.89	-402.27	173.98	0.00	0.00	0.00
Richard Sandstone									

# Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well SHELDUCK 6-5-1HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4981.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4981.00usft
<b>Site:</b>	SEC 6-T7N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	SHELDUCK 6-5-1HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<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)	
4,000.00	33.29	345.84	3,541.08	1,645.51	-415.30	179.61	0.00	0.00	0.00	
4,023.83	33.29	345.84	3,561.00	1,658.19	-418.50	181.00	0.00	0.00	0.00	
Parkman Sandstone										
4,100.00	33.29	345.84	3,624.67	1,698.73	-428.73	185.42	0.00	0.00	0.00	
4,200.00	33.29	345.84	3,708.26	1,751.95	-442.16	191.23	0.00	0.00	0.00	
4,300.00	33.29	345.84	3,791.86	1,805.17	-455.59	197.04	0.00	0.00	0.00	
4,400.00	33.29	345.84	3,875.45	1,858.39	-469.03	202.85	0.00	0.00	0.00	
4,478.42	33.29	345.84	3,941.00	1,900.12	-479.56	207.40	0.00	0.00	0.00	
Parkman Sandstone Base										
4,500.00	33.29	345.84	3,959.04	1,911.60	-482.46	208.66	0.00	0.00	0.00	
4,600.00	33.29	345.84	4,042.63	1,964.82	-495.89	214.47	0.00	0.00	0.00	
4,700.00	33.29	345.84	4,126.22	2,018.04	-509.32	220.28	0.00	0.00	0.00	
4,800.00	33.29	345.84	4,209.81	2,071.26	-522.75	226.09	0.00	0.00	0.00	
4,900.00	33.29	345.84	4,293.40	2,124.48	-536.18	231.89	0.00	0.00	0.00	
5,000.00	33.29	345.84	4,376.99	2,177.70	-549.61	237.70	0.00	0.00	0.00	
5,100.00	33.29	345.84	4,460.58	2,230.92	-563.05	243.51	0.00	0.00	0.00	
5,200.00	33.29	345.84	4,544.17	2,284.13	-576.48	249.32	0.00	0.00	0.00	
5,300.00	33.29	345.84	4,627.76	2,337.35	-589.91	255.13	0.00	0.00	0.00	
5,400.00	33.29	345.84	4,711.35	2,390.57	-603.34	260.94	0.00	0.00	0.00	
5,500.00	33.29	345.84	4,794.94	2,443.79	-616.77	266.75	0.00	0.00	0.00	
5,600.00	33.29	345.84	4,878.53	2,497.01	-630.20	272.56	0.00	0.00	0.00	
5,700.00	33.29	345.84	4,962.12	2,550.23	-643.63	278.37	0.00	0.00	0.00	
5,800.00	33.29	345.84	5,045.71	2,603.45	-657.07	284.18	0.00	0.00	0.00	
5,900.00	33.29	345.84	5,129.30	2,656.66	-670.50	289.98	0.00	0.00	0.00	
6,000.00	33.29	345.84	5,212.89	2,709.88	-683.93	295.79	0.00	0.00	0.00	
6,100.00	33.29	345.84	5,296.49	2,763.10	-697.36	301.60	0.00	0.00	0.00	
6,200.00	33.29	345.84	5,380.08	2,816.32	-710.79	307.41	0.00	0.00	0.00	
6,300.00	33.29	345.84	5,463.67	2,869.54	-724.22	313.22	0.00	0.00	0.00	
6,400.00	33.29	345.84	5,547.26	2,922.76	-737.65	319.03	0.00	0.00	0.00	
6,500.00	33.29	345.84	5,630.85	2,975.97	-751.09	324.84	0.00	0.00	0.00	
6,600.00	33.29	345.84	5,714.44	3,029.19	-764.52	330.65	0.00	0.00	0.00	
6,700.00	33.29	345.84	5,798.03	3,082.41	-777.95	336.46	0.00	0.00	0.00	
6,800.00	33.29	345.84	5,881.62	3,135.63	-791.38	342.27	0.00	0.00	0.00	
6,900.00	33.29	345.84	5,965.21	3,188.85	-804.81	348.07	0.00	0.00	0.00	
6,902.51	33.29	345.84	5,967.30	3,190.18	-805.15	348.22	0.00	0.00	0.00	
Start DLS 10.00 TFO 101.82										
7,000.00	32.55	3.78	6,049.34	3,242.43	-809.98	361.76	10.00	-0.75	18.40	
7,100.00	34.44	21.63	6,132.93	3,295.69	-797.76	391.66	10.00	1.88	17.85	
7,200.00	38.60	36.96	6,213.45	3,347.03	-768.51	436.86	10.00	4.16	15.33	
7,291.02	43.82	48.31	6,282.00	3,390.77	-727.82	490.17	10.00	5.74	12.47	
Sharon Springs										
7,300.00	44.39	49.30	6,288.45	3,394.88	-723.12	496.00	10.00	6.36	11.09	
7,343.85	47.29	53.89	6,319.00	3,414.39	-698.46	525.88	10.00	6.62	10.45	
Niobrara Top										
7,400.00	51.25	59.15	6,355.65	3,437.79	-662.97	567.28	10.00	7.04	9.37	
7,500.00	58.78	67.19	6,413.00	3,474.46	-589.89	648.53	10.00	7.54	8.04	
7,517.71	60.17	68.47	6,422.00	3,480.22	-575.76	663.78	10.00	7.82	7.24	
Niobrara B2 Chalk Reservoir Top										
7,600.00	66.74	74.01	6,458.78	3,503.77	-506.10	737.29	10.00	7.99	6.73	
7,669.46	72.43	78.26	6,483.00	3,519.31	-442.93	801.93	10.00	8.19	6.12	
Niobrara C Chalk Reservoir Top										
7,700.00	74.96	80.04	6,491.57	3,524.82	-414.15	830.85	10.00	8.29	5.83	
7,774.74	81.21	84.24	6,507.00	3,534.78	-341.75	902.21	10.00	8.36	5.62	

# Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well SHELDUCK 6-5-1HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4981.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4981.00usft
<b>Site:</b>	SEC 6-T7N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	SHELDUCK 6-5-1HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<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)
<b>Niobrara C Chalk Target Top</b>									
7,800.00	83.33	85.63	6,510.40	3,536.99	-316.82	926.37	10.00	8.40	5.47
7,879.11	90.00	89.89	6,515.00	3,540.06	-237.97	1,001.42	10.00	8.43	5.40
<b>Niobrara C Chalk Target Center Line (LP)</b>									
7,879.14	90.00	89.90	6,515.00	3,540.06	-237.94	1,001.44	10.00	8.43	5.37
<b>Start 9887.51 hold at 7879.14 MD</b>									
7,900.00	90.00	89.90	6,515.00	3,540.10	-217.08	1,021.03	0.00	0.00	0.00
8,000.00	90.00	89.90	6,515.00	3,540.28	-117.08	1,114.92	0.00	0.00	0.00
8,100.00	90.00	89.90	6,515.00	3,540.46	-17.08	1,208.81	0.00	0.00	0.00
8,200.00	90.00	89.90	6,515.00	3,540.65	82.92	1,302.70	0.00	0.00	0.00
8,300.00	90.00	89.90	6,515.00	3,540.83	182.92	1,396.58	0.00	0.00	0.00
8,400.00	90.00	89.90	6,515.00	3,541.01	282.92	1,490.47	0.00	0.00	0.00
8,500.00	90.00	89.90	6,515.00	3,541.19	382.92	1,584.36	0.00	0.00	0.00
8,600.00	90.00	89.90	6,515.00	3,541.37	482.92	1,678.25	0.00	0.00	0.00
8,700.00	90.00	89.90	6,515.00	3,541.55	582.92	1,772.14	0.00	0.00	0.00
8,800.00	90.00	89.90	6,515.00	3,541.73	682.92	1,866.02	0.00	0.00	0.00
8,900.00	90.00	89.90	6,515.00	3,541.91	782.92	1,959.91	0.00	0.00	0.00
9,000.00	90.00	89.90	6,515.00	3,542.10	882.92	2,053.80	0.00	0.00	0.00
9,100.00	90.00	89.90	6,515.00	3,542.28	982.92	2,147.69	0.00	0.00	0.00
9,200.00	90.00	89.90	6,515.00	3,542.46	1,082.92	2,241.57	0.00	0.00	0.00
9,300.00	90.00	89.90	6,515.00	3,542.64	1,182.92	2,335.46	0.00	0.00	0.00
9,400.00	90.00	89.90	6,515.00	3,542.82	1,282.92	2,429.35	0.00	0.00	0.00
9,500.00	90.00	89.90	6,515.00	3,543.00	1,382.92	2,523.24	0.00	0.00	0.00
9,600.00	90.00	89.90	6,515.00	3,543.18	1,482.92	2,617.13	0.00	0.00	0.00
9,700.00	90.00	89.90	6,515.00	3,543.36	1,582.92	2,711.01	0.00	0.00	0.00
9,800.00	90.00	89.90	6,515.00	3,543.55	1,682.92	2,804.90	0.00	0.00	0.00
9,900.00	90.00	89.90	6,515.00	3,543.73	1,782.92	2,898.79	0.00	0.00	0.00
10,000.00	90.00	89.90	6,515.00	3,543.91	1,882.92	2,992.68	0.00	0.00	0.00
10,100.00	90.00	89.90	6,515.00	3,544.09	1,982.92	3,086.56	0.00	0.00	0.00
10,200.00	90.00	89.90	6,515.00	3,544.27	2,082.92	3,180.45	0.00	0.00	0.00
10,300.00	90.00	89.90	6,515.00	3,544.45	2,182.92	3,274.34	0.00	0.00	0.00
10,400.00	90.00	89.90	6,515.00	3,544.63	2,282.92	3,368.23	0.00	0.00	0.00
10,500.00	90.00	89.90	6,515.00	3,544.81	2,382.92	3,462.11	0.00	0.00	0.00
10,600.00	90.00	89.90	6,515.00	3,545.00	2,482.92	3,556.00	0.00	0.00	0.00
10,700.00	90.00	89.90	6,515.00	3,545.18	2,582.92	3,649.89	0.00	0.00	0.00
10,800.00	90.00	89.90	6,515.00	3,545.36	2,682.92	3,743.78	0.00	0.00	0.00
10,900.00	90.00	89.90	6,515.00	3,545.54	2,782.92	3,837.67	0.00	0.00	0.00
11,000.00	90.00	89.90	6,515.00	3,545.72	2,882.92	3,931.55	0.00	0.00	0.00
11,100.00	90.00	89.90	6,515.00	3,545.90	2,982.92	4,025.44	0.00	0.00	0.00
11,200.00	90.00	89.90	6,515.00	3,546.08	3,082.92	4,119.33	0.00	0.00	0.00
11,300.00	90.00	89.90	6,515.00	3,546.26	3,182.92	4,213.22	0.00	0.00	0.00
11,400.00	90.00	89.90	6,515.00	3,546.45	3,282.92	4,307.10	0.00	0.00	0.00
11,500.00	90.00	89.90	6,515.00	3,546.63	3,382.92	4,400.99	0.00	0.00	0.00
11,600.00	90.00	89.90	6,515.00	3,546.81	3,482.92	4,494.88	0.00	0.00	0.00
11,700.00	90.00	89.90	6,515.00	3,546.99	3,582.92	4,588.77	0.00	0.00	0.00
11,800.00	90.00	89.90	6,515.00	3,547.17	3,682.92	4,682.66	0.00	0.00	0.00
11,900.00	90.00	89.90	6,515.00	3,547.35	3,782.92	4,776.54	0.00	0.00	0.00
12,000.00	90.00	89.90	6,515.00	3,547.53	3,882.92	4,870.43	0.00	0.00	0.00
12,100.00	90.00	89.90	6,515.00	3,547.71	3,982.92	4,964.32	0.00	0.00	0.00
12,200.00	90.00	89.90	6,515.00	3,547.90	4,082.92	5,058.21	0.00	0.00	0.00
12,300.00	90.00	89.90	6,515.00	3,548.08	4,182.91	5,152.09	0.00	0.00	0.00
12,400.00	90.00	89.90	6,515.00	3,548.26	4,282.91	5,245.98	0.00	0.00	0.00
12,500.00	90.00	89.90	6,515.00	3,548.44	4,382.91	5,339.87	0.00	0.00	0.00

# Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well SHELDUCK 6-5-1HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4981.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4981.00usft
<b>Site:</b>	SEC 6-T7N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	SHELDUCK 6-5-1HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<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)	
12,600.00	90.00	89.90	6,515.00	3,548.62	4,482.91	5,433.76	0.00	0.00	0.00	
12,700.00	90.00	89.90	6,515.00	3,548.80	4,582.91	5,527.65	0.00	0.00	0.00	
12,800.00	90.00	89.90	6,515.00	3,548.98	4,682.91	5,621.53	0.00	0.00	0.00	
12,900.00	90.00	89.90	6,515.00	3,549.16	4,782.91	5,715.42	0.00	0.00	0.00	
13,000.00	90.00	89.90	6,515.00	3,549.35	4,882.91	5,809.31	0.00	0.00	0.00	
13,100.00	90.00	89.90	6,515.00	3,549.53	4,982.91	5,903.20	0.00	0.00	0.00	
13,200.00	90.00	89.90	6,515.00	3,549.71	5,082.91	5,997.08	0.00	0.00	0.00	
13,300.00	90.00	89.90	6,515.00	3,549.89	5,182.91	6,090.97	0.00	0.00	0.00	
13,400.00	90.00	89.90	6,515.00	3,550.07	5,282.91	6,184.86	0.00	0.00	0.00	
13,500.00	90.00	89.90	6,515.00	3,550.25	5,382.91	6,278.75	0.00	0.00	0.00	
13,600.00	90.00	89.90	6,515.00	3,550.43	5,482.91	6,372.64	0.00	0.00	0.00	
13,700.00	90.00	89.90	6,515.00	3,550.61	5,582.91	6,466.52	0.00	0.00	0.00	
13,800.00	90.00	89.90	6,515.00	3,550.80	5,682.91	6,560.41	0.00	0.00	0.00	
13,900.00	90.00	89.90	6,515.00	3,550.98	5,782.91	6,654.30	0.00	0.00	0.00	
14,000.00	90.00	89.90	6,515.00	3,551.16	5,882.91	6,748.19	0.00	0.00	0.00	
14,100.00	90.00	89.90	6,515.00	3,551.34	5,982.91	6,842.07	0.00	0.00	0.00	
14,200.00	90.00	89.90	6,515.00	3,551.52	6,082.91	6,935.96	0.00	0.00	0.00	
14,300.00	90.00	89.90	6,515.00	3,551.70	6,182.91	7,029.85	0.00	0.00	0.00	
14,400.00	90.00	89.90	6,515.00	3,551.88	6,282.91	7,123.74	0.00	0.00	0.00	
14,500.00	90.00	89.90	6,515.00	3,552.06	6,382.91	7,217.62	0.00	0.00	0.00	
14,600.00	90.00	89.90	6,515.00	3,552.25	6,482.91	7,311.51	0.00	0.00	0.00	
14,700.00	90.00	89.90	6,515.00	3,552.43	6,582.91	7,405.40	0.00	0.00	0.00	
14,800.00	90.00	89.90	6,515.00	3,552.61	6,682.91	7,499.29	0.00	0.00	0.00	
14,900.00	90.00	89.90	6,515.00	3,552.79	6,782.91	7,593.18	0.00	0.00	0.00	
15,000.00	90.00	89.90	6,515.00	3,552.97	6,882.91	7,687.06	0.00	0.00	0.00	
15,100.00	90.00	89.90	6,515.00	3,553.15	6,982.91	7,780.95	0.00	0.00	0.00	
15,200.00	90.00	89.90	6,515.00	3,553.33	7,082.91	7,874.84	0.00	0.00	0.00	
15,300.00	90.00	89.90	6,515.00	3,553.51	7,182.91	7,968.73	0.00	0.00	0.00	
15,400.00	90.00	89.90	6,515.00	3,553.69	7,282.91	8,062.61	0.00	0.00	0.00	
15,500.00	90.00	89.90	6,515.00	3,553.88	7,382.91	8,156.50	0.00	0.00	0.00	
15,600.00	90.00	89.90	6,515.00	3,554.06	7,482.91	8,250.39	0.00	0.00	0.00	
15,700.00	90.00	89.90	6,515.00	3,554.24	7,582.91	8,344.28	0.00	0.00	0.00	
15,800.00	90.00	89.90	6,515.00	3,554.42	7,682.91	8,438.17	0.00	0.00	0.00	
15,900.00	90.00	89.90	6,515.00	3,554.60	7,782.91	8,532.05	0.00	0.00	0.00	
16,000.00	90.00	89.90	6,515.00	3,554.78	7,882.91	8,625.94	0.00	0.00	0.00	
16,100.00	90.00	89.90	6,515.00	3,554.96	7,982.91	8,719.83	0.00	0.00	0.00	
16,200.00	90.00	89.90	6,515.00	3,555.14	8,082.91	8,813.72	0.00	0.00	0.00	
16,300.00	90.00	89.90	6,515.00	3,555.33	8,182.91	8,907.60	0.00	0.00	0.00	
16,400.00	90.00	89.90	6,515.00	3,555.51	8,282.91	9,001.49	0.00	0.00	0.00	
16,500.00	90.00	89.90	6,515.00	3,555.69	8,382.91	9,095.38	0.00	0.00	0.00	
16,600.00	90.00	89.90	6,515.00	3,555.87	8,482.91	9,189.27	0.00	0.00	0.00	
16,700.00	90.00	89.90	6,515.00	3,556.05	8,582.91	9,283.16	0.00	0.00	0.00	
16,800.00	90.00	89.90	6,515.00	3,556.23	8,682.91	9,377.04	0.00	0.00	0.00	
16,900.00	90.00	89.90	6,515.00	3,556.41	8,782.91	9,470.93	0.00	0.00	0.00	
17,000.00	90.00	89.90	6,515.00	3,556.59	8,882.91	9,564.82	0.00	0.00	0.00	
17,100.00	90.00	89.90	6,515.00	3,556.78	8,982.91	9,658.71	0.00	0.00	0.00	
17,200.00	90.00	89.90	6,515.00	3,556.96	9,082.91	9,752.59	0.00	0.00	0.00	
17,300.00	90.00	89.90	6,515.00	3,557.14	9,182.91	9,846.48	0.00	0.00	0.00	
17,400.00	90.00	89.90	6,515.00	3,557.32	9,282.91	9,940.37	0.00	0.00	0.00	
17,500.00	90.00	89.90	6,515.00	3,557.50	9,382.91	10,034.26	0.00	0.00	0.00	
17,600.00	90.00	89.90	6,515.00	3,557.68	9,482.91	10,128.15	0.00	0.00	0.00	
17,700.00	90.00	89.90	6,515.00	3,557.86	9,582.91	10,222.03	0.00	0.00	0.00	
17,766.64	90.00	89.90	6,515.00	3,557.98	9,649.55	10,284.60	0.00	0.00	0.00	
TD at 17766.64										

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well SHELDUCK 6-5-1HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4981.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4981.00usft
<b>Site:</b>	SEC 6-T7N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	SHELDUCK 6-5-1HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<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)

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
SHELDUCK 6-5-1HN-Pf - plan hits target center - Point	0.00	0.00	6,515.00	3,557.98	9,649.55	1,468,336.13	3,386,406.99	40.610656°N	104.108212°W
SHELDUCK 6-5-1HN-LF - plan hits target center - Point	0.00	0.00	6,515.00	3,540.06	-237.94	1,468,166.91	3,376,520.93	40.610612°N	104.143824°W

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
226.04	226.00	Laramie Base				
685.06	681.00	Laramie Fox Hills Base				
937.90	926.00	Pierre Shale Base				
1,858.51	1,751.00	Upper Pierre Shale Base*				
3,903.00	3,460.00	Richard Sandstone				
4,023.83	3,561.00	Parkman Sandstone				
4,478.42	3,941.00	Parkman Sandstone Base				
7,291.02	6,282.00	Sharon Springs				
7,343.85	6,319.00	Niobrara Top				
7,517.71	6,422.00	Niobrara B2 Chalk Reservoir Top				
7,669.46	6,483.00	Niobrara C Chalk Reservoir Top				
7,774.74	6,507.00	Niobrara C Chalk Target Top				
7,879.11	6,515.00	Niobrara C Chalk Target Center Line (LF				

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
1,764.48	1,672.40	455.80	-115.04	Start 5138.02 hold at 1764.48 MD
6,902.51	5,967.30	3,190.18	-805.15	Start DLS 10.00 TFO 101.82
7,879.14	6,515.00	3,540.06	-237.94	Start 9887.51 hold at 7879.14 MD
17,766.64	6,515.00	3,557.98	9,649.55	TD at 17766.64