

# **MALLARD EXPLORATION**

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

**SW SW SEC. 35 T9N R60W 6TH P.M.**

**PINTAIL FED 2-6HC**

**ORIGINAL WELLBORE**

**12 October, 2017**

**Plan: PROPOSAL #2**





Project: WELD COUNTY, COLORADO (NAD 83)  
Site: SW SW SEC. 35 T9N R60W 6TH P.M.  
Well: PINTAIL FED 2-6HC  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL #2

ANNOTATIONS										
TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Dep	Annotation		
0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	SHL: 889ft FSL & 1204ft FWL of Sec 35		
1555.0	1555.0	0.00	0.00	0.0	0.0	0.0	0.0	SURFACE CASING		
1850.0	1850.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)		
2867.9	2890.7	20.81	131.41	-123.6	140.2	136.1	186.9	EOB TO 20.81° INC		
6032.5	6276.2	20.81	131.41	-919.3	1042.5	1011.7	1389.9	KOP (10°/100ft DGLG)		
6455.7	7042.5	90.00	180.83	-1478.4	1156.6	1579.0	1971.1	HZ LP: 600ft FNL & 1900ft FWL of Sec 2		
6455.7	16538.7	90.00	180.83	-10973.6	1018.9	11020.8	11467.2	BHL: 600ft FSL & 1920ft FWL of Sec 11		

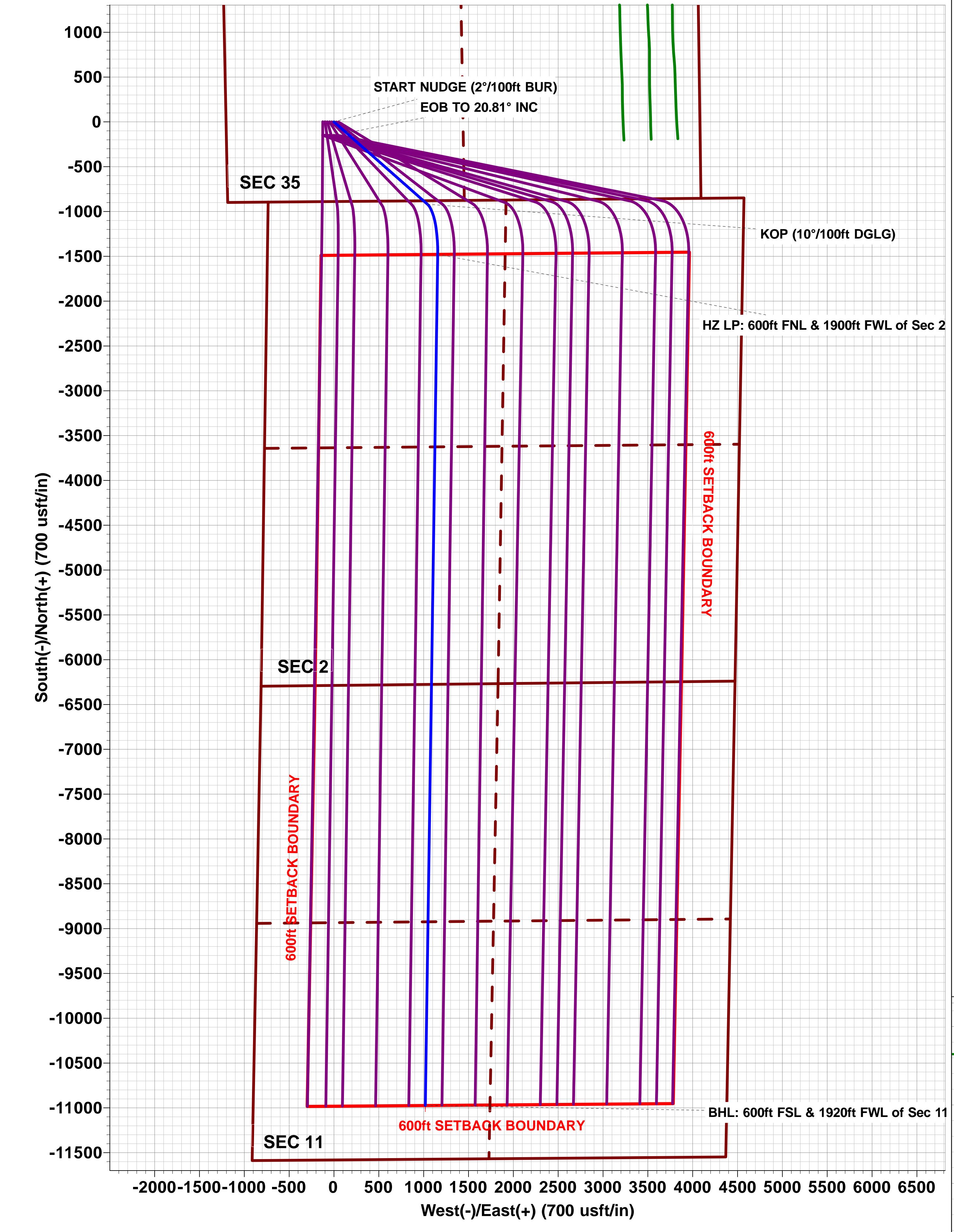
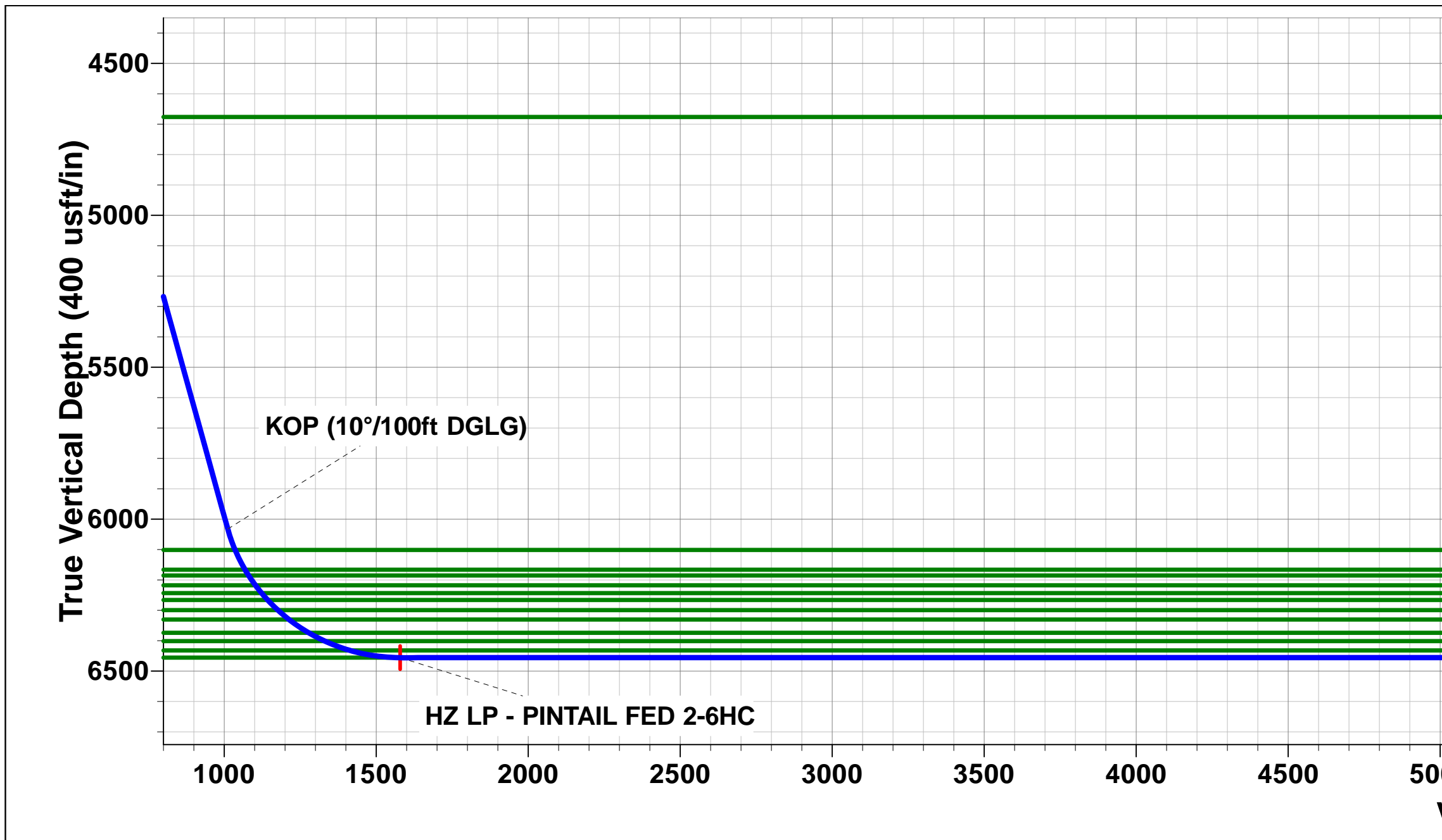
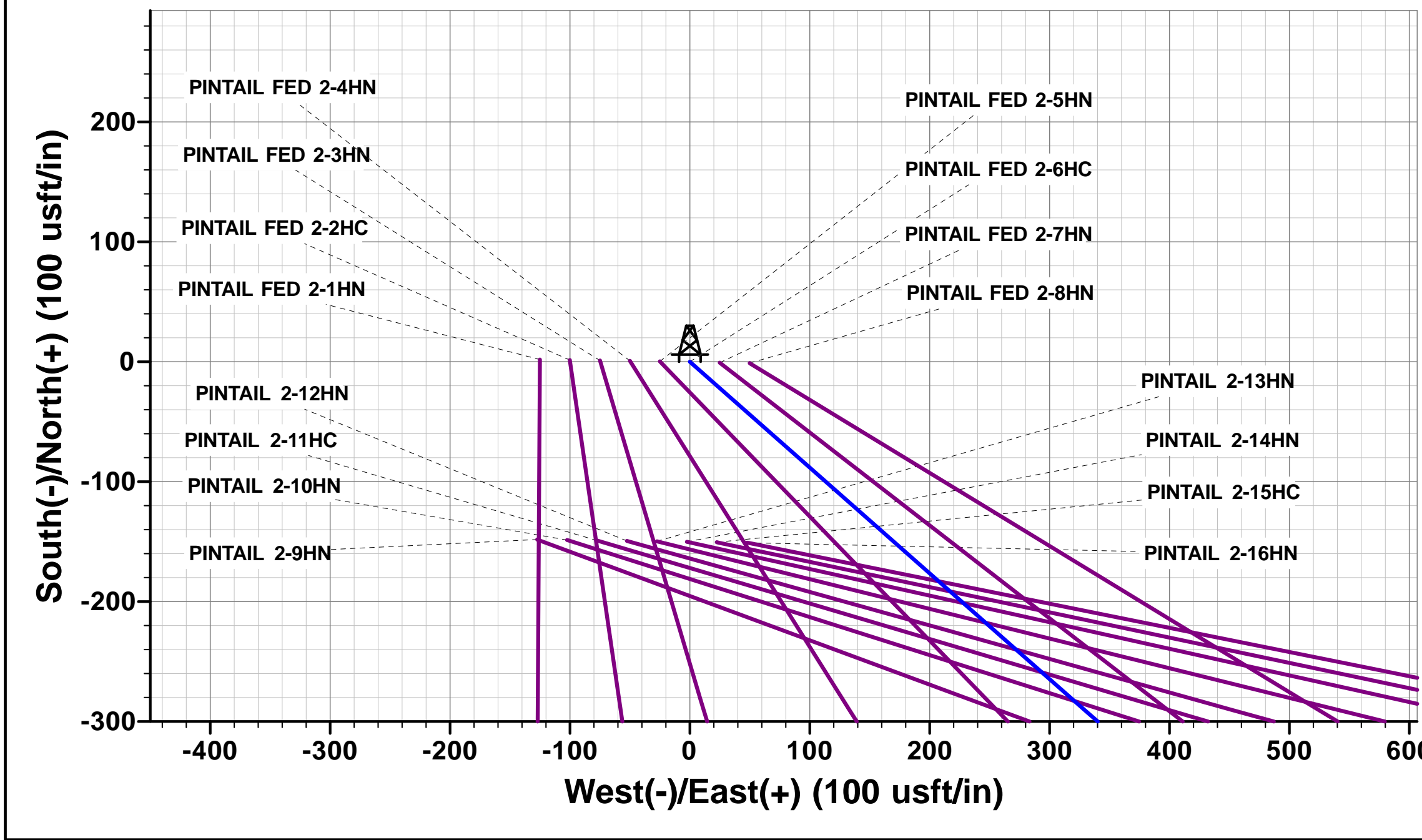
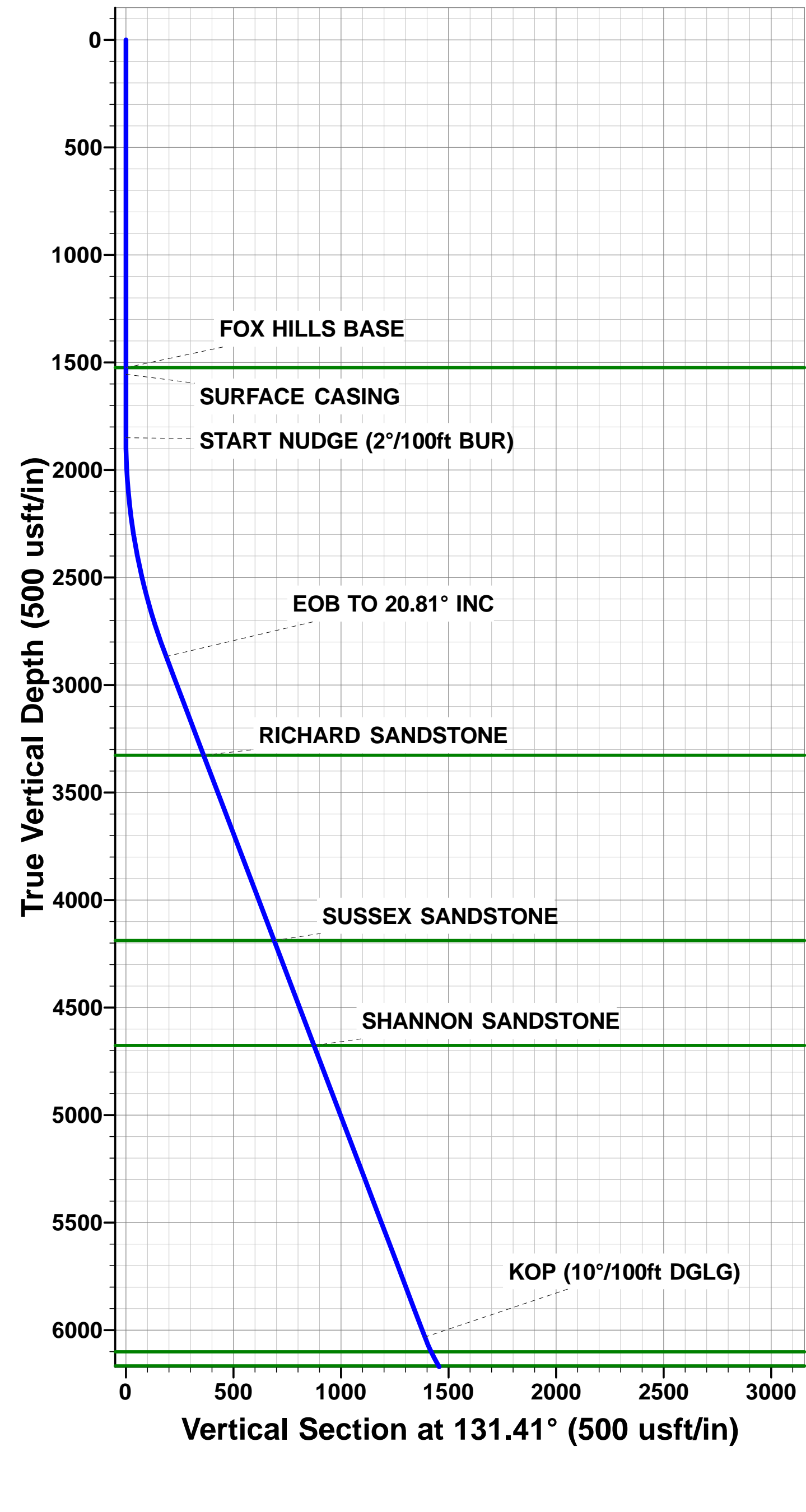
PROPOSED LOCAL COORDINATES:

SHL: 889ft FSL & 1204ft FWL Sec 35

HZ LP: 600ft FNL & 1900ft FWL Sec 2

BHL: 600ft FSL & 1920ft FWL of Sec 11

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
HZ LP - PINTAIL FED 2-6HC	6455.7	-1478.4	1156.6	40.697483	-104.059881
BHL - PINTAIL FED 2-6HC (P2)	6455.7	-10973.6	1018.9	40.671421	-104.060379



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well PINTAIL FED 2-6HC
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4940.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4940.0usft (Original Well Elev)
<b>Site:</b>	SW SW SEC. 35 T9N R60W 6TH P.M.	<b>North Reference:</b>	True
<b>Well:</b>	PINTAIL FED 2-6HC	<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>	SW SW SEC. 35 T9N R60W 6TH P.M.		
<b>Site Position:</b>		<b>Northing:</b>	1,501,638.38 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,398,005.01 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	1.10000ft
		<b>Latitude:</b>	40.701546
		<b>Longitude:</b>	-104.064503
		<b>Grid Convergence:</b>	0.93 °

<b>Well</b>	PINTAIL FED 2-6HC		
<b>Well Position</b>	<b>+N-S</b>	-1.8 usft	<b>Northing:</b>
	<b>+E-W</b>	125.1 usft	<b>Easting:</b>
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>
			<b>Latitude:</b>
			<b>Longitude:</b>
			<b>Ground Level:</b>

<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	26/08/2017	7.83	67.20	52,597

<b>Design</b>	PROPOSAL #2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N-S (usft)</b>	<b>+E-W (usft)</b>	<b>Direction (°)</b>
	6,455.7	0.0	0.0	174.70

<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
0.0	0.00	0.00	0.0	-4,940.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,850.0	0.00	0.00	1,850.0	-3,090.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,890.7	20.81	131.41	2,867.9	-2,072.1	-123.6	140.2	2.00	2.00	0.00	131.41	
6,276.2	20.81	131.41	6,032.5	1,092.5	-919.3	1,042.5	0.00	0.00	0.00	0.00	
7,042.5	90.00	180.83	6,455.7	1,515.7	-1,478.4	1,156.6	10.00	9.03	6.45	51.32	HZ LP - PINTAIL FI
16,538.7	90.00	180.83	6,455.7	1,515.7	-10,973.6	1,018.9	0.00	0.00	0.00	0.00	BHL - PINTAIL FEC

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well PINTAIL FED 2-6HC
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4940.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4940.0usft (Original Well Elev)
<b>Site:</b>	SW SW SEC. 35 T9N R60W 6TH P.M.	<b>North Reference:</b>	True
<b>Well:</b>	PINTAIL FED 2-6HC	<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: 889ft FSL &amp; 1204ft FWL of Sec 35</b>										
0.0	0.00	0.00	0.0	4,940.00	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	4,840.00	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	4,740.00	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	4,640.00	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	4,540.00	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	4,440.00	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	4,340.00	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	4,240.00	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	4,140.00	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	4,040.00	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	3,940.00	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	3,840.00	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	3,740.00	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	3,640.00	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	3,540.00	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	3,440.00	0.0	0.0	0.0	0.00	0.00	0.00
<b>FOX HILLS BASE</b>										
1,524.7	0.00	0.00	1,524.7	3,415.25	0.0	0.0	0.0	0.00	0.00	0.00
<b>SURFACE CASING</b>										
1,555.0	0.00	0.00	1,555.0	3,385.00	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	3,340.00	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	3,240.00	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	3,140.00	0.0	0.0	0.0	0.00	0.00	0.00
<b>START NUDGE (2°/100ft BUR)</b>										
1,850.0	0.00	0.00	1,850.0	3,090.00	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	1.00	131.41	1,900.0	3,040.00	-0.3	0.3	0.3	2.00	2.00	0.00
2,000.0	3.00	131.41	1,999.9	2,940.07	-2.6	2.9	2.9	2.00	2.00	0.00
2,100.0	5.00	131.41	2,099.7	2,840.32	-7.2	8.2	7.9	2.00	2.00	0.00
2,200.0	7.00	131.41	2,199.1	2,740.87	-14.1	16.0	15.5	2.00	2.00	0.00
2,300.0	9.00	131.41	2,298.2	2,641.85	-23.3	26.5	25.7	2.00	2.00	0.00
2,400.0	11.00	131.41	2,396.6	2,543.37	-34.8	39.5	38.3	2.00	2.00	0.00
2,500.0	13.00	131.41	2,494.4	2,445.56	-48.6	55.1	53.4	2.00	2.00	0.00
2,600.0	15.00	131.41	2,591.5	2,348.54	-64.6	73.2	71.1	2.00	2.00	0.00
2,700.0	17.00	131.41	2,687.6	2,252.42	-82.8	93.9	91.1	2.00	2.00	0.00
2,800.0	19.00	131.41	2,782.7	2,157.32	-103.2	117.1	113.6	2.00	2.00	0.00
<b>EOB TO 20.81° INC</b>										
2,890.7	20.81	131.41	2,867.9	2,072.08	-123.6	140.2	136.1	2.00	2.00	0.00
2,900.0	20.81	131.41	2,876.7	2,063.35	-125.8	142.7	138.5	0.00	0.00	0.00
3,000.0	20.81	131.41	2,970.1	1,969.87	-149.3	169.4	164.4	0.00	0.00	0.00
3,100.0	20.81	131.41	3,063.6	1,876.40	-172.8	196.0	190.2	0.00	0.00	0.00
3,200.0	20.81	131.41	3,157.1	1,782.92	-196.3	222.7	216.1	0.00	0.00	0.00
3,300.0	20.81	131.41	3,250.6	1,689.45	-219.8	249.3	241.9	0.00	0.00	0.00
<b>RICHARD SANDSTONE</b>										
3,382.1	20.81	131.41	3,327.2	1,612.75	-239.1	271.2	263.2	0.00	0.00	0.00
3,400.0	20.81	131.41	3,344.0	1,595.97	-243.3	276.0	267.8	0.00	0.00	0.00
3,500.0	20.81	131.41	3,437.5	1,502.50	-266.8	302.6	293.7	0.00	0.00	0.00
3,600.0	20.81	131.41	3,531.0	1,409.03	-290.3	329.3	319.5	0.00	0.00	0.00
3,700.0	20.81	131.41	3,624.4	1,315.55	-313.8	355.9	345.4	0.00	0.00	0.00
3,800.0	20.81	131.41	3,717.9	1,222.08	-337.3	382.6	371.3	0.00	0.00	0.00
3,900.0	20.81	131.41	3,811.4	1,128.60	-360.8	409.2	397.1	0.00	0.00	0.00
4,000.0	20.81	131.41	3,904.9	1,035.13	-384.3	435.9	423.0	0.00	0.00	0.00
4,100.0	20.81	131.41	3,998.3	941.65	-407.8	462.5	448.9	0.00	0.00	0.00



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well PINTAIL FED 2-6HC
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4940.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4940.0usft (Original Well Elev)
<b>Site:</b>	SW SW SEC. 35 T9N R60W 6TH P.M.	<b>North Reference:</b>	True
<b>Well:</b>	PINTAIL FED 2-6HC	<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)
4,200.0	20.81	131.41	4,091.8	848.18	-431.3	489.2	474.7	0.00	0.00	0.00
4,300.0	20.81	131.41	4,185.3	754.70	-454.8	515.8	500.6	0.00	0.00	0.00
<b>SUSSEX SANDSTONE</b>										
<b>4,303.7</b>	<b>20.81</b>	<b>131.41</b>	<b>4,188.7</b>	<b>751.25</b>	<b>-455.7</b>	<b>516.8</b>	<b>501.5</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
4,400.0	20.81	131.41	4,278.8	661.23	-478.3	542.5	526.4	0.00	0.00	0.00
4,500.0	20.81	131.41	4,372.2	567.76	-501.8	569.1	552.3	0.00	0.00	0.00
4,600.0	20.81	131.41	4,465.7	474.28	-525.3	595.8	578.2	0.00	0.00	0.00
4,700.0	20.81	131.41	4,559.2	380.81	-548.8	622.4	604.0	0.00	0.00	0.00
4,800.0	20.81	131.41	4,652.7	287.33	-572.3	649.1	629.9	0.00	0.00	0.00
<b>SHANNON SANDSTONE</b>										
<b>4,825.8</b>	<b>20.81</b>	<b>131.41</b>	<b>4,676.7</b>	<b>263.25</b>	<b>-578.4</b>	<b>655.9</b>	<b>636.6</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
4,900.0	20.81	131.41	4,746.1	193.86	-595.8	675.7	655.8	0.00	0.00	0.00
5,000.0	20.81	131.41	4,839.6	100.38	-619.3	702.4	681.6	0.00	0.00	0.00
5,100.0	20.81	131.41	4,933.1	6.91	-642.9	729.0	707.5	0.00	0.00	0.00
5,200.0	20.81	131.41	5,026.6	-86.57	-666.4	755.7	733.4	0.00	0.00	0.00
5,300.0	20.81	131.41	5,120.0	-180.04	-689.9	782.3	759.2	0.00	0.00	0.00
5,400.0	20.81	131.41	5,213.5	-273.51	-713.4	809.0	785.1	0.00	0.00	0.00
5,500.0	20.81	131.41	5,307.0	-366.99	-736.9	835.6	811.0	0.00	0.00	0.00
5,600.0	20.81	131.41	5,400.5	-460.46	-760.4	862.3	836.8	0.00	0.00	0.00
5,700.0	20.81	131.41	5,493.9	-553.94	-783.9	888.9	862.7	0.00	0.00	0.00
5,800.0	20.81	131.41	5,587.4	-647.41	-807.4	915.6	888.5	0.00	0.00	0.00
5,900.0	20.81	131.41	5,680.9	-740.89	-830.9	942.2	914.4	0.00	0.00	0.00
6,000.0	20.81	131.41	5,774.4	-834.36	-854.4	968.9	940.3	0.00	0.00	0.00
6,100.0	20.81	131.41	5,867.8	-927.84	-877.9	995.5	966.1	0.00	0.00	0.00
6,200.0	20.81	131.41	5,961.3	-1,021.31	-901.4	1,022.2	992.0	0.00	0.00	0.00
<b>KOP (10°/100ft DGLG)</b>										
<b>6,276.2</b>	<b>20.81</b>	<b>131.41</b>	<b>6,032.5</b>	<b>-1,092.50</b>	<b>-919.3</b>	<b>1,042.5</b>	<b>1,011.7</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
6,300.0	22.38	136.30	6,054.7	-1,114.67	-925.3	1,048.8	1,018.3	10.00	6.56	20.53
<b>SHARON SPRINGS</b>										
<b>6,351.1</b>	<b>26.13</b>	<b>144.77</b>	<b>6,101.2</b>	<b>-1,161.25</b>	<b>-941.6</b>	<b>1,062.0</b>	<b>1,035.7</b>	<b>10.00</b>	<b>7.34</b>	<b>16.58</b>
6,400.0	30.07	150.92	6,144.4	-1,204.40	-961.1	1,074.2	1,056.3	10.00	8.07	12.58
<b>NIOBRARA A CHALK</b>										
<b>6,426.1</b>	<b>32.28</b>	<b>153.63</b>	<b>6,166.7</b>	<b>-1,226.75</b>	<b>-973.1</b>	<b>1,080.5</b>	<b>1,068.8</b>	<b>10.00</b>	<b>8.44</b>	<b>10.37</b>
<b>NIOBRARA A CHALK BASE</b>										
<b>6,448.2</b>	<b>34.19</b>	<b>155.68</b>	<b>6,185.2</b>	<b>-1,245.25</b>	<b>-984.0</b>	<b>1,085.6</b>	<b>1,080.2</b>	<b>10.00</b>	<b>8.62</b>	<b>9.24</b>
<b>NIOBRARA B1 CHALK TOP</b>										
<b>6,488.4</b>	<b>37.72</b>	<b>158.91</b>	<b>6,217.7</b>	<b>-1,277.75</b>	<b>-1,005.8</b>	<b>1,094.7</b>	<b>1,102.7</b>	<b>10.00</b>	<b>8.81</b>	<b>8.07</b>
6,500.0	38.76	159.76	6,226.9	-1,286.87	-1,012.5	1,097.2	1,109.6	10.00	8.94	7.24
<b>NIOBRARA B1 CHALK BASE</b>										
<b>6,521.3</b>	<b>40.68</b>	<b>161.20</b>	<b>6,243.2</b>	<b>-1,303.25</b>	<b>-1,025.3</b>	<b>1,101.8</b>	<b>1,122.8</b>	<b>10.00</b>	<b>9.01</b>	<b>6.80</b>
<b>NIOBRARA B2 CHALK TOP</b>										
<b>6,552.3</b>	<b>43.50</b>	<b>163.12</b>	<b>6,266.2</b>	<b>-1,326.25</b>	<b>-1,045.1</b>	<b>1,108.1</b>	<b>1,143.1</b>	<b>10.00</b>	<b>9.10</b>	<b>6.18</b>
<b>NIOBRARA B2 CHALK BASE</b>										
<b>6,599.5</b>	<b>47.86</b>	<b>165.68</b>	<b>6,299.2</b>	<b>-1,359.25</b>	<b>-1,077.6</b>	<b>1,117.2</b>	<b>1,176.3</b>	<b>10.00</b>	<b>9.22</b>	<b>5.43</b>
6,600.0	47.90	165.71	6,299.6	-1,359.56	-1,078.0	1,117.3	1,176.7	10.00	9.27	5.04
<b>NIOBRARA C CHALK TOP</b>										
<b>6,648.7</b>	<b>52.44</b>	<b>168.00</b>	<b>6,330.7</b>	<b>-1,390.75</b>	<b>-1,114.4</b>	<b>1,125.8</b>	<b>1,213.7</b>	<b>10.00</b>	<b>9.32</b>	<b>4.71</b>
6,700.0	57.26	170.13	6,360.3	-1,420.27	-1,155.6	1,133.7	1,255.4	10.00	9.41	4.16
<b>NIOBRARA C CHALK BASE</b>										
<b>6,726.8</b>	<b>59.80</b>	<b>171.16</b>	<b>6,374.2</b>	<b>-1,434.25</b>	<b>-1,178.1</b>	<b>1,137.4</b>	<b>1,278.2</b>	<b>10.00</b>	<b>9.46</b>	<b>3.81</b>
<b>NIOBRARA D CHALK TOP</b>										
<b>6,785.4</b>	<b>65.37</b>	<b>173.22</b>	<b>6,401.2</b>	<b>-1,461.25</b>	<b>-1,229.6</b>	<b>1,144.5</b>	<b>1,330.2</b>	<b>10.00</b>	<b>9.50</b>	<b>3.53</b>

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well PINTAIL FED 2-6HC
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4940.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4940.0usft (Original Well Elev)
<b>Site:</b>	SW SW SEC. 35 T9N R60W 6TH P.M.	<b>North Reference:</b>	True
<b>Well:</b>	PINTAIL FED 2-6HC	<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)
6,800.0	66.76	173.71	6,407.2	-1,467.16	-1,242.9	1,146.0	1,343.5	10.00	9.53	3.32
<b>FT. HAYS</b>										
<b>6,874.5</b>	<b>73.88</b>	<b>176.04</b>	<b>6,432.2</b>	<b>-1,492.25</b>	<b>-1,312.7</b>	<b>1,152.2</b>	<b>1,413.6</b>	<b>10.00</b>	<b>9.56</b>	<b>3.13</b>
6,900.0	76.32	176.80	6,438.8	-1,498.80	-1,337.3	1,153.7	1,438.2	10.00	9.58	2.97
7,000.0	85.91	179.65	6,454.2	-1,514.23	-1,435.9	1,156.8	1,536.7	10.00	9.60	2.85
<b>HZ LP: 600ft FNL &amp; 1900ft FWL of Sec 2 - CODELL</b>										
<b>7,042.5</b>	<b>90.00</b>	<b>180.83</b>	<b>6,455.7</b>	<b>-1,515.75</b>	<b>-1,478.4</b>	<b>1,156.6</b>	<b>1,579.0</b>	<b>10.00</b>	<b>9.61</b>	<b>2.78</b>
7,100.0	90.00	180.83	6,455.7	-1,515.75	-1,535.9	1,155.7	1,636.1	0.00	0.00	0.00
7,200.0	90.00	180.83	6,455.7	-1,515.75	-1,635.9	1,154.3	1,735.6	0.00	0.00	0.00
7,300.0	90.00	180.83	6,455.7	-1,515.75	-1,735.9	1,152.8	1,835.0	0.00	0.00	0.00
7,400.0	90.00	180.83	6,455.7	-1,515.75	-1,835.8	1,151.4	1,934.4	0.00	0.00	0.00
7,500.0	90.00	180.83	6,455.7	-1,515.75	-1,935.8	1,149.9	2,033.9	0.00	0.00	0.00
7,600.0	90.00	180.83	6,455.7	-1,515.75	-2,035.8	1,148.5	2,133.3	0.00	0.00	0.00
7,700.0	90.00	180.83	6,455.7	-1,515.75	-2,135.8	1,147.0	2,232.7	0.00	0.00	0.00
7,800.0	90.00	180.83	6,455.7	-1,515.75	-2,235.8	1,145.6	2,332.1	0.00	0.00	0.00
7,900.0	90.00	180.83	6,455.7	-1,515.75	-2,335.8	1,144.1	2,431.6	0.00	0.00	0.00
8,000.0	90.00	180.83	6,455.7	-1,515.74	-2,435.8	1,142.7	2,531.0	0.00	0.00	0.00
8,100.0	90.00	180.83	6,455.7	-1,515.74	-2,535.8	1,141.2	2,630.4	0.00	0.00	0.00
8,200.0	90.00	180.83	6,455.7	-1,515.74	-2,635.8	1,139.8	2,729.8	0.00	0.00	0.00
8,300.0	90.00	180.83	6,455.7	-1,515.74	-2,735.7	1,138.3	2,829.3	0.00	0.00	0.00
8,400.0	90.00	180.83	6,455.7	-1,515.74	-2,835.7	1,136.9	2,928.7	0.00	0.00	0.00
8,500.0	90.00	180.83	6,455.7	-1,515.74	-2,935.7	1,135.4	3,028.1	0.00	0.00	0.00
8,600.0	90.00	180.83	6,455.7	-1,515.74	-3,035.7	1,134.0	3,127.6	0.00	0.00	0.00
8,700.0	90.00	180.83	6,455.7	-1,515.74	-3,135.7	1,132.5	3,227.0	0.00	0.00	0.00
8,800.0	90.00	180.83	6,455.7	-1,515.74	-3,235.7	1,131.1	3,326.4	0.00	0.00	0.00
8,900.0	90.00	180.83	6,455.7	-1,515.74	-3,335.7	1,129.6	3,425.8	0.00	0.00	0.00
9,000.0	90.00	180.83	6,455.7	-1,515.74	-3,435.7	1,128.2	3,525.3	0.00	0.00	0.00
9,100.0	90.00	180.83	6,455.7	-1,515.74	-3,535.7	1,126.7	3,624.7	0.00	0.00	0.00
9,200.0	90.00	180.83	6,455.7	-1,515.74	-3,635.7	1,125.3	3,724.1	0.00	0.00	0.00
9,300.0	90.00	180.83	6,455.7	-1,515.74	-3,735.6	1,123.8	3,823.5	0.00	0.00	0.00
9,400.0	90.00	180.83	6,455.7	-1,515.74	-3,835.6	1,122.4	3,923.0	0.00	0.00	0.00
9,500.0	90.00	180.83	6,455.7	-1,515.74	-3,935.6	1,120.9	4,022.4	0.00	0.00	0.00
9,600.0	90.00	180.83	6,455.7	-1,515.74	-4,035.6	1,119.5	4,121.8	0.00	0.00	0.00
9,700.0	90.00	180.83	6,455.7	-1,515.74	-4,135.6	1,118.0	4,221.3	0.00	0.00	0.00
9,800.0	90.00	180.83	6,455.7	-1,515.74	-4,235.6	1,116.6	4,320.7	0.00	0.00	0.00
9,900.0	90.00	180.83	6,455.7	-1,515.73	-4,335.6	1,115.1	4,420.1	0.00	0.00	0.00
10,000.0	90.00	180.83	6,455.7	-1,515.73	-4,435.6	1,113.7	4,519.5	0.00	0.00	0.00
10,100.0	90.00	180.83	6,455.7	-1,515.73	-4,535.6	1,112.2	4,619.0	0.00	0.00	0.00
10,200.0	90.00	180.83	6,455.7	-1,515.73	-4,635.5	1,110.8	4,718.4	0.00	0.00	0.00
10,300.0	90.00	180.83	6,455.7	-1,515.73	-4,735.5	1,109.3	4,817.8	0.00	0.00	0.00
10,400.0	90.00	180.83	6,455.7	-1,515.73	-4,835.5	1,107.9	4,917.2	0.00	0.00	0.00
10,500.0	90.00	180.83	6,455.7	-1,515.73	-4,935.5	1,106.4	5,016.7	0.00	0.00	0.00
10,600.0	90.00	180.83	6,455.7	-1,515.73	-5,035.5	1,105.0	5,116.1	0.00	0.00	0.00
10,700.0	90.00	180.83	6,455.7	-1,515.73	-5,135.5	1,103.5	5,215.5	0.00	0.00	0.00
10,800.0	90.00	180.83	6,455.7	-1,515.73	-5,235.5	1,102.1	5,315.0	0.00	0.00	0.00
10,900.0	90.00	180.83	6,455.7	-1,515.73	-5,335.5	1,100.6	5,414.4	0.00	0.00	0.00
11,000.0	90.00	180.83	6,455.7	-1,515.73	-5,435.5	1,099.2	5,513.8	0.00	0.00	0.00
11,100.0	90.00	180.83	6,455.7	-1,515.73	-5,535.5	1,097.7	5,613.2	0.00	0.00	0.00
11,200.0	90.00	180.83	6,455.7	-1,515.73	-5,635.4	1,096.3	5,712.7	0.00	0.00	0.00
11,300.0	90.00	180.83	6,455.7	-1,515.73	-5,735.4	1,094.8	5,812.1	0.00	0.00	0.00
11,400.0	90.00	180.83	6,455.7	-1,515.73	-5,835.4	1,093.4	5,911.5	0.00	0.00	0.00
11,500.0	90.00	180.83	6,455.7	-1,515.73	-5,935.4	1,091.9	6,010.9	0.00	0.00	0.00
11,600.0	90.00	180.83	6,455.7	-1,515.73	-6,035.4	1,090.5	6,110.4	0.00	0.00	0.00
11,700.0	90.00	180.83	6,455.7	-1,515.73	-6,135.4	1,089.0	6,209.8	0.00	0.00	0.00

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well PINTAIL FED 2-6HC
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4940.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4940.0usft (Original Well Elev)
<b>Site:</b>	SW SW SEC. 35 T9N R60W 6TH P.M.	<b>North Reference:</b>	True
<b>Well:</b>	PINTAIL FED 2-6HC	<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)
11,800.0	90.00	180.83	6,455.7	-1,515.72	-6,235.4	1,087.6	6,309.2	0.00	0.00	0.00
11,900.0	90.00	180.83	6,455.7	-1,515.72	-6,335.4	1,086.1	6,408.7	0.00	0.00	0.00
12,000.0	90.00	180.83	6,455.7	-1,515.72	-6,435.4	1,084.7	6,508.1	0.00	0.00	0.00
12,100.0	90.00	180.83	6,455.7	-1,515.72	-6,535.3	1,083.2	6,607.5	0.00	0.00	0.00
12,200.0	90.00	180.83	6,455.7	-1,515.72	-6,635.3	1,081.8	6,706.9	0.00	0.00	0.00
12,300.0	90.00	180.83	6,455.7	-1,515.72	-6,735.3	1,080.3	6,806.4	0.00	0.00	0.00
12,400.0	90.00	180.83	6,455.7	-1,515.72	-6,835.3	1,078.9	6,905.8	0.00	0.00	0.00
12,500.0	90.00	180.83	6,455.7	-1,515.72	-6,935.3	1,077.4	7,005.2	0.00	0.00	0.00
12,600.0	90.00	180.83	6,455.7	-1,515.72	-7,035.3	1,076.0	7,104.6	0.00	0.00	0.00
12,700.0	90.00	180.83	6,455.7	-1,515.72	-7,135.3	1,074.5	7,204.1	0.00	0.00	0.00
12,800.0	90.00	180.83	6,455.7	-1,515.72	-7,235.3	1,073.1	7,303.5	0.00	0.00	0.00
12,900.0	90.00	180.83	6,455.7	-1,515.72	-7,335.3	1,071.6	7,402.9	0.00	0.00	0.00
13,000.0	90.00	180.83	6,455.7	-1,515.72	-7,435.3	1,070.2	7,502.4	0.00	0.00	0.00
13,100.0	90.00	180.83	6,455.7	-1,515.72	-7,535.2	1,068.7	7,601.8	0.00	0.00	0.00
13,200.0	90.00	180.83	6,455.7	-1,515.72	-7,635.2	1,067.3	7,701.2	0.00	0.00	0.00
13,300.0	90.00	180.83	6,455.7	-1,515.72	-7,735.2	1,065.8	7,800.6	0.00	0.00	0.00
13,400.0	90.00	180.83	6,455.7	-1,515.72	-7,835.2	1,064.4	7,900.1	0.00	0.00	0.00
13,500.0	90.00	180.83	6,455.7	-1,515.72	-7,935.2	1,062.9	7,999.5	0.00	0.00	0.00
13,600.0	90.00	180.83	6,455.7	-1,515.72	-8,035.2	1,061.5	8,098.9	0.00	0.00	0.00
13,700.0	90.00	180.83	6,455.7	-1,515.71	-8,135.2	1,060.0	8,198.3	0.00	0.00	0.00
13,800.0	90.00	180.83	6,455.7	-1,515.71	-8,235.2	1,058.6	8,297.8	0.00	0.00	0.00
13,900.0	90.00	180.83	6,455.7	-1,515.71	-8,335.2	1,057.1	8,397.2	0.00	0.00	0.00
14,000.0	90.00	180.83	6,455.7	-1,515.71	-8,435.1	1,055.7	8,496.6	0.00	0.00	0.00
14,100.0	90.00	180.83	6,455.7	-1,515.71	-8,535.1	1,054.2	8,596.1	0.00	0.00	0.00
14,200.0	90.00	180.83	6,455.7	-1,515.71	-8,635.1	1,052.8	8,695.5	0.00	0.00	0.00
14,300.0	90.00	180.83	6,455.7	-1,515.71	-8,735.1	1,051.3	8,794.9	0.00	0.00	0.00
14,400.0	90.00	180.83	6,455.7	-1,515.71	-8,835.1	1,049.9	8,894.3	0.00	0.00	0.00
14,500.0	90.00	180.83	6,455.7	-1,515.71	-8,935.1	1,048.4	8,993.8	0.00	0.00	0.00
14,600.0	90.00	180.83	6,455.7	-1,515.71	-9,035.1	1,047.0	9,093.2	0.00	0.00	0.00
14,700.0	90.00	180.83	6,455.7	-1,515.71	-9,135.1	1,045.5	9,192.6	0.00	0.00	0.00
14,800.0	90.00	180.83	6,455.7	-1,515.71	-9,235.1	1,044.1	9,292.0	0.00	0.00	0.00
14,900.0	90.00	180.83	6,455.7	-1,515.71	-9,335.1	1,042.6	9,391.5	0.00	0.00	0.00
15,000.0	90.00	180.83	6,455.7	-1,515.71	-9,435.0	1,041.2	9,490.9	0.00	0.00	0.00
15,100.0	90.00	180.83	6,455.7	-1,515.71	-9,535.0	1,039.7	9,590.3	0.00	0.00	0.00
15,200.0	90.00	180.83	6,455.7	-1,515.71	-9,635.0	1,038.3	9,689.8	0.00	0.00	0.00
15,300.0	90.00	180.83	6,455.7	-1,515.71	-9,735.0	1,036.8	9,789.2	0.00	0.00	0.00
15,400.0	90.00	180.83	6,455.7	-1,515.71	-9,835.0	1,035.4	9,888.6	0.00	0.00	0.00
15,500.0	90.00	180.83	6,455.7	-1,515.71	-9,935.0	1,033.9	9,988.0	0.00	0.00	0.00
15,600.0	90.00	180.83	6,455.7	-1,515.70	-10,035.0	1,032.5	10,087.5	0.00	0.00	0.00
15,700.0	90.00	180.83	6,455.7	-1,515.70	-10,135.0	1,031.0	10,186.9	0.00	0.00	0.00
15,800.0	90.00	180.83	6,455.7	-1,515.70	-10,235.0	1,029.6	10,286.3	0.00	0.00	0.00
15,900.0	90.00	180.83	6,455.7	-1,515.70	-10,334.9	1,028.1	10,385.7	0.00	0.00	0.00
16,000.0	90.00	180.83	6,455.7	-1,515.70	-10,434.9	1,026.7	10,485.2	0.00	0.00	0.00
16,100.0	90.00	180.83	6,455.7	-1,515.70	-10,534.9	1,025.2	10,584.6	0.00	0.00	0.00
16,200.0	90.00	180.83	6,455.7	-1,515.70	-10,634.9	1,023.8	10,684.0	0.00	0.00	0.00
16,300.0	90.00	180.83	6,455.7	-1,515.70	-10,734.9	1,022.3	10,783.4	0.00	0.00	0.00
16,400.0	90.00	180.83	6,455.7	-1,515.70	-10,834.9	1,020.9	10,882.9	0.00	0.00	0.00
16,500.0	90.00	180.83	6,455.7	-1,515.70	-10,934.9	1,019.4	10,982.3	0.00	0.00	0.00
<b>BHL: 600ft FSL &amp; 1920ft FWL of Sec 11</b>										
<b>16,538.7</b>	<b>90.00</b>	<b>180.83</b>	<b>6,455.7</b>	<b>-1,515.70</b>	<b>-10,973.6</b>	<b>1,018.9</b>	<b>11,020.8</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well PINTAIL FED 2-6HC
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4940.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4940.0usft (Original Well Elev)
<b>Site:</b>	SW SW SEC. 35 T9N R60W 6TH P.M.	<b>North Reference:</b>	True
<b>Well:</b>	PINTAIL FED 2-6HC	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #2		

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,524.7	1,524.7	FOX HILLS BASE				
3,382.1	3,327.2	RICHARD SANDSTONE				
4,303.7	4,188.7	SUSSEX SANDSTONE				
4,825.8	4,676.7	SHANNON SANDSTONE				
6,351.1	6,101.2	SHARON SPRINGS				
6,426.1	6,166.7	NIOBRARA A CHALK				
6,448.2	6,185.2	NIOBRARA A CHALK BASE				
6,488.4	6,217.7	NIOBRARA B1 CHALK TOP				
6,521.3	6,243.2	NIOBRARA B1 CHALK BASE				
6,552.3	6,266.2	NIOBRARA B2 CHALK TOP				
6,599.5	6,299.2	NIOBRARA B2 CHALK BASE				
6,648.7	6,330.7	NIOBRARA C CHALK TOP				
6,726.8	6,374.2	NIOBRARA C CHALK BASE				
6,785.4	6,401.2	NIOBRARA D CHALK TOP				
6,874.5	6,432.2	FT. HAYS				
7,042.5	6,455.7	CODELL				

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.0	0.0	0.0	0.0	SHL: 889ft FSL & 1204ft FWL of Sec 35
1,555.0	1,555.0	0.0	0.0	SURFACE CASING
1,850.0	1,850.0	0.0	0.0	START NUDGE (2°/100ft BUR)
2,890.7	2,867.9	-123.6	140.2	EOB TO 20.81° INC
6,276.2	6,032.5	-919.3	1,042.5	KOP (10°/100ft DGLG)
7,042.5	6,455.7	-1,478.4	1,156.6	HZ LP: 600ft FNL & 1900ft FWL of Sec 2
16,538.7	6,455.7	-10,973.6	1,018.9	BHL: 600ft FSL & 1920ft FWL of Sec 11