

# **MALLARD EXPLORATION**

**WELD COUNTY**

**SEC 35-T8N-R60W**

**CINNAMON TEAL 35-5HN**

**OWB**

**Plan: PROPOSAL 1**

## **Standard Planning Report**

**11 May, 2021**



Project: WELD COUNTY  
Site: SEC 35-T8N-R60W  
Well: CINNAMON TEAL 35-5HN  
Wellbore: OWB  
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: 7.50°  
Magnetic Field  
Strength: 52145.2nT  
Dip Angle: 66.93°  
Date: 5/11/2021  
Model: IGRF2020

WELL DETAILS: CINNAMON TEAL 35-5HN

+N/-S	+E/-W	Northing	Easting	4924.00	Latitude	Longitude	Slot
0.00	0.00	1469420.32	3399454.59		40.613060°N	104.061161°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	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	1224.02	18.48	123.94	1208.08	-82.48	122.57	2.00	123.94	-43.63	
4	4915.07	18.48	123.94	4708.79	-735.67	1093.24	0.00	0.00	-389.21	
5	5839.09	0.00	0.00	5616.87	-818.15	1215.81	2.00	180.00	-432.84	
6	5939.09	0.00	0.00	5716.87	-818.15	1215.81	0.00	0.00	-432.84	
7	6839.40	90.00	1.38	6290.00	-245.15	1229.66	10.00	1.38	119.82	CT 35-5HN - LP
8	8339.40	90.00	1.38	6289.89	1254.42	1265.90	0.00	0.00	1566.14	
9	8758.62	90.00	353.00	6289.88	1672.76	1245.38	2.00	-90.03	1960.80	
10	8858.62	90.00	353.00	6289.88	1772.01	1233.19	0.00	0.00	2052.33	
11	9375.26	90.00	3.33	6289.88	2287.69	1216.69	2.00	90.00	2541.34	CT 35-5HN - PBHL
12	11551.99	89.99	3.33	6290.00	4460.74	1343.23	0.00	180.00	4658.59	CT 35-5HN - PBHL

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
151.00	151.00	Laramie Shale Base
535.00	535.26	Laramie Fox Hills Base
835.00	838.16	Pierre Shale Base
1546.00	1580.31	Upper Pierre Shale Base
3307.00	3437.06	Richard Sandstone
3421.00	3557.26	Parkman Sandstone
3761.00	3915.75	Lower Pierre Shale
6096.00	6353.36	Sharon Springs
6139.00	6413.60	Niobrara Top
6268.00	6680.05	Niobrara B Chalk Target Reservoir Top
6280.00	6732.14	Niobrara B Chalk Target Top
6290.00	6839.40	Niobrara B Chalk Target Landing Point

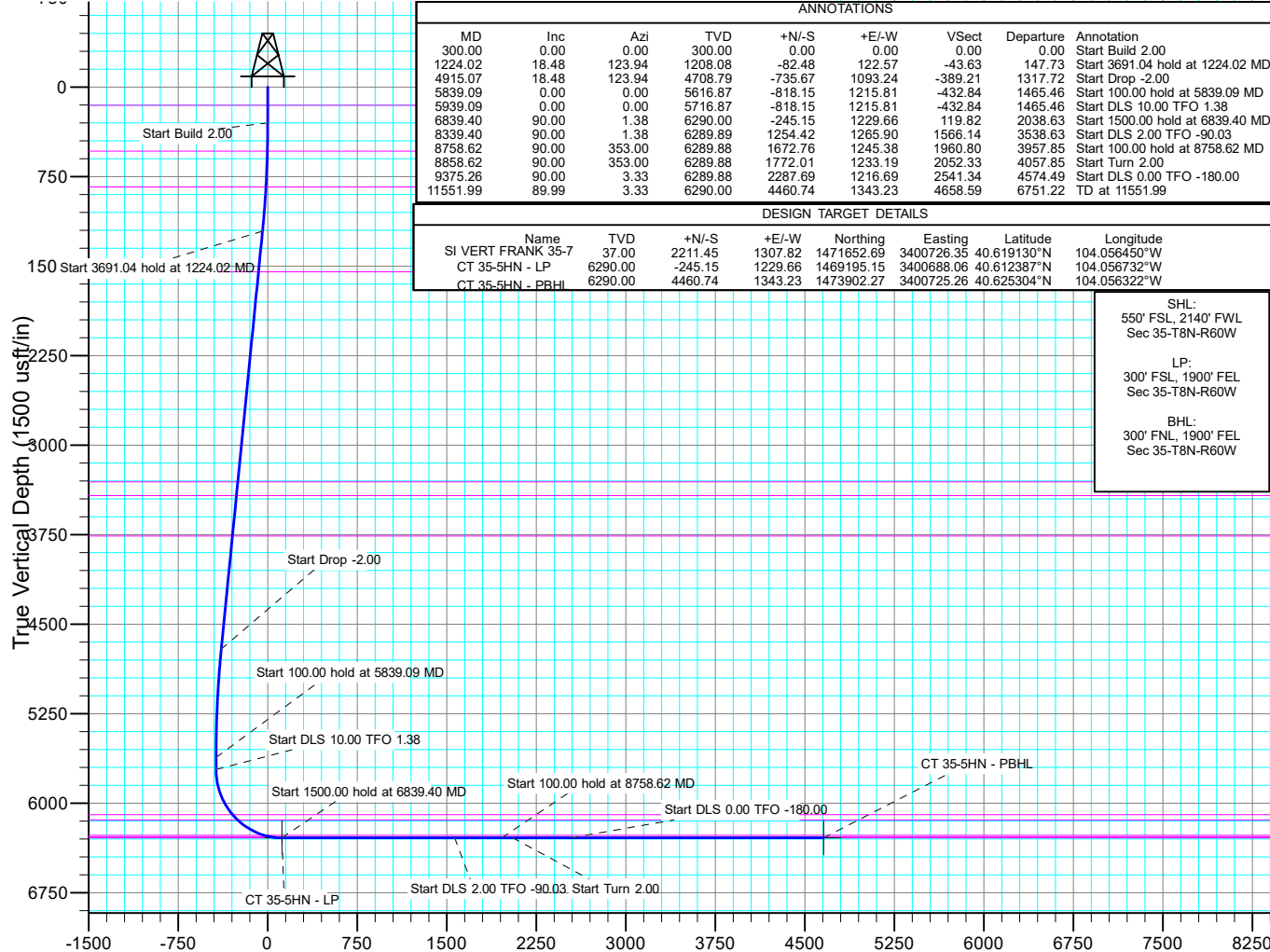
ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	Start Build 2.00
1224.02	18.48	123.94	1208.08	-82.48	122.57	-43.63	147.73	Start 3691.04 hold at 1224.02 MD
4915.07	18.48	123.94	4708.79	-735.67	1093.24	-389.21	1317.72	Start Drop -2.00
5839.09	0.00	0.00	5616.87	-818.15	1215.81	-432.84	1465.46	Start 100.00 hold at 5839.09 MD
5939.09	0.00	0.00	5716.87	-818.15	1215.81	-432.84	1465.46	Start DLS 10.00 TFO 1.38
6839.40	90.00	1.38	6290.00	-245.15	1229.66	119.82	2038.63	Start 1500.00 hold at 6839.40 MD
8339.40	90.00	1.38	6289.89	1254.42	1265.90	1566.14	3538.63	Start DLS 2.00 TFO -90.03
8758.62	90.00	353.00	6289.88	1672.76	1245.38	1960.80	3957.85	Start 100.00 hold at 8758.62 MD
8858.62	90.00	353.00	6289.88	1772.01	1233.19	2052.33	4057.85	Start Turn 2.00
9375.26	90.00	3.33	6289.88	2287.69	1216.69	2541.34	4574.49	Start DLS 0.00 TFO -180.00
11551.99	89.99	3.33	6290.00	4460.74	1343.23	4658.59	6751.22	TD at 11551.99

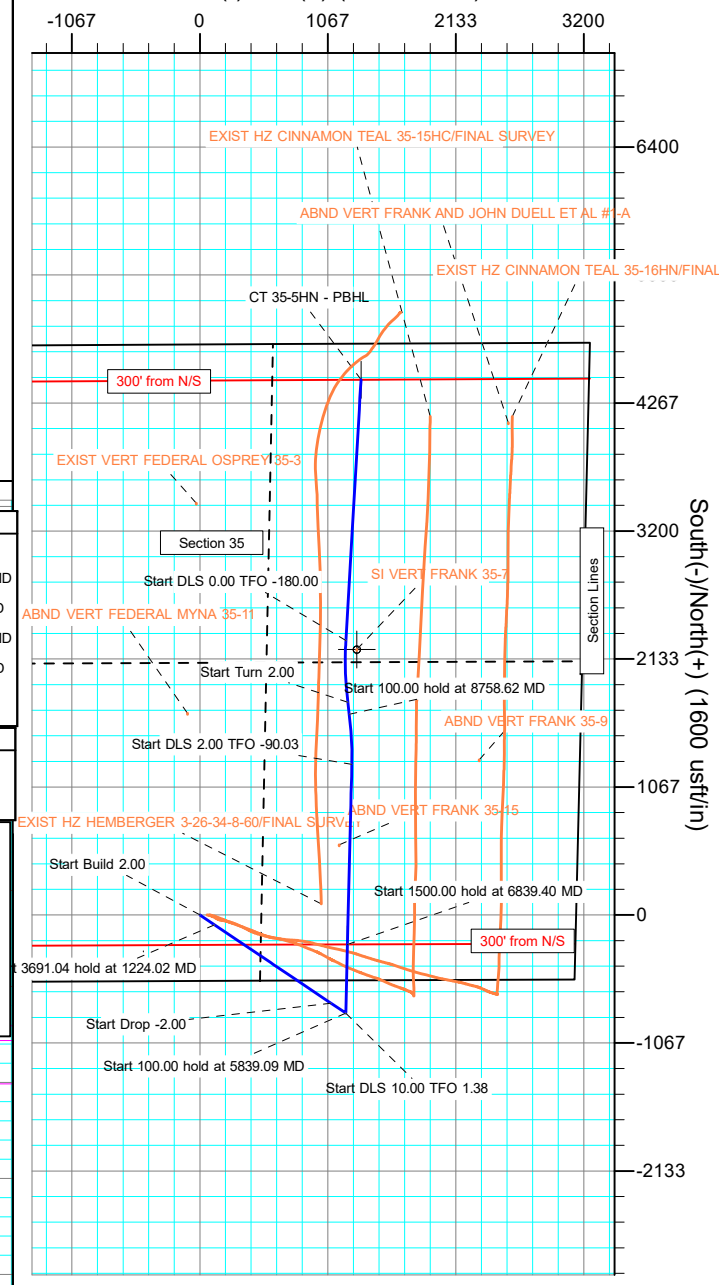
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SI VERT FRANK 35-7	37.00	2211.45	1307.82	1471652.69	3400726.35	40.619130°N	104.056450°W
CT 35-5HN - LP	6290.00	-245.15	1229.66	1469195.15	3400688.06	40.612387°N	104.056732°W
CT 35-5HN - PBHL	6290.00	4460.74	1343.23	1473902.27	3400725.26	40.625304°N	104.056322°W

SHL:  
550' FSL, 2140' FWL  
Sec 35-T8N-R60W  
LP:  
300' FSL, 1900' FEL  
Sec 35-T8N-R60W  
BHL:  
300' FNL, 1900' FEL  
Sec 35-T8N-R60W



West(-)/East(+) (1600 usft/in)



## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well CINNAMON TEAL 35-5HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4951.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4951.00usft
<b>Site:</b>	SEC 35-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	CINNAMON TEAL 35-5HN	<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 35-T8N-R60W				
Site Position:		Northing:	1,468,880.97	usft	Latitude:	40.611557°N
From:	Lat/Long	Easting:	3,399,964.54	usft	Longitude:	104.059356°W
Position Uncertainty:		0.00	usft	Slot Radius:	13.200	in

Well		CINNAMON TEAL 35-5HN				
Well Position	+N/-S	0.00 usft	Northing:	1,469,420.32 usft	Latitude:	40.613060°N
	+E/-W	0.00 usft	Easting:	3,399,454.58 usft	Longitude:	104.061161°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,924.00 usft
Grid Convergence:		0.93 °				

<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	5/11/2021	7.50	66.93	52,145.18232590

<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	16.76	

<b>Plan Survey Tool Program</b>	<b>Date</b>	5/11/2021			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	11,551.89 PROPOSAL 1 (OWB)	MWD		
			OWSG MWD - Standard		

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<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4951.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4951.00usft
<b>Site:</b>	SEC 35-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	CINNAMON TEAL 35-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PROPOSAL 1		

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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,224.02	18.48	123.94	1,208.08	-82.48	122.57	2.00	2.00	0.00	123.94	
4,915.07	18.48	123.94	4,708.79	-735.67	1,093.24	0.00	0.00	0.00	0.00	
5,839.09	0.00	0.00	5,616.87	-818.15	1,215.81	2.00	-2.00	0.00	180.00	
5,939.09	0.00	0.00	5,716.87	-818.15	1,215.81	0.00	0.00	0.00	0.00	
6,839.40	90.00	1.38	6,290.00	-245.15	1,229.66	10.00	10.00	0.15	1.38	CT 35-5HN - LP
8,339.40	90.00	1.38	6,289.89	1,254.42	1,265.90	0.00	0.00	0.00	0.00	
8,758.62	90.00	353.00	6,289.88	1,672.76	1,245.38	2.00	0.00	-2.00	-90.03	
8,858.62	90.00	353.00	6,289.88	1,772.01	1,233.19	0.00	0.00	0.00	0.00	
9,375.26	90.00	3.33	6,289.88	2,287.69	1,216.69	2.00	0.00	2.00	90.00	CT 35-5HN - PBHL
11,551.99	89.99	3.33	6,290.00	4,460.74	1,343.23	0.00	0.00	0.00	180.00	CT 35-5HN - PBHL

# Planning Report

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<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4951.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4951.00usft
<b>Site:</b>	SEC 35-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	CINNAMON TEAL 35-5HN	<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
151.00	0.00	0.00	151.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Laramie Shale Base</b>									
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 2.00</b>									
400.00	2.00	123.94	399.98	-0.97	1.45	-0.52	2.00	2.00	0.00
500.00	4.00	123.94	499.84	-3.90	5.79	-2.06	2.00	2.00	0.00
535.26	4.71	123.94	535.00	-5.39	8.01	-2.85	2.00	2.00	0.00
<b>Laramie Fox Hills Base</b>									
600.00	6.00	123.94	599.45	-8.76	13.02	-4.64	2.00	2.00	0.00
700.00	8.00	123.94	698.70	-15.57	23.13	-8.23	2.00	2.00	0.00
800.00	10.00	123.94	797.47	-24.30	36.11	-12.86	2.00	2.00	0.00
838.16	10.76	123.94	835.00	-28.14	41.81	-14.89	2.00	2.00	0.00
<b>Pierre Shale Base</b>									
900.00	12.00	123.94	895.62	-34.95	51.94	-18.49	2.00	2.00	0.00
1,000.00	14.00	123.94	993.06	-47.51	70.60	-25.13	2.00	2.00	0.00
1,100.00	16.00	123.94	1,089.64	-61.96	92.07	-32.78	2.00	2.00	0.00
1,200.00	18.00	123.94	1,185.27	-78.28	116.33	-41.41	2.00	2.00	0.00
1,224.02	18.48	123.94	1,208.08	-82.48	122.57	-43.63	2.00	2.00	0.00
<b>Start 3691.04 hold at 1224.02 MD</b>									
1,300.00	18.48	123.94	1,280.14	-95.92	142.55	-50.75	0.00	0.00	0.00
1,400.00	18.48	123.94	1,374.99	-113.62	168.84	-60.11	0.00	0.00	0.00
1,500.00	18.48	123.94	1,469.83	-131.32	195.14	-69.47	0.00	0.00	0.00
1,580.31	18.48	123.94	1,546.00	-145.53	216.26	-76.99	0.00	0.00	0.00
<b>Upper Pierre Shale Base</b>									
1,600.00	18.48	123.94	1,564.67	-149.01	221.44	-78.84	0.00	0.00	0.00
1,700.00	18.48	123.94	1,659.52	-166.71	247.74	-88.20	0.00	0.00	0.00
1,800.00	18.48	123.94	1,754.36	-184.41	274.04	-97.56	0.00	0.00	0.00
1,900.00	18.48	123.94	1,849.20	-202.10	300.34	-106.92	0.00	0.00	0.00
2,000.00	18.48	123.94	1,944.05	-219.80	326.63	-116.29	0.00	0.00	0.00
2,100.00	18.48	123.94	2,038.89	-237.50	352.93	-125.65	0.00	0.00	0.00
2,200.00	18.48	123.94	2,133.73	-255.19	379.23	-135.01	0.00	0.00	0.00
2,300.00	18.48	123.94	2,228.58	-272.89	405.53	-144.37	0.00	0.00	0.00
2,400.00	18.48	123.94	2,323.42	-290.59	431.83	-153.74	0.00	0.00	0.00
2,500.00	18.48	123.94	2,418.26	-308.28	458.12	-163.10	0.00	0.00	0.00
2,600.00	18.48	123.94	2,513.10	-325.98	484.42	-172.46	0.00	0.00	0.00
2,700.00	18.48	123.94	2,607.95	-343.68	510.72	-181.82	0.00	0.00	0.00
2,800.00	18.48	123.94	2,702.79	-361.37	537.02	-191.19	0.00	0.00	0.00
2,900.00	18.48	123.94	2,797.63	-379.07	563.32	-200.55	0.00	0.00	0.00
3,000.00	18.48	123.94	2,892.48	-396.77	589.62	-209.91	0.00	0.00	0.00
3,100.00	18.48	123.94	2,987.32	-414.46	615.91	-219.27	0.00	0.00	0.00
3,200.00	18.48	123.94	3,082.16	-432.16	642.21	-228.64	0.00	0.00	0.00
3,300.00	18.48	123.94	3,177.01	-449.86	668.51	-238.00	0.00	0.00	0.00
3,400.00	18.48	123.94	3,271.85	-467.56	694.81	-247.36	0.00	0.00	0.00
3,437.06	18.48	123.94	3,307.00	-474.11	704.56	-250.83	0.00	0.00	0.00
<b>Richard Sandstone</b>									
3,500.00	18.48	123.94	3,366.69	-485.25	721.11	-256.72	0.00	0.00	0.00
3,557.26	18.48	123.94	3,421.00	-495.38	736.17	-262.08	0.00	0.00	0.00
<b>Parkman Sandstone</b>									
3,600.00	18.48	123.94	3,461.54	-502.95	747.41	-266.09	0.00	0.00	0.00
3,700.00	18.48	123.94	3,556.38	-520.65	773.70	-275.45	0.00	0.00	0.00
3,800.00	18.48	123.94	3,651.22	-538.34	800.00	-284.81	0.00	0.00	0.00
3,900.00	18.48	123.94	3,746.07	-556.04	826.30	-294.17	0.00	0.00	0.00

# Planning Report

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<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4951.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4951.00usft
<b>Site:</b>	SEC 35-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	CINNAMON TEAL 35-5HN	<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)	
3,915.75	18.48	123.94	3,761.00	-558.83	830.44	-295.65	0.00	0.00	0.00	
<b>Lower Pierre Shale</b>										
4,000.00	18.48	123.94	3,840.91	-573.74	852.60	-303.54	0.00	0.00	0.00	
4,100.00	18.48	123.94	3,935.75	-591.43	878.90	-312.90	0.00	0.00	0.00	
4,200.00	18.48	123.94	4,030.60	-609.13	905.20	-322.26	0.00	0.00	0.00	
4,300.00	18.48	123.94	4,125.44	-626.83	931.49	-331.62	0.00	0.00	0.00	
4,400.00	18.48	123.94	4,220.28	-644.52	957.79	-340.99	0.00	0.00	0.00	
4,500.00	18.48	123.94	4,315.12	-662.22	984.09	-350.35	0.00	0.00	0.00	
4,600.00	18.48	123.94	4,409.97	-679.92	1,010.39	-359.71	0.00	0.00	0.00	
4,700.00	18.48	123.94	4,504.81	-697.61	1,036.69	-369.07	0.00	0.00	0.00	
4,800.00	18.48	123.94	4,599.65	-715.31	1,062.98	-378.44	0.00	0.00	0.00	
4,900.00	18.48	123.94	4,694.50	-733.01	1,089.28	-387.80	0.00	0.00	0.00	
4,915.07	18.48	123.94	4,708.79	-735.67	1,093.24	-389.21	0.00	0.00	0.00	
<b>Start Drop -2.00</b>										
5,000.00	16.78	123.94	4,789.73	-750.03	1,114.59	-396.81	2.00	-2.00	0.00	
5,100.00	14.78	123.94	4,885.95	-765.22	1,137.15	-404.84	2.00	-2.00	0.00	
5,200.00	12.78	123.94	4,983.07	-778.52	1,156.91	-411.88	2.00	-2.00	0.00	
5,300.00	10.78	123.94	5,080.96	-789.92	1,173.85	-417.91	2.00	-2.00	0.00	
5,400.00	8.78	123.94	5,179.50	-799.40	1,187.95	-422.92	2.00	-2.00	0.00	
5,500.00	6.78	123.94	5,278.57	-806.96	1,199.18	-426.92	2.00	-2.00	0.00	
5,600.00	4.78	123.94	5,378.06	-812.58	1,207.54	-429.90	2.00	-2.00	0.00	
5,700.00	2.78	123.94	5,477.84	-816.27	1,213.01	-431.85	2.00	-2.00	0.00	
5,800.00	0.78	123.94	5,577.78	-818.00	1,215.59	-432.76	2.00	-2.00	0.00	
5,839.09	0.00	0.00	5,616.87	-818.15	1,215.81	-432.84	2.00	-2.00	0.00	
<b>Start 100.00 hold at 5839.09 MD</b>										
5,900.00	0.00	0.00	5,677.78	-818.15	1,215.81	-432.84	0.00	0.00	0.00	
5,939.09	0.00	0.00	5,716.87	-818.15	1,215.81	-432.84	0.00	0.00	0.00	
<b>Start DLS 10.00 TFO 1.38</b>										
5,950.00	1.09	1.38	5,727.78	-818.05	1,215.81	-432.74	10.00	10.00	0.00	
6,000.00	6.09	1.38	5,777.67	-814.92	1,215.89	-429.73	10.00	10.00	0.00	
6,050.00	11.09	1.38	5,827.09	-807.45	1,216.07	-422.53	10.00	10.00	0.00	
6,100.00	16.09	1.38	5,875.68	-795.72	1,216.35	-411.21	10.00	10.00	0.00	
6,150.00	21.08	1.38	5,923.05	-779.79	1,216.74	-395.84	10.00	10.00	0.00	
6,200.00	26.08	1.38	5,968.86	-759.80	1,217.22	-376.56	10.00	10.00	0.00	
6,250.00	31.08	1.38	6,012.76	-735.89	1,217.80	-353.50	10.00	10.00	0.00	
6,300.00	36.08	1.38	6,054.40	-708.25	1,218.47	-326.85	10.00	10.00	0.00	
6,350.00	41.08	1.38	6,093.47	-677.09	1,219.22	-296.79	10.00	10.00	0.00	
6,353.36	41.41	1.38	6,096.00	-674.87	1,219.27	-294.65	10.00	10.00	0.00	
<b>Sharon Springs</b>										
6,400.00	46.08	1.38	6,129.68	-642.64	1,220.05	-263.57	10.00	10.00	0.00	
6,413.60	47.44	1.38	6,139.00	-632.74	1,220.29	-254.01	10.00	10.00	0.00	
<b>Niobrara Top</b>										
6,450.00	51.08	1.38	6,162.75	-605.17	1,220.96	-227.43	10.00	10.00	0.00	
6,500.00	56.07	1.38	6,192.43	-564.97	1,221.93	-188.65	10.00	10.00	0.00	
6,550.00	61.07	1.38	6,218.49	-522.33	1,222.96	-147.52	10.00	10.00	0.00	
6,600.00	66.07	1.38	6,240.74	-477.58	1,224.04	-104.36	10.00	10.00	0.00	
6,650.00	71.07	1.38	6,259.00	-431.07	1,225.16	-59.50	10.00	10.00	0.00	
6,680.05	74.07	1.38	6,268.00	-402.41	1,225.86	-31.86	10.00	10.00	0.00	
<b>Niobrara B Chalk Target Reservoir Top</b>										
6,700.00	76.07	1.38	6,273.14	-383.14	1,226.32	-13.27	10.00	10.00	0.00	
6,732.14	79.28	1.38	6,280.00	-351.75	1,227.08	17.00	10.00	10.00	0.00	
<b>Niobrara B Chalk Target Top</b>										
6,750.00	81.07	1.38	6,283.05	-334.16	1,227.51	33.97	10.00	10.00	0.00	

# Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well CINNAMON TEAL 35-5HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4951.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4951.00usft
<b>Site:</b>	SEC 35-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	CINNAMON TEAL 35-5HN	<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)
6,800.00	86.07	1.38	6,288.65	-284.50	1,228.71	81.86	10.00	10.00	0.00
6,839.40	90.00	1.38	6,290.00	-245.15	1,229.66	119.82	10.00	10.00	0.00
<b>Start 1500.00 hold at 6839.40 MD - Niobrara B Chalk Target Landing Point</b>									
6,900.00	90.00	1.38	6,290.00	-184.56	1,231.12	178.25	0.00	0.00	0.00
7,000.00	90.00	1.38	6,289.99	-84.59	1,233.54	274.67	0.00	0.00	0.00
7,100.00	90.00	1.38	6,289.98	15.38	1,235.95	371.09	0.00	0.00	0.00
7,200.00	90.00	1.38	6,289.97	115.35	1,238.37	467.51	0.00	0.00	0.00
7,300.00	90.00	1.38	6,289.97	215.32	1,240.79	563.94	0.00	0.00	0.00
7,400.00	90.00	1.38	6,289.96	315.29	1,243.20	660.36	0.00	0.00	0.00
7,500.00	90.00	1.38	6,289.95	415.26	1,245.62	756.78	0.00	0.00	0.00
7,600.00	90.00	1.38	6,289.95	515.23	1,248.03	853.20	0.00	0.00	0.00
7,700.00	90.00	1.38	6,289.94	615.20	1,250.45	949.62	0.00	0.00	0.00
7,800.00	90.00	1.38	6,289.93	715.17	1,252.87	1,046.04	0.00	0.00	0.00
7,900.00	90.00	1.38	6,289.92	815.14	1,255.28	1,142.47	0.00	0.00	0.00
8,000.00	90.00	1.38	6,289.92	915.12	1,257.70	1,238.89	0.00	0.00	0.00
8,100.00	90.00	1.38	6,289.91	1,015.09	1,260.11	1,335.31	0.00	0.00	0.00
8,200.00	90.00	1.38	6,289.90	1,115.06	1,262.53	1,431.73	0.00	0.00	0.00
8,300.00	90.00	1.38	6,289.90	1,215.03	1,264.95	1,528.15	0.00	0.00	0.00
8,339.40	90.00	1.38	6,289.89	1,254.42	1,265.90	1,566.14	0.00	0.00	0.00
<b>Start DLS 2.00 TFO -90.03</b>									
8,400.00	90.00	0.17	6,289.89	1,315.01	1,266.72	1,624.40	2.00	0.00	-2.00
8,500.00	90.00	358.17	6,289.88	1,414.99	1,265.28	1,719.72	2.00	0.00	-2.00
8,600.00	90.00	356.17	6,289.88	1,514.87	1,260.34	1,813.93	2.00	0.00	-2.00
8,700.00	90.00	354.17	6,289.88	1,614.51	1,251.93	1,906.91	2.00	0.00	-2.00
8,758.62	90.00	353.00	6,289.88	1,672.76	1,245.38	1,960.80	2.00	0.00	-2.00
<b>Start 100.00 hold at 8758.62 MD</b>									
8,800.00	90.00	353.00	6,289.88	1,713.83	1,240.34	1,998.68	0.00	0.00	0.00
8,858.62	90.00	353.00	6,289.88	1,772.01	1,233.19	2,052.33	0.00	0.00	0.00
<b>Start Turn 2.00</b>									
8,900.00	90.00	353.83	6,289.88	1,813.12	1,228.45	2,090.32	2.00	0.00	2.00
9,000.00	90.00	355.83	6,289.88	1,912.71	1,219.43	2,183.08	2.00	0.00	2.00
9,100.00	90.00	357.83	6,289.88	2,012.55	1,213.90	2,277.09	2.00	0.00	2.00
9,200.00	90.00	359.83	6,289.88	2,112.52	1,211.85	2,372.22	2.00	0.00	2.00
9,300.00	90.00	1.83	6,289.88	2,212.51	1,213.30	2,468.38	2.00	0.00	2.00
9,375.26	90.00	3.33	6,289.88	2,287.69	1,216.69	2,541.34	2.00	0.00	2.00
<b>Start DLS 0.00 TFO -180.00</b>									
9,400.00	90.00	3.33	6,289.88	2,312.39	1,218.12	2,565.41	0.00	0.00	0.00
9,500.00	90.00	3.33	6,289.88	2,412.22	1,223.94	2,662.67	0.00	0.00	0.00
9,600.00	90.00	3.33	6,289.88	2,512.05	1,229.75	2,759.94	0.00	0.00	0.00
9,700.00	90.00	3.33	6,289.88	2,611.88	1,235.56	2,857.21	0.00	0.00	0.00
9,800.00	90.00	3.33	6,289.88	2,711.71	1,241.38	2,954.48	0.00	0.00	0.00
9,900.00	90.00	3.33	6,289.88	2,811.54	1,247.19	3,051.74	0.00	0.00	0.00
10,000.00	90.00	3.33	6,289.89	2,911.37	1,253.01	3,149.01	0.00	0.00	0.00
10,100.00	90.00	3.33	6,289.89	3,011.20	1,258.82	3,246.28	0.00	0.00	0.00
10,200.00	90.00	3.33	6,289.90	3,111.04	1,264.63	3,343.55	0.00	0.00	0.00
10,300.00	90.00	3.33	6,289.90	3,210.87	1,270.45	3,440.81	0.00	0.00	0.00
10,400.00	90.00	3.33	6,289.90	3,310.70	1,276.26	3,538.08	0.00	0.00	0.00
10,500.00	90.00	3.33	6,289.91	3,410.53	1,282.07	3,635.35	0.00	0.00	0.00
10,600.00	90.00	3.33	6,289.92	3,510.36	1,287.89	3,732.61	0.00	0.00	0.00
10,700.00	90.00	3.33	6,289.92	3,610.19	1,293.70	3,829.88	0.00	0.00	0.00
10,800.00	90.00	3.33	6,289.93	3,710.02	1,299.51	3,927.15	0.00	0.00	0.00
10,900.00	90.00	3.33	6,289.94	3,809.85	1,305.33	4,024.42	0.00	0.00	0.00
11,000.00	90.00	3.33	6,289.95	3,909.68	1,311.14	4,121.68	0.00	0.00	0.00
11,100.00	89.99	3.33	6,289.95	4,009.51	1,316.96	4,218.95	0.00	0.00	0.00

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well CINNAMON TEAL 35-5HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4951.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4951.00usft
<b>Site:</b>	SEC 35-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	CINNAMON TEAL 35-5HN	<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)	
11,200.00	89.99	3.33	6,289.96	4,109.34	1,322.77	4,316.22	0.00	0.00	0.00	
11,300.00	89.99	3.33	6,289.97	4,209.17	1,328.58	4,413.49	0.00	0.00	0.00	
11,400.00	89.99	3.33	6,289.98	4,309.01	1,334.40	4,510.75	0.00	0.00	0.00	
11,500.00	89.99	3.33	6,289.99	4,408.84	1,340.21	4,608.02	0.00	0.00	0.00	
11,551.99	89.99	3.33	6,290.00	4,460.74	1,343.23	4,658.59	0.00	0.00	0.00	
TD at 11551.99										

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	
CT 35-5HN - PBHL - plan hits target center - Point	0.00	0.00	6,290.00	4,460.74	1,343.23	1,473,902.27	3,400,725.26	40.625304°N	104.056322°W	
CT 35-5HN - LP - plan hits target center - Point	0.00	0.00	6,290.00	-245.15	1,229.66	1,469,195.16	3,400,688.06	40.612387°N	104.056732°W	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
151.00	151.00	Laramie Shale Base				
535.26	535.00	Laramie Fox Hills Base				
838.16	835.00	Pierre Shale Base				
1,580.31	1,546.00	Upper Pierre Shale Base				
3,437.06	3,307.00	Richard Sandstone				
3,557.26	3,421.00	Parkman Sandstone				
3,915.75	3,761.00	Lower Pierre Shale				
6,353.36	6,096.00	Sharon Springs				
6,413.60	6,139.00	Niobrara Top				
6,680.05	6,268.00	Niobrara B Chalk Target Reservoir Top				
6,732.14	6,280.00	Niobrara B Chalk Target Top				
6,839.40	6,290.00	Niobrara B Chalk Target Landing Point				

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well CINNAMON TEAL 35-5HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4951.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4951.00usft
<b>Site:</b>	SEC 35-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	CINNAMON TEAL 35-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PROPOSAL 1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
300.00	300.00	0.00	0.00	Start Build 2.00
1,224.02	1,208.08	-82.48	122.57	Start 3691.04 hold at 1224.02 MD
4,915.07	4,708.79	-735.67	1,093.24	Start Drop -2.00
5,839.09	5,616.87	-818.15	1,215.81	Start 100.00 hold at 5839.09 MD
5,939.09	5,716.87	-818.15	1,215.81	Start DLS 10.00 TFO 1.38
6,839.40	6,290.00	-245.15	1,229.66	Start 1500.00 hold at 6839.40 MD
8,339.40	6,289.89	1,254.42	1,265.90	Start DLS 2.00 TFO -90.03
8,758.62	6,289.88	1,672.76	1,245.38	Start 100.00 hold at 8758.62 MD
8,858.62	6,289.88	1,772.01	1,233.19	Start Turn 2.00
9,375.26	6,289.88	2,287.69	1,216.69	Start DLS 0.00 TFO -180.00
11,551.99	6,290.00	4,460.74	1,343.23	TD at 11551.99