

# **MALLARD EXPLORATION**

**WELD COUNTY, COLORADO (NAD 83)**

**SE SW SEC. 31 T9N R59W 6th P.M.**

**ANDERSON FED 6-5-10HN**

**ORIGINAL WELLBORE**

**25 July, 2019**

**Plan: PROPOSAL #2**





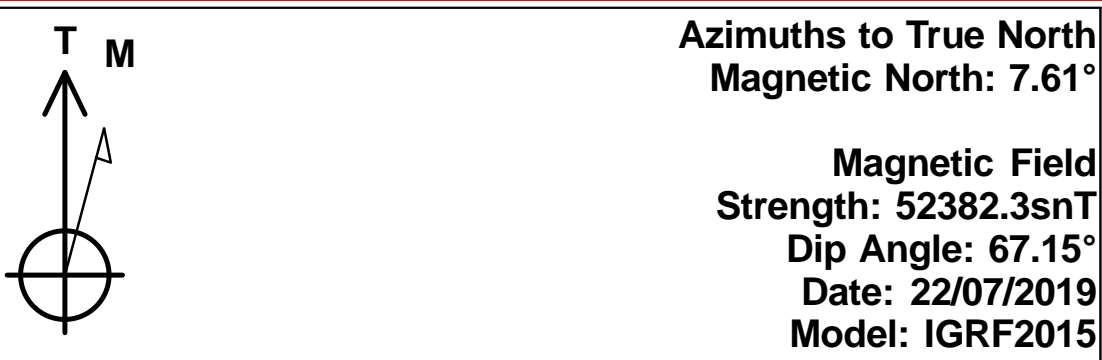
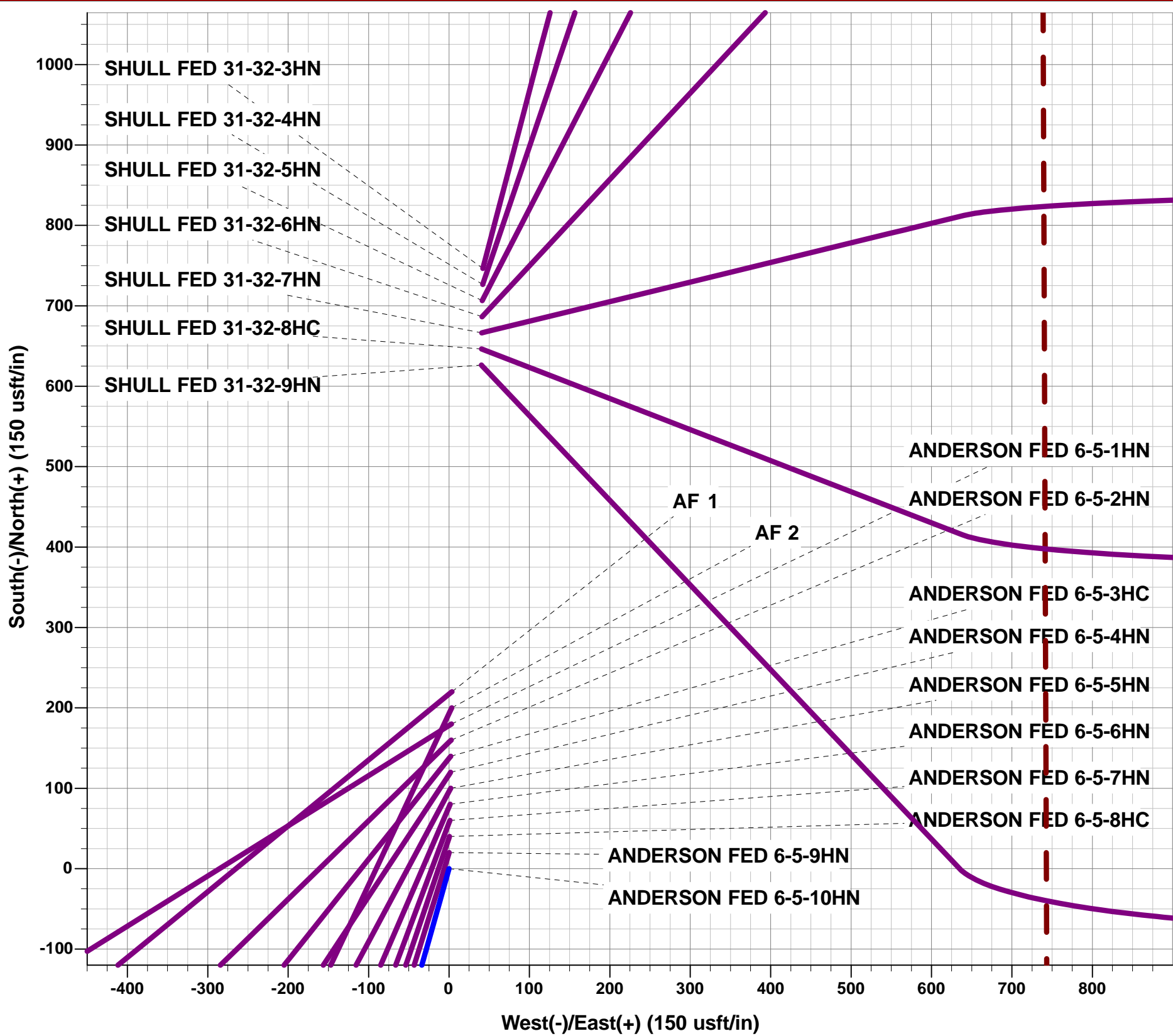
Project: WELD COUNTY, COLORADO (NAD 83)  
Site: SE SW SEC. 31 T9N R59W 6th P.M.  
Well: ANDERSON FED 6-5-10HN  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL #2

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 522ft FSL & 1909ft FWL of Sec 31
100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (3°/100ft BUR)
1516.37	1695.63	47.87	195.65	-605.36	-169.62	189.33	628.67	EOB TO 47.87° INC
5752.04	8009.71	47.87	195.65	-5114.30	-1432.99	1599.53	5311.27	KOP (10°/100ft DGLG)
6219.00	9020.55	90.00	90.63	-5619.02	-876.22	2341.74	6175.98	LP *NEW*: 305ft FSL & 600ft FWL of Sec 6
6219.00	18652.23	90.00	90.63	-5724.60	8754.88	10460.35	15807.66	BHL: 305ft FSL & 300ft FEL of Sec 5

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
LP *NEW* - ANDERSON FED 6-5-10HN (P2)	6219.00	-5619.02	-876.22	40.685269	-104.026591
BHL - ANDERSON FED 6-5-10HN (P2)	6219.00	-5724.60	8754.89	40.684975	-103.991865

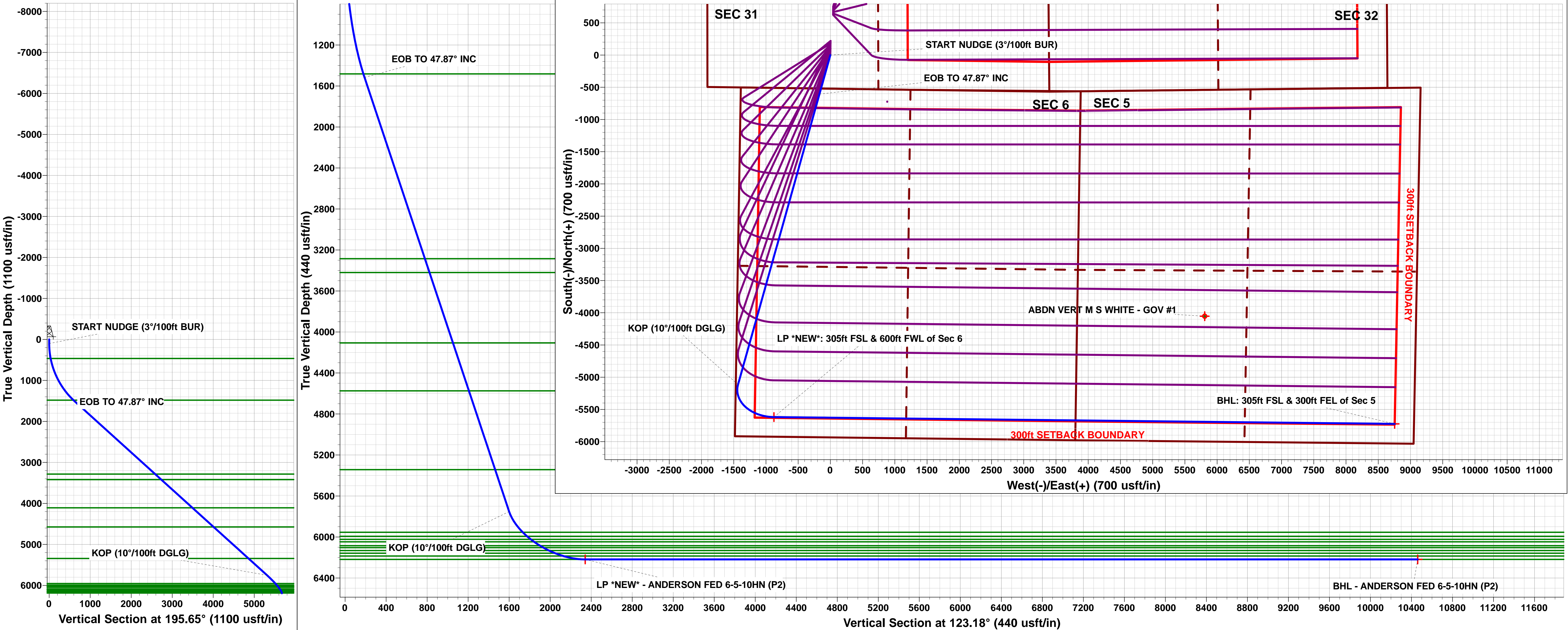


FORMATION TOP DETAILS

TVDPath	MDPath	Formation
465.00	467.26	Fox Hills Base
1482.00	1645.12	Pierre Shale Top
3285.00	4332.11	Richard Sandstone
3420.00	4533.35	Parkman Sandstone
4107.00	5557.46	Sussex Sandstone
4574.00	6253.61	Shannon Sandstone
5343.00	7399.95	TeePee Buttes
5954.00	8309.23	Sharon Springs
5993.00	8370.77	Niobrara Top
6023.00	8420.26	Niobrara A Chalk
6047.00	8461.69	Niobrara A Chalk Base
6085.00	8531.92	Niobrara B1 Chalk Top
6104.00	8569.96	Niobrara B1 Chalk Base
6132.00	8631.21	Niobrara B2 Chalk Top
6158.00	8696.47	Niobrara B2 Chalk Base
6186.00	8783.66	Niobrara C Chalk Target Top
6219.00	9020.55	Niobrara C Chalk Target Center

PROPOSED LOCAL COORDINATES:

SHL: 522ft FSL & 1909ft FWL of Sec 31  
HZ LP \*NEW\*: 305ft FSL & 600ft FWL of Sec 6  
BHL: 305ft FSL & 300ft FEL of Sec 5



# Planning Report



<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well ANDERSON FED 6-5-10HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 25' @ 4903.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB 25' @ 4903.00usft
<b>Site:</b>	SE SW SEC. 31 T9N R59W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	ANDERSON FED 6-5-10HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #2		

<b>Project</b>	WELD COUNTY, COLORADO (NAD 83)		
<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		Using geodetic scale factor

<b>Site</b>	SE SW SEC. 31 T9N R59W 6th P.M.		
<b>Site Position:</b>		<b>Northing:</b>	1,501,513.53 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,409,242.57 usft
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	1.10 ft
		<b>Latitude:</b>	40.700697
		<b>Longitude:</b>	-104.023987
		<b>Grid Convergence:</b>	0.95 °

<b>Well</b>	ANDERSON FED 6-5-10HN		
<b>Well Position</b>	<b>+N/-S</b>	-1.83 usft	<b>Northing:</b>
	<b>+E/-W</b>	153.89 usft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	usft
		<b>Latitude:</b>	40.700692
		<b>Longitude:</b>	-104.023432
		<b>Ground Level:</b>	4,878.00 usft

<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>
	IGRF2015	22/07/2019	7.61	67.15	52,382

<b>Design</b>	PROPOSAL #2			
<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>
	6,219.00	0.00	0.00	123.18

<b>Plan Sections</b>											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100usf)	Turn Rate (°/100usf)	TFO (°)	Target
0.00	0.00	0.00	0.00	-4,903.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	-4,803.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,695.63	47.87	195.65	1,516.37	-3,386.63	-605.36	-169.62	3.00	3.00	0.00	195.65	
8,009.71	47.87	195.65	5,752.04	849.04	-5,114.30	-1,432.99	0.00	0.00	0.00	0.00	
9,020.55	90.00	90.63	6,219.00	1,316.00	-5,619.02	-876.22	10.00	4.17	-10.39	-100.21	LP *NEW* - ANDEF
18,652.23	90.00	90.63	6,219.00	1,316.00	-5,724.60	8,754.89	0.00	0.00	0.00	0.00	BHL - ANDERSON

# Planning Report



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<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 25' @ 4903.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB 25' @ 4903.00usft
<b>Site:</b>	SE SW SEC. 31 T9N R59W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	ANDERSON FED 6-5-10HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #2		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
<b>SHL: 522ft FSL &amp; 1909ft FWL of Sec 31</b>										
0.00	0.00	0.00	0.00	4,903.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>START NUDGE (3°/100ft BUR)</b>										
100.00	0.00	0.00	100.00	4,803.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	3.00	195.65	199.95	4,703.05	-2.52	-0.71	0.79	3.00	3.00	0.00
300.00	6.00	195.65	299.63	4,603.37	-10.07	-2.82	3.15	3.00	3.00	0.00
400.00	9.00	195.65	398.77	4,504.23	-22.64	-6.34	7.08	3.00	3.00	0.00
<b>Fox Hills Base</b>										
467.26	11.02	195.65	465.00	4,438.00	-33.90	-9.50	10.60	3.00	3.00	0.00
500.00	12.00	195.65	497.08	4,405.92	-40.19	-11.26	12.57	3.00	3.00	0.00
600.00	15.00	195.65	594.31	4,308.69	-62.66	-17.56	19.60	3.00	3.00	0.00
700.00	18.00	195.65	690.18	4,212.82	-90.01	-25.22	28.15	3.00	3.00	0.00
800.00	21.00	195.65	784.43	4,118.57	-122.15	-34.22	38.20	3.00	3.00	0.00
900.00	24.00	195.65	876.81	4,026.19	-158.99	-44.55	49.73	3.00	3.00	0.00
1,000.00	27.00	195.65	967.06	3,935.94	-200.44	-56.16	62.69	3.00	3.00	0.00
1,100.00	30.00	195.65	1,054.93	3,848.07	-246.38	-69.03	77.06	3.00	3.00	0.00
1,200.00	33.00	195.65	1,140.18	3,762.82	-296.69	-83.13	92.79	3.00	3.00	0.00
1,300.00	36.00	195.65	1,222.59	3,680.41	-351.22	-98.41	109.85	3.00	3.00	0.00
1,400.00	39.00	195.65	1,301.91	3,601.09	-409.84	-114.83	128.18	3.00	3.00	0.00
1,500.00	42.00	195.65	1,377.95	3,525.05	-472.37	-132.35	147.74	3.00	3.00	0.00
1,600.00	45.00	195.65	1,450.47	3,452.53	-538.64	-150.92	168.46	3.00	3.00	0.00
<b>Pierre Shale Top</b>										
1,645.12	46.35	195.65	1,482.00	3,421.00	-569.72	-159.63	178.18	3.00	3.00	0.00
<b>EOB TO 47.87° INC</b>										
1,695.63	47.87	195.65	1,516.37	3,386.63	-605.36	-169.62	189.33	3.00	3.00	0.00
1,700.00	47.87	195.65	1,519.31	3,383.69	-608.48	-170.49	190.30	0.00	0.00	0.00
1,800.00	47.87	195.65	1,586.39	3,316.61	-679.89	-190.50	212.64	0.00	0.00	0.00
1,900.00	47.87	195.65	1,653.47	3,249.53	-751.30	-210.51	234.97	0.00	0.00	0.00
2,000.00	47.87	195.65	1,720.55	3,182.45	-822.71	-230.52	257.31	0.00	0.00	0.00
2,100.00	47.87	195.65	1,787.64	3,115.36	-894.12	-250.53	279.64	0.00	0.00	0.00
2,200.00	47.87	195.65	1,854.72	3,048.28	-965.53	-270.54	301.98	0.00	0.00	0.00
2,300.00	47.87	195.65	1,921.80	2,981.20	-1,036.94	-290.54	324.31	0.00	0.00	0.00
2,400.00	47.87	195.65	1,988.89	2,914.11	-1,108.35	-310.55	346.64	0.00	0.00	0.00
2,500.00	47.87	195.65	2,055.97	2,847.03	-1,179.76	-330.56	368.98	0.00	0.00	0.00
2,600.00	47.87	195.65	2,123.05	2,779.95	-1,251.18	-350.57	391.31	0.00	0.00	0.00
2,700.00	47.87	195.65	2,190.13	2,712.87	-1,322.59	-370.58	413.65	0.00	0.00	0.00
2,800.00	47.87	195.65	2,257.22	2,645.78	-1,394.00	-390.59	435.98	0.00	0.00	0.00
2,900.00	47.87	195.65	2,324.30	2,578.70	-1,465.41	-410.60	458.32	0.00	0.00	0.00
3,000.00	47.87	195.65	2,391.38	2,511.62	-1,536.82	-430.61	480.65	0.00	0.00	0.00
3,100.00	47.87	195.65	2,458.47	2,444.53	-1,608.23	-450.61	502.98	0.00	0.00	0.00
3,200.00	47.87	195.65	2,525.55	2,377.45	-1,679.64	-470.62	525.32	0.00	0.00	0.00
3,300.00	47.87	195.65	2,592.63	2,310.37	-1,751.05	-490.63	547.65	0.00	0.00	0.00
3,400.00	47.87	195.65	2,659.71	2,243.29	-1,822.46	-510.64	569.99	0.00	0.00	0.00
3,500.00	47.87	195.65	2,726.80	2,176.20	-1,893.87	-530.65	592.32	0.00	0.00	0.00
3,600.00	47.87	195.65	2,793.88	2,109.12	-1,965.29	-550.66	614.66	0.00	0.00	0.00
3,700.00	47.87	195.65	2,860.96	2,042.04	-2,036.70	-570.67	636.99	0.00	0.00	0.00
3,800.00	47.87	195.65	2,928.05	1,974.95	-2,108.11	-590.68	659.32	0.00	0.00	0.00
3,900.00	47.87	195.65	2,995.13	1,907.87	-2,179.52	-610.69	681.66	0.00	0.00	0.00
4,000.00	47.87	195.65	3,062.21	1,840.79	-2,250.93	-630.69	703.99	0.00	0.00	0.00
4,100.00	47.87	195.65	3,129.30	1,773.70	-2,322.34	-650.70	726.33	0.00	0.00	0.00
4,200.00	47.87	195.65	3,196.38	1,706.62	-2,393.75	-670.71	748.66	0.00	0.00	0.00
4,300.00	47.87	195.65	3,263.46	1,639.54	-2,465.16	-690.72	770.99	0.00	0.00	0.00
<b>Richard Sandstone</b>										



# Planning Report



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<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 25' @ 4903.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB 25' @ 4903.00usft
<b>Site:</b>	SE SW SEC. 31 T9N R59W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	ANDERSON FED 6-5-10HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #2		

## Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
<b>4,332.11</b>	<b>47.87</b>	<b>195.65</b>	<b>3,285.00</b>	<b>1,618.00</b>	<b>-2,488.09</b>	<b>-697.15</b>	<b>778.17</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
4,400.00	47.87	195.65	3,330.54	1,572.46	-2,536.57	-710.73	793.33	0.00	0.00	0.00
4,500.00	47.87	195.65	3,397.63	1,505.37	-2,607.98	-730.74	815.66	0.00	0.00	0.00
<b>Parkman Sandstone</b>										
<b>4,533.35</b>	<b>47.87</b>	<b>195.65</b>	<b>3,420.00</b>	<b>1,483.00</b>	<b>-2,631.80</b>	<b>-737.41</b>	<b>823.11</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
4,600.00	47.87	195.65	3,464.71	1,438.29	-2,679.40	-750.75	838.00	0.00	0.00	0.00
4,700.00	47.87	195.65	3,531.79	1,371.21	-2,750.81	-770.76	860.33	0.00	0.00	0.00
4,800.00	47.87	195.65	3,598.88	1,304.12	-2,822.22	-790.77	882.67	0.00	0.00	0.00
4,900.00	47.87	195.65	3,665.96	1,237.04	-2,893.63	-810.77	905.00	0.00	0.00	0.00
5,000.00	47.87	195.65	3,733.04	1,169.96	-2,965.04	-830.78	927.33	0.00	0.00	0.00
5,100.00	47.87	195.65	3,800.12	1,102.88	-3,036.45	-850.79	949.67	0.00	0.00	0.00
5,200.00	47.87	195.65	3,867.21	1,035.79	-3,107.86	-870.80	972.00	0.00	0.00	0.00
5,300.00	47.87	195.65	3,934.29	968.71	-3,179.27	-890.81	994.34	0.00	0.00	0.00
5,400.00	47.87	195.65	4,001.37	901.63	-3,250.68	-910.82	1,016.67	0.00	0.00	0.00
5,500.00	47.87	195.65	4,068.46	834.54	-3,322.09	-930.83	1,039.01	0.00	0.00	0.00
<b>Sussex Sandstone</b>										
<b>5,557.46</b>	<b>47.87</b>	<b>195.65</b>	<b>4,107.00</b>	<b>796.00</b>	<b>-3,363.13</b>	<b>-942.32</b>	<b>1,051.84</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
5,600.00	47.87	195.65	4,135.54	767.46	-3,393.51	-950.84	1,061.34	0.00	0.00	0.00
5,700.00	47.87	195.65	4,202.62	700.38	-3,464.92	-970.84	1,083.67	0.00	0.00	0.00
5,800.00	47.87	195.65	4,269.70	633.30	-3,536.33	-990.85	1,106.01	0.00	0.00	0.00
5,900.00	47.87	195.65	4,336.79	566.21	-3,607.74	-1,010.86	1,128.34	0.00	0.00	0.00
6,000.00	47.87	195.65	4,403.87	499.13	-3,679.15	-1,030.87	1,150.68	0.00	0.00	0.00
6,100.00	47.87	195.65	4,470.95	432.05	-3,750.56	-1,050.88	1,173.01	0.00	0.00	0.00
6,200.00	47.87	195.65	4,538.04	364.96	-3,821.97	-1,070.89	1,195.35	0.00	0.00	0.00
<b>Shannon Sandstone</b>										
<b>6,253.61</b>	<b>47.87</b>	<b>195.65</b>	<b>4,574.00</b>	<b>329.00</b>	<b>-3,860.26</b>	<b>-1,081.62</b>	<b>1,207.32</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
6,300.00	47.87	195.65	4,605.12	297.88	-3,893.38	-1,090.90	1,217.68	0.00	0.00	0.00
6,400.00	47.87	195.65	4,672.20	230.80	-3,964.79	-1,110.91	1,240.01	0.00	0.00	0.00
6,500.00	47.87	195.65	4,739.28	163.72	-4,036.20	-1,130.92	1,262.35	0.00	0.00	0.00
6,600.00	47.87	195.65	4,806.37	96.63	-4,107.62	-1,150.92	1,284.68	0.00	0.00	0.00
6,700.00	47.87	195.65	4,873.45	29.55	-4,179.03	-1,170.93	1,307.02	0.00	0.00	0.00
6,800.00	47.87	195.65	4,940.53	-37.53	-4,250.44	-1,190.94	1,329.35	0.00	0.00	0.00
6,900.00	47.87	195.65	5,007.62	-104.62	-4,321.85	-1,210.95	1,351.68	0.00	0.00	0.00
7,000.00	47.87	195.65	5,074.70	-171.70	-4,393.26	-1,230.96	1,374.02	0.00	0.00	0.00
7,100.00	47.87	195.65	5,141.78	-238.78	-4,464.67	-1,250.97	1,396.35	0.00	0.00	0.00
7,200.00	47.87	195.65	5,208.86	-305.86	-4,536.08	-1,270.98	1,418.69	0.00	0.00	0.00
7,300.00	47.87	195.65	5,275.95	-372.95	-4,607.49	-1,290.99	1,441.02	0.00	0.00	0.00
<b>TeePee Buttes</b>										
<b>7,399.95</b>	<b>47.87</b>	<b>195.65</b>	<b>5,343.00</b>	<b>-440.00</b>	<b>-4,678.87</b>	<b>-1,310.99</b>	<b>1,463.35</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
7,400.00	47.87	195.65	5,343.03	-440.03	-4,678.90	-1,311.00	1,463.36	0.00	0.00	0.00
7,500.00	47.87	195.65	5,410.11	-507.11	-4,750.31	-1,331.00	1,485.69	0.00	0.00	0.00
7,600.00	47.87	195.65	5,477.20	-574.20	-4,821.73	-1,351.01	1,508.02	0.00	0.00	0.00
7,700.00	47.87	195.65	5,544.28	-641.28	-4,893.14	-1,371.02	1,530.36	0.00	0.00	0.00
7,800.00	47.87	195.65	5,611.36	-708.36	-4,964.55	-1,391.03	1,552.69	0.00	0.00	0.00
7,900.00	47.87	195.65	5,678.45	-775.45	-5,035.96	-1,411.04	1,575.03	0.00	0.00	0.00
8,000.00	47.87	195.65	5,745.53	-842.53	-5,107.37	-1,431.05	1,597.36	0.00	0.00	0.00
<b>KOP (10°/100ft DGLG)</b>										
<b>8,009.71</b>	<b>47.87</b>	<b>195.65</b>	<b>5,752.04</b>	<b>-849.04</b>	<b>-5,114.30</b>	<b>-1,432.99</b>	<b>1,599.53</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
8,100.00	46.91	183.44	5,813.29	-910.29	-5,179.59	-1,444.03	1,626.02	10.00	-1.06	-13.52
8,200.00	47.39	169.80	5,881.47	-978.47	-5,252.44	-1,439.69	1,669.52	10.00	0.48	-13.64
8,300.00	49.43	156.70	5,948.01	-1,045.01	-5,323.72	-1,418.10	1,726.60	10.00	2.04	-13.10
<b>Sharon Springs</b>										
<b>8,309.23</b>	<b>49.70</b>	<b>155.54</b>	<b>5,954.00</b>	<b>-1,051.00</b>	<b>-5,330.15</b>	<b>-1,415.25</b>	<b>1,732.50</b>	<b>10.00</b>	<b>2.84</b>	<b>-12.60</b>

# Planning Report



<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well ANDERSON FED 6-5-10HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVL Reference:</b>	KB 25' @ 4903.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB 25' @ 4903.00usft
<b>Site:</b>	SE SW SEC. 31 T9N R59W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	ANDERSON FED 6-5-10HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #2		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
<b>Niobrara Top</b>										
8,370.77	51.73	148.03	5,993.00	-1,090.00	-5,372.04	-1,392.73	1,774.28	10.00	3.30	-12.20
8,400.00	52.85	144.62	6,010.88	-1,107.88	-5,391.27	-1,379.90	1,795.54	10.00	3.85	-11.67
<b>Niobrara A Chalk</b>										
8,420.26	53.69	142.32	6,023.00	-1,120.00	-5,404.32	-1,370.23	1,810.77	10.00	4.13	-11.36
<b>Niobrara A Chalk Base</b>										
8,461.69	55.53	137.76	6,047.00	-1,144.00	-5,430.18	-1,348.54	1,843.08	10.00	4.45	-10.99
8,500.00	57.38	133.74	6,068.17	-1,165.17	-5,453.04	-1,326.26	1,874.23	10.00	4.82	-10.51
<b>Niobrara B1 Chalk Top</b>										
8,531.92	59.01	130.51	6,085.00	-1,182.00	-5,471.22	-1,306.14	1,901.03	10.00	5.12	-10.11
<b>Niobrara B1 Chalk Base</b>										
8,569.96	61.06	126.81	6,104.00	-1,201.00	-5,491.79	-1,280.41	1,933.82	10.00	5.38	-9.73
8,600.00	62.75	123.99	6,118.15	-1,215.15	-5,507.14	-1,258.81	1,960.30	10.00	5.62	-9.38
<b>Niobrara B2 Chalk Top</b>										
8,631.21	64.56	121.15	6,132.00	-1,229.00	-5,522.19	-1,235.24	1,988.26	10.00	5.80	-9.09
<b>Niobrara B2 Chalk Base</b>										
8,696.47	68.51	115.49	6,158.00	-1,255.00	-5,550.53	-1,182.56	2,047.86	10.00	6.05	-8.68
8,700.00	68.73	115.19	6,159.29	-1,256.29	-5,551.93	-1,179.59	2,051.12	10.00	6.21	-8.42
<b>Niobrara C Chalk Target Top</b>										
8,783.66	74.06	108.38	6,186.00	-1,283.00	-5,581.26	-1,106.01	2,128.75	10.00	6.37	-8.14
8,800.00	75.13	107.10	6,190.34	-1,287.34	-5,586.06	-1,091.01	2,143.93	10.00	6.53	-7.85
8,900.00	81.79	99.49	6,210.36	-1,307.36	-5,608.49	-995.77	2,235.91	10.00	6.67	-7.61
9,000.00	88.60	92.13	6,218.75	-1,315.75	-5,618.53	-896.76	2,324.28	10.00	6.80	-7.36
<b>LP *NEW*: 305ft FSL &amp; 600ft FWL of Sec 6 - Niobrara C Chalk Target Center</b>										
9,020.55	90.00	90.63	6,219.00	-1,316.00	-5,619.02	-876.22	2,341.74	10.00	6.84	-7.30
9,100.00	90.00	90.63	6,219.00	-1,316.00	-5,619.89	-796.77	2,408.71	0.00	0.00	0.00
9,200.00	90.00	90.63	6,219.00	-1,316.00	-5,620.99	-696.78	2,493.00	0.00	0.00	0.00
9,300.00	90.00	90.63	6,219.00	-1,316.00	-5,622.08	-596.79	2,577.29	0.00	0.00	0.00
9,400.00	90.00	90.63	6,219.00	-1,316.00	-5,623.18	-496.79	2,661.58	0.00	0.00	0.00
9,500.00	90.00	90.63	6,219.00	-1,316.00	-5,624.28	-396.80	2,745.87	0.00	0.00	0.00
9,600.00	90.00	90.63	6,219.00	-1,316.00	-5,625.37	-296.80	2,830.16	0.00	0.00	0.00
9,700.00	90.00	90.63	6,219.00	-1,316.00	-5,626.47	-196.81	2,914.45	0.00	0.00	0.00
9,800.00	90.00	90.63	6,219.00	-1,316.00	-5,627.56	-96.82	2,998.74	0.00	0.00	0.00
9,900.00	90.00	90.63	6,219.00	-1,316.00	-5,628.66	3.18	3,083.03	0.00	0.00	0.00
10,000.00	90.00	90.63	6,219.00	-1,316.00	-5,629.76	103.17	3,167.32	0.00	0.00	0.00
10,100.00	90.00	90.63	6,219.00	-1,316.00	-5,630.85	203.17	3,251.62	0.00	0.00	0.00
10,200.00	90.00	90.63	6,219.00	-1,316.00	-5,631.95	303.16	3,335.91	0.00	0.00	0.00
10,300.00	90.00	90.63	6,219.00	-1,316.00	-5,633.04	403.15	3,420.20	0.00	0.00	0.00
10,400.00	90.00	90.63	6,219.00	-1,316.00	-5,634.14	503.15	3,504.49	0.00	0.00	0.00
10,500.00	90.00	90.63	6,219.00	-1,316.00	-5,635.24	603.14	3,588.78	0.00	0.00	0.00
10,600.00	90.00	90.63	6,219.00	-1,316.00	-5,636.33	703.14	3,673.07	0.00	0.00	0.00
10,700.00	90.00	90.63	6,219.00	-1,316.00	-5,637.43	803.13	3,757.36	0.00	0.00	0.00
10,800.00	90.00	90.63	6,219.00	-1,316.00	-5,638.53	903.12	3,841.65	0.00	0.00	0.00
10,900.00	90.00	90.63	6,219.00	-1,316.00	-5,639.62	1,003.12	3,925.94	0.00	0.00	0.00
11,000.00	90.00	90.63	6,219.00	-1,316.00	-5,640.72	1,103.11	4,010.23	0.00	0.00	0.00
11,100.00	90.00	90.63	6,219.00	-1,316.00	-5,641.81	1,203.11	4,094.52	0.00	0.00	0.00
11,200.00	90.00	90.63	6,219.00	-1,316.00	-5,642.91	1,303.10	4,178.81	0.00	0.00	0.00
11,300.00	90.00	90.63	6,219.00	-1,316.00	-5,644.01	1,403.09	4,263.10	0.00	0.00	0.00
11,400.00	90.00	90.63	6,219.00	-1,316.00	-5,645.10	1,503.09	4,347.40	0.00	0.00	0.00
11,500.00	90.00	90.63	6,219.00	-1,316.00	-5,646.20	1,603.08	4,431.69	0.00	0.00	0.00
11,600.00	90.00	90.63	6,219.00	-1,316.00	-5,647.29	1,703.08	4,515.98	0.00	0.00	0.00
11,700.00	90.00	90.63	6,219.00	-1,316.00	-5,648.39	1,803.07	4,600.27	0.00	0.00	0.00
11,800.00	90.00	90.63	6,219.00	-1,316.00	-5,649.49	1,903.06	4,684.56	0.00	0.00	0.00

# Planning Report



<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well ANDERSON FED 6-5-10HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 25' @ 4903.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB 25' @ 4903.00usft
<b>Site:</b>	SE SW SEC. 31 T9N R59W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	ANDERSON FED 6-5-10HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #2		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,900.00	90.00	90.63	6,219.00	-1,316.00	-5,650.58	2,003.06	4,768.85	0.00	0.00	0.00
12,000.00	90.00	90.63	6,219.00	-1,316.00	-5,651.68	2,103.05	4,853.14	0.00	0.00	0.00
12,100.00	90.00	90.63	6,219.00	-1,316.00	-5,652.78	2,203.05	4,937.43	0.00	0.00	0.00
12,200.00	90.00	90.63	6,219.00	-1,316.00	-5,653.87	2,303.04	5,021.72	0.00	0.00	0.00
12,300.00	90.00	90.63	6,219.00	-1,316.00	-5,654.97	2,403.03	5,106.01	0.00	0.00	0.00
12,400.00	90.00	90.63	6,219.00	-1,316.00	-5,656.06	2,503.03	5,190.30	0.00	0.00	0.00
12,500.00	90.00	90.63	6,219.00	-1,316.00	-5,657.16	2,603.02	5,274.59	0.00	0.00	0.00
12,600.00	90.00	90.63	6,219.00	-1,316.00	-5,658.26	2,703.02	5,358.88	0.00	0.00	0.00
12,700.00	90.00	90.63	6,219.00	-1,316.00	-5,659.35	2,803.01	5,443.17	0.00	0.00	0.00
12,800.00	90.00	90.63	6,219.00	-1,316.00	-5,660.45	2,903.00	5,527.47	0.00	0.00	0.00
12,900.00	90.00	90.63	6,219.00	-1,316.00	-5,661.54	3,003.00	5,611.76	0.00	0.00	0.00
13,000.00	90.00	90.63	6,219.00	-1,316.00	-5,662.64	3,102.99	5,696.05	0.00	0.00	0.00
13,100.00	90.00	90.63	6,219.00	-1,316.00	-5,663.74	3,202.99	5,780.34	0.00	0.00	0.00
13,200.00	90.00	90.63	6,219.00	-1,316.00	-5,664.83	3,302.98	5,864.63	0.00	0.00	0.00
13,300.00	90.00	90.63	6,219.00	-1,316.00	-5,665.93	3,402.97	5,948.92	0.00	0.00	0.00
13,400.00	90.00	90.63	6,219.00	-1,316.00	-5,667.02	3,502.97	6,033.21	0.00	0.00	0.00
13,500.00	90.00	90.63	6,219.00	-1,316.00	-5,668.12	3,602.96	6,117.50	0.00	0.00	0.00
13,600.00	90.00	90.63	6,219.00	-1,316.00	-5,669.22	3,702.96	6,201.79	0.00	0.00	0.00
13,700.00	90.00	90.63	6,219.00	-1,316.00	-5,670.31	3,802.95	6,286.08	0.00	0.00	0.00
13,800.00	90.00	90.63	6,219.00	-1,316.00	-5,671.41	3,902.94	6,370.37	0.00	0.00	0.00
13,900.00	90.00	90.63	6,219.00	-1,316.00	-5,672.51	4,002.94	6,454.66	0.00	0.00	0.00
14,000.00	90.00	90.63	6,219.00	-1,316.00	-5,673.60	4,102.93	6,538.95	0.00	0.00	0.00
14,100.00	90.00	90.63	6,219.00	-1,316.00	-5,674.70	4,202.93	6,623.24	0.00	0.00	0.00
14,200.00	90.00	90.63	6,219.00	-1,316.00	-5,675.79	4,302.92	6,707.54	0.00	0.00	0.00
14,300.00	90.00	90.63	6,219.00	-1,316.00	-5,676.89	4,402.91	6,791.83	0.00	0.00	0.00
14,400.00	90.00	90.63	6,219.00	-1,316.00	-5,677.99	4,502.91	6,876.12	0.00	0.00	0.00
14,500.00	90.00	90.63	6,219.00	-1,316.00	-5,679.08	4,602.90	6,960.41	0.00	0.00	0.00
14,600.00	90.00	90.63	6,219.00	-1,316.00	-5,680.18	4,702.90	7,044.70	0.00	0.00	0.00
14,700.00	90.00	90.63	6,219.00	-1,316.00	-5,681.27	4,802.89	7,128.99	0.00	0.00	0.00
14,800.00	90.00	90.63	6,219.00	-1,316.00	-5,682.37	4,902.88	7,213.28	0.00	0.00	0.00
14,900.00	90.00	90.63	6,219.00	-1,316.00	-5,683.47	5,002.88	7,297.57	0.00	0.00	0.00
15,000.00	90.00	90.63	6,219.00	-1,316.00	-5,684.56	5,102.87	7,381.86	0.00	0.00	0.00
15,100.00	90.00	90.63	6,219.00	-1,316.00	-5,685.66	5,202.87	7,466.15	0.00	0.00	0.00
15,200.00	90.00	90.63	6,219.00	-1,316.00	-5,686.76	5,302.86	7,550.44	0.00	0.00	0.00
15,300.00	90.00	90.63	6,219.00	-1,316.00	-5,687.85	5,402.85	7,634.73	0.00	0.00	0.00
15,400.00	90.00	90.63	6,219.00	-1,316.00	-5,688.95	5,502.85	7,719.02	0.00	0.00	0.00
15,500.00	90.00	90.63	6,219.00	-1,316.00	-5,690.04	5,602.84	7,803.31	0.00	0.00	0.00
15,600.00	90.00	90.63	6,219.00	-1,316.00	-5,691.14	5,702.84	7,887.61	0.00	0.00	0.00
15,700.00	90.00	90.63	6,219.00	-1,316.00	-5,692.24	5,802.83	7,971.90	0.00	0.00	0.00
15,800.00	90.00	90.63	6,219.00	-1,316.00	-5,693.33	5,902.82	8,056.19	0.00	0.00	0.00
15,900.00	90.00	90.63	6,219.00	-1,316.00	-5,694.43	6,002.82	8,140.48	0.00	0.00	0.00
16,000.00	90.00	90.63	6,219.00	-1,316.00	-5,695.52	6,102.81	8,224.77	0.00	0.00	0.00
16,100.00	90.00	90.63	6,219.00	-1,316.00	-5,696.62	6,202.81	8,309.06	0.00	0.00	0.00
16,200.00	90.00	90.63	6,219.00	-1,316.00	-5,697.72	6,302.80	8,393.35	0.00	0.00	0.00
16,300.00	90.00	90.63	6,219.00	-1,316.00	-5,698.81	6,402.79	8,477.64	0.00	0.00	0.00
16,400.00	90.00	90.63	6,219.00	-1,316.00	-5,699.91	6,502.79	8,561.93	0.00	0.00	0.00
16,500.00	90.00	90.63	6,219.00	-1,316.00	-5,701.01	6,602.78	8,646.22	0.00	0.00	0.00
16,600.00	90.00	90.63	6,219.00	-1,316.00	-5,702.10	6,702.78	8,730.51	0.00	0.00	0.00
16,700.00	90.00	90.63	6,219.00	-1,316.00	-5,703.20	6,802.77	8,814.80	0.00	0.00	0.00
16,800.00	90.00	90.63	6,219.00	-1,316.00	-5,704.29	6,902.76	8,899.09	0.00	0.00	0.00
16,900.00	90.00	90.63	6,219.00	-1,316.00	-5,705.39	7,002.76	8,983.39	0.00	0.00	0.00
17,000.00	90.00	90.63	6,219.00	-1,316.00	-5,706.49	7,102.75	9,067.68	0.00	0.00	0.00
17,100.00	90.00	90.63	6,219.00	-1,316.00	-5,707.58	7,202.75	9,151.97	0.00	0.00	0.00
17,200.00	90.00	90.63	6,219.00	-1,316.00	-5,708.68	7,302.74	9,236.26	0.00	0.00	0.00

# Planning Report



<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well ANDERSON FED 6-5-10HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 25' @ 4903.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB 25' @ 4903.00usft
<b>Site:</b>	SE SW SEC. 31 T9N R59W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	ANDERSON FED 6-5-10HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #2		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,300.00	90.00	90.63	6,219.00	-1,316.00	-5,709.77	7,402.73	9,320.55	0.00	0.00	0.00
17,400.00	90.00	90.63	6,219.00	-1,316.00	-5,710.87	7,502.73	9,404.84	0.00	0.00	0.00
17,500.00	90.00	90.63	6,219.00	-1,316.00	-5,711.97	7,602.72	9,489.13	0.00	0.00	0.00
17,600.00	90.00	90.63	6,219.00	-1,316.00	-5,713.06	7,702.72	9,573.42	0.00	0.00	0.00
17,700.00	90.00	90.63	6,219.00	-1,316.00	-5,714.16	7,802.71	9,657.71	0.00	0.00	0.00
17,800.00	90.00	90.63	6,219.00	-1,316.00	-5,715.26	7,902.70	9,742.00	0.00	0.00	0.00
17,900.00	90.00	90.63	6,219.00	-1,316.00	-5,716.35	8,002.70	9,826.29	0.00	0.00	0.00
18,000.00	90.00	90.63	6,219.00	-1,316.00	-5,717.45	8,102.69	9,910.58	0.00	0.00	0.00
18,100.00	90.00	90.63	6,219.00	-1,316.00	-5,718.54	8,202.69	9,994.87	0.00	0.00	0.00
18,200.00	90.00	90.63	6,219.00	-1,316.00	-5,719.64	8,302.68	10,079.16	0.00	0.00	0.00
18,300.00	90.00	90.63	6,219.00	-1,316.00	-5,720.74	8,402.67	10,163.46	0.00	0.00	0.00
18,400.00	90.00	90.63	6,219.00	-1,316.00	-5,721.83	8,502.67	10,247.75	0.00	0.00	0.00
18,500.00	90.00	90.63	6,219.00	-1,316.00	-5,722.93	8,602.66	10,332.04	0.00	0.00	0.00
18,600.00	90.00	90.63	6,219.00	-1,316.00	-5,724.02	8,702.66	10,416.33	0.00	0.00	0.00
<b>BHL: 305ft FSL &amp; 300ft FEL of Sec 5</b>										
<b>18,652.23</b>	<b>90.00</b>	<b>90.63</b>	<b>6,219.00</b>	<b>-1,316.00</b>	<b>-5,724.60</b>	<b>8,754.88</b>	<b>10,460.35</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
467.26	465.00	Fox Hills Base				
1,645.12	1,482.00	Pierre Shale Top				
4,332.11	3,285.00	Richard Sandstone				
4,533.35	3,420.00	Parkman Sandstone				
5,557.46	4,107.00	Sussex Sandstone				
6,253.61	4,574.00	Shannon Sandstone				
7,399.95	5,343.00	TeePee Buttes				
8,309.23	5,954.00	Sharon Springs				
8,370.77	5,993.00	Niobrara Top				
8,420.26	6,023.00	Niobrara A Chalk				
8,461.69	6,047.00	Niobrara A Chalk Base				
8,531.92	6,085.00	Niobrara B1 Chalk Top				
8,569.96	6,104.00	Niobrara B1 Chalk Base				
8,631.21	6,132.00	Niobrara B2 Chalk Top				
8,696.47	6,158.00	Niobrara B2 Chalk Base				
8,783.66	6,186.00	Niobrara C Chalk Target Top				
9,020.55	6,219.00	Niobrara C Chalk Target Center				



# Planning Report



<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well ANDERSON FED 6-5-10HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 25' @ 4903.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB 25' @ 4903.00usft
<b>Site:</b>	SE SW SEC. 31 T9N R59W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	ANDERSON FED 6-5-10HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #2		

Plan Annotations				
Local Coordinates				
MD (usft)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Comment
0.00	0.00	0.00	0.00	SHL: 522ft FSL & 1909ft FWL of Sec 31
100.00	100.00	0.00	0.00	START NUDGE (3°/100ft BUR)
1,695.63	1,516.37	-605.36	-169.62	EOB TO 47.87° INC
8,009.71	5,752.04	-5,114.30	-1,432.99	KOP (10°/100ft DGLG)
9,020.55	6,219.00	-5,619.02	-876.22	LP *NEW*: 305ft FSL & 600ft FWL of Sec 6
18,652.23	6,219.00	-5,724.60	8,754.88	BHL: 305ft FSL & 300ft FEL of Sec 5