

# **MALLARD EXPLORATION**

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

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

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

**ORIGINAL WELLBORE**

**25 July, 2019**

**Plan: PROPOSAL #3**





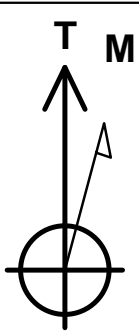
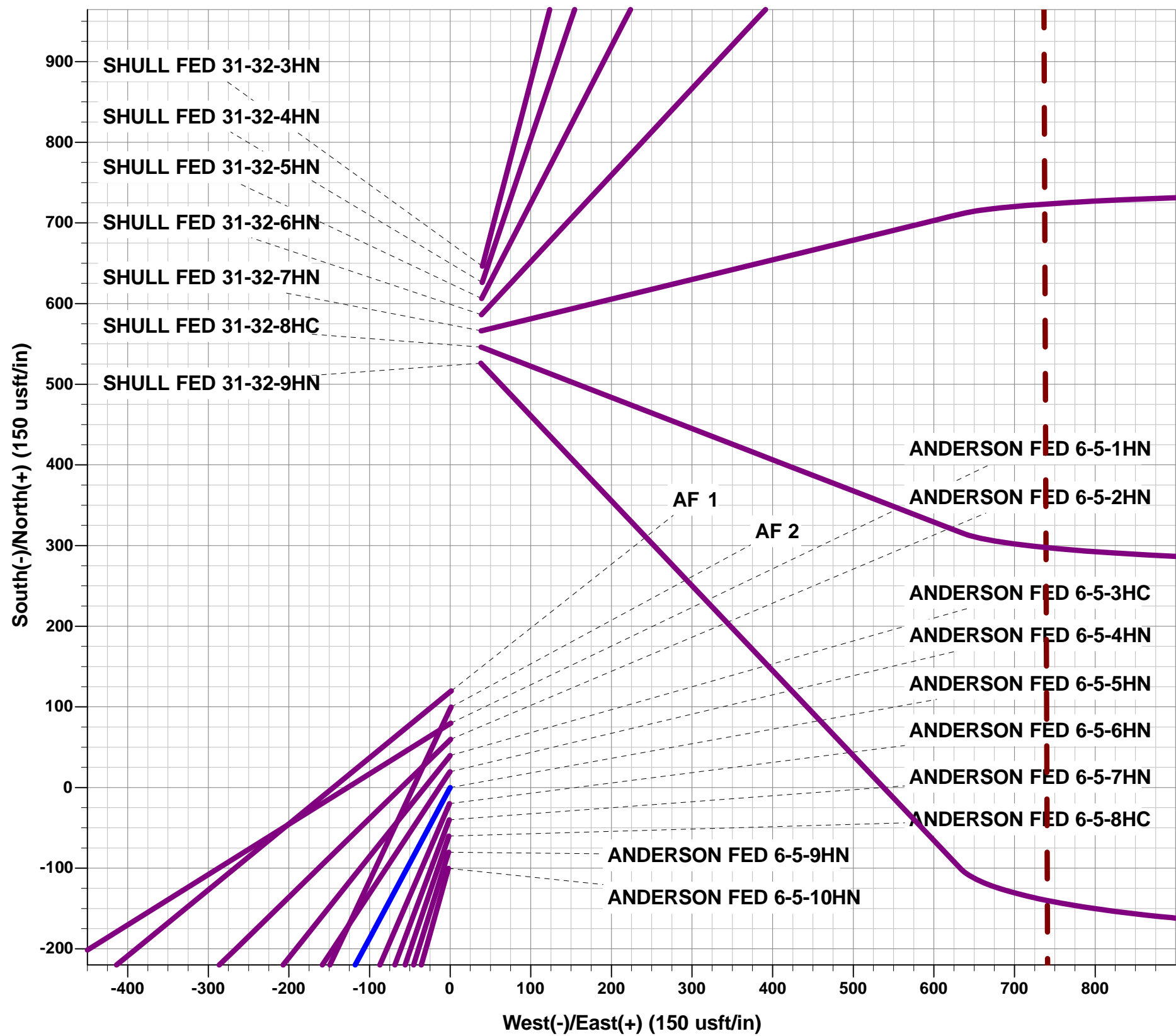
Project: WELD COUNTY, COLORADO (NAD 83)  
Site: SE SW SEC. 31 T9N R59W 6th P.M.  
Well: ANDERSON FED 6-5-5HN  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL #3

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: 622ft FSL & 1911ft FWL of Sec 31
600.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (3°/100ft BUR)
1669.06	1734.64	34.04	208.12	-288.61	-154.25	-54.16	327.25	EOB TO 34.04° INC
5532.98	6397.52	34.04	208.12	-2590.55	-1384.56	-486.17	2937.34	KOP (10°/100ft DGLG)
6155.00	7450.44	90.00	90.01	-2961.31	-831.98	155.80	3716.68	LP *NEW*: 2355ft FNL & 600ft FWL of Sec 6
6155.00	17090.91	90.00	90.01	-2963.69	8808.49	9293.71	13357.15	BHL: 2355ft FNL & 300ft FEL of Sec 5

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
LP *NEW*- ANDERSON FED 6-5-5HN (P3)	6155.00	-2961.31	-831.98	40.692839	-104.026424
BHL - ANDERSON FED 6-5-5HN (P3)	6155.00	-2963.69	8808.50	40.692828	-103.991660



Azimuths to True North  
Magnetic North: 7.61°  
Magnetic Field  
Strength: 52382.4snT  
Dip Angle: 67.15°  
Date: 22/07/2019  
Model: IGRF2015

FORMATION TOP DETAILS

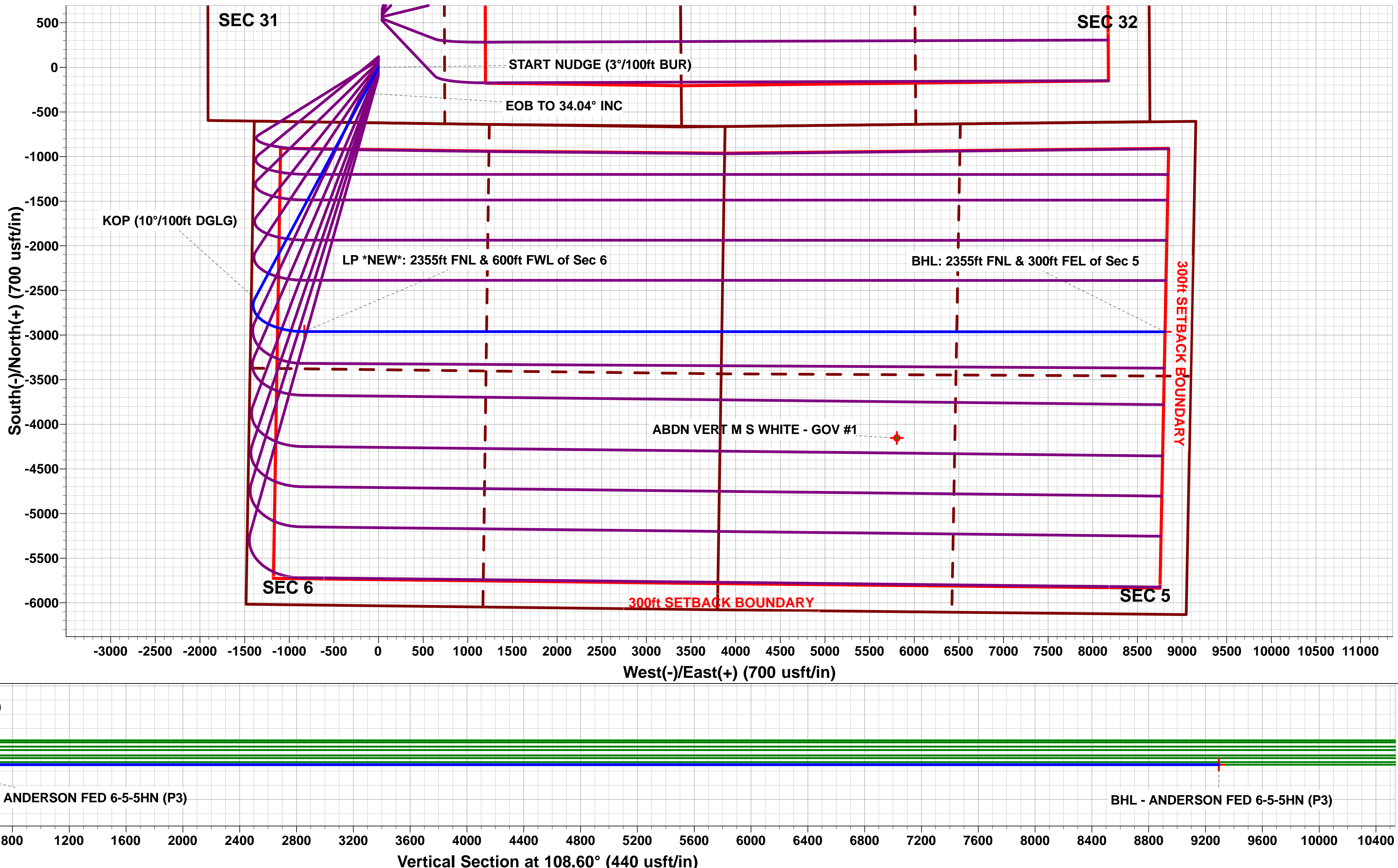
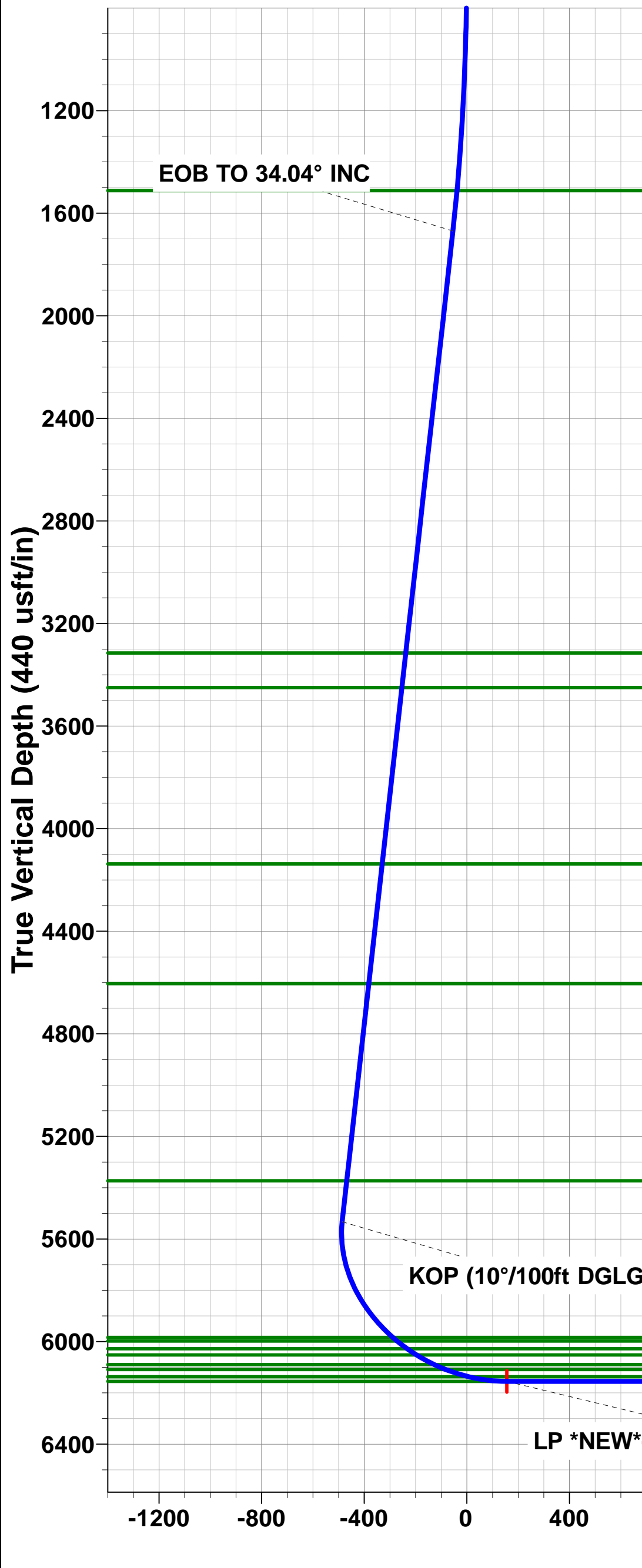
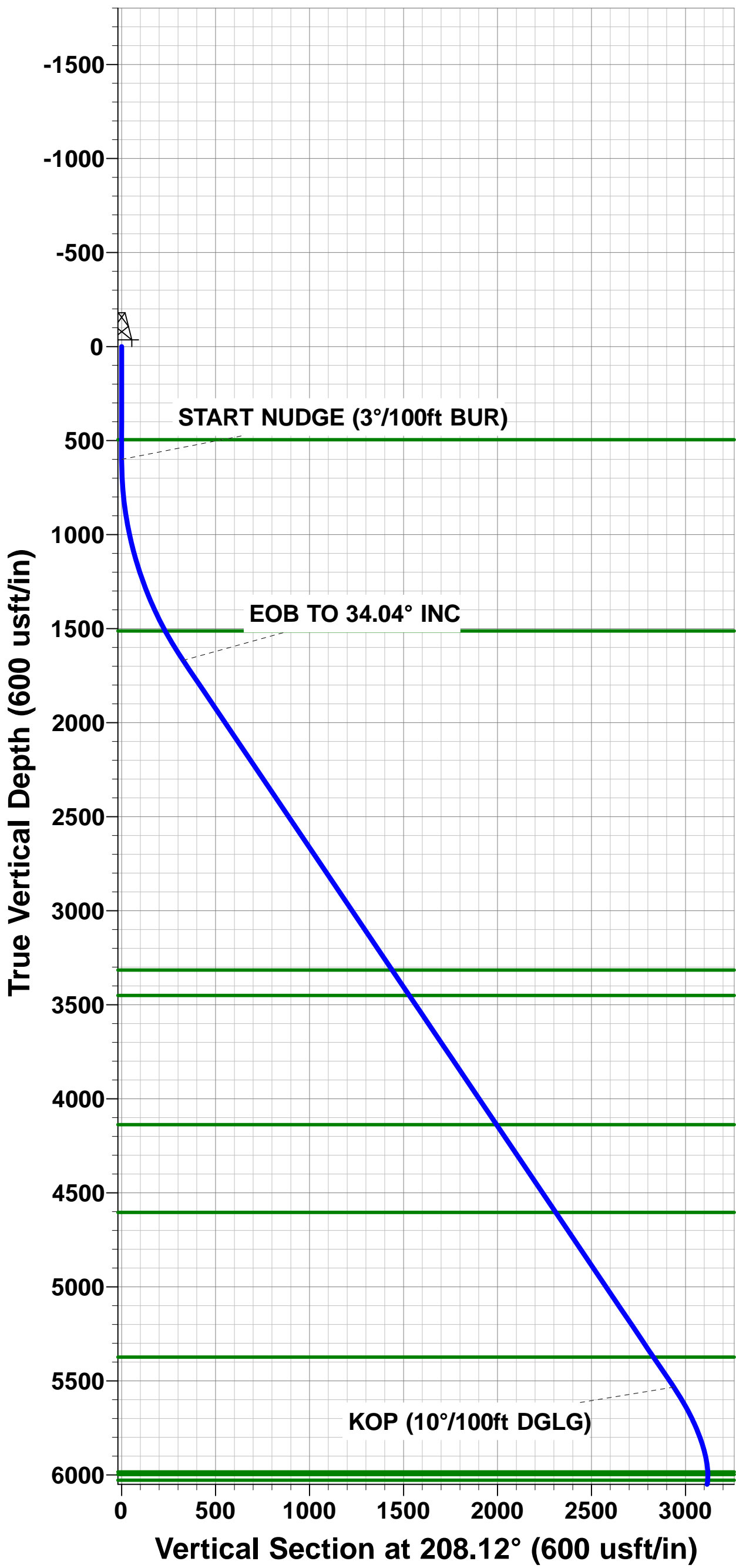
TVDPath	MDPath	Formation
495.00	495.00	Fox Hills Base
1512.00	1550.79	Pierre Shale Top
3315.00	3720.92	Richard Sandstone
3450.00	3883.83	Parkman Sandstone
4137.00	4712.89	Sussex Sandstone
4604.00	5276.45	Shannon Sandstone
5373.00	6204.46	TeePee Buttes
5984.00	6957.81	Sharon Springs
5998.00	6979.68	Niobrara Top
6028.00	7029.44	Niobrara A Chalk
6052.00	7072.98	Niobrara A Chalk Base
6090.00	7152.64	Niobrara B1 Chalk Top
6109.00	7200.76	Niobrara B1 Chalk Base
6137.00	7295.01	Niobrara B2 Chalk Target Top
6155.00	7450.44	Niobrara B2 Chalk Target Center

PROPOSED LOCAL COORDINATES:

SHL: 622ft FSL & 1911ft FWL of Sec 31

HZ LP \*NEW\*: 2355ft FNL & 600ft FWL of Sec 6

BHL: 2355ft FNL & 300ft FEL of Sec 5



# Planning Report



<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well ANDERSON FED 6-5-5HN
<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 6-5-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #3		

<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 6-5-5HN		
<b>Well Position</b>	<b>+N-S</b>	98.36 usft	<b>Northing:</b>
	<b>+E-W</b>	156.11 usft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	usft
		<b>Latitude:</b>	40.700967
		<b>Longitude:</b>	-104.023424
		<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 #3			
<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>
	6,155.00	0.00	0.00	108.60

<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	
600.00	0.00	0.00	600.00	-4,303.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,734.64	34.04	208.12	1,669.06	-3,233.94	-288.61	-154.25	3.00	3.00	0.00	208.12	
6,397.52	34.04	208.12	5,532.98	629.98	-2,590.55	-1,384.56	0.00	0.00	0.00	0.00	
7,450.44	90.00	90.01	6,155.00	1,252.00	-2,961.31	-831.98	10.00	5.31	-11.22	-113.88	LP *NEW*- ANDER
17,090.91	90.00	90.01	6,155.00	1,252.00	-2,963.69	8,808.50	0.00	0.00	0.00	0.00	BHL - ANDERSON

# Planning Report



<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well ANDERSON FED 6-5-5HN
<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 6-5-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #3		

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: 622ft FSL &amp; 1911ft 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
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	0.00	0.00	200.00	4,703.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	4,603.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	4,503.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fox Hills Base</b>										
495.00	0.00	0.00	495.00	4,408.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	4,403.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>START NUDGE (3°/100ft BUR)</b>										
600.00	0.00	0.00	600.00	4,303.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	3.00	208.12	699.95	4,203.05	-2.31	-1.23	-0.43	3.00	3.00	0.00
800.00	6.00	208.12	799.63	4,103.37	-9.23	-4.93	-1.73	3.00	3.00	0.00
900.00	9.00	208.12	898.77	4,004.23	-20.74	-11.08	-3.89	3.00	3.00	0.00
1,000.00	12.00	208.12	997.08	3,905.92	-36.81	-19.67	-6.91	3.00	3.00	0.00
1,100.00	15.00	208.12	1,094.31	3,808.69	-57.39	-30.67	-10.77	3.00	3.00	0.00
1,200.00	18.00	208.12	1,190.18	3,712.82	-82.44	-44.06	-15.47	3.00	3.00	0.00
1,300.00	21.00	208.12	1,284.43	3,618.57	-111.88	-59.79	-21.00	3.00	3.00	0.00
1,400.00	24.00	208.12	1,376.81	3,526.19	-145.62	-77.83	-27.33	3.00	3.00	0.00
1,500.00	27.00	208.12	1,467.06	3,435.94	-183.59	-98.12	-34.45	3.00	3.00	0.00
<b>Pierre Shale Top</b>										
1,550.79	28.52	208.12	1,512.00	3,391.00	-204.45	-109.27	-38.37	3.00	3.00	0.00
1,600.00	30.00	208.12	1,554.93	3,348.07	-225.66	-120.61	-42.35	3.00	3.00	0.00
1,700.00	33.00	208.12	1,640.18	3,262.82	-271.74	-145.24	-51.00	3.00	3.00	0.00
<b>EOB TO 34.04° INC</b>										
1,734.64	34.04	208.12	1,669.06	3,233.94	-288.61	-154.25	-54.16	3.00	3.00	0.00
1,800.00	34.04	208.12	1,723.22	3,179.78	-320.88	-171.50	-60.22	0.00	0.00	0.00
1,900.00	34.04	208.12	1,806.09	3,096.91	-370.24	-197.88	-69.48	0.00	0.00	0.00
2,000.00	34.04	208.12	1,888.95	3,014.05	-419.61	-224.27	-78.75	0.00	0.00	0.00
2,100.00	34.04	208.12	1,971.82	2,931.18	-468.98	-250.65	-88.01	0.00	0.00	0.00
2,200.00	34.04	208.12	2,054.69	2,848.31	-518.35	-277.04	-97.28	0.00	0.00	0.00
2,300.00	34.04	208.12	2,137.55	2,765.45	-567.71	-303.42	-106.54	0.00	0.00	0.00
2,400.00	34.04	208.12	2,220.42	2,682.58	-617.08	-329.81	-115.81	0.00	0.00	0.00
2,500.00	34.04	208.12	2,303.28	2,599.72	-666.45	-356.19	-125.07	0.00	0.00	0.00
2,600.00	34.04	208.12	2,386.15	2,516.85	-715.82	-382.58	-134.34	0.00	0.00	0.00
2,700.00	34.04	208.12	2,469.01	2,433.99	-765.18	-408.96	-143.60	0.00	0.00	0.00
2,800.00	34.04	208.12	2,551.88	2,351.12	-814.55	-435.35	-152.87	0.00	0.00	0.00
2,900.00	34.04	208.12	2,634.74	2,268.26	-863.92	-461.73	-162.13	0.00	0.00	0.00
3,000.00	34.04	208.12	2,717.61	2,185.39	-913.29	-488.12	-171.40	0.00	0.00	0.00
3,100.00	34.04	208.12	2,800.47	2,102.53	-962.65	-514.50	-180.66	0.00	0.00	0.00
3,200.00	34.04	208.12	2,883.34	2,019.66	-1,012.02	-540.89	-189.93	0.00	0.00	0.00
3,300.00	34.04	208.12	2,966.21	1,936.79	-1,061.39	-567.28	-199.19	0.00	0.00	0.00
3,400.00	34.04	208.12	3,049.07	1,853.93	-1,110.76	-593.66	-208.45	0.00	0.00	0.00
3,500.00	34.04	208.12	3,131.94	1,771.06	-1,160.12	-620.05	-217.72	0.00	0.00	0.00
3,600.00	34.04	208.12	3,214.80	1,688.20	-1,209.49	-646.43	-226.98	0.00	0.00	0.00
3,700.00	34.04	208.12	3,297.67	1,605.33	-1,258.86	-672.82	-236.25	0.00	0.00	0.00
<b>Richard Sandstone</b>										
3,720.92	34.04	208.12	3,315.00	1,588.00	-1,269.18	-678.33	-238.19	0.00	0.00	0.00
3,800.00	34.04	208.12	3,380.53	1,522.47	-1,308.22	-699.20	-245.51	0.00	0.00	0.00
<b>Parkman Sandstone</b>										
3,883.83	34.04	208.12	3,450.00	1,453.00	-1,349.61	-721.32	-253.28	0.00	0.00	0.00
3,900.00	34.04	208.12	3,463.40	1,439.60	-1,357.59	-725.59	-254.78	0.00	0.00	0.00
4,000.00	34.04	208.12	3,546.26	1,356.74	-1,406.96	-751.97	-264.04	0.00	0.00	0.00



# Planning Report



<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well ANDERSON FED 6-5-5HN
<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 6-5-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #3		

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)
4,100.00	34.04	208.12	3,629.13	1,273.87	-1,456.33	-778.36	-273.31	0.00	0.00	0.00
4,200.00	34.04	208.12	3,711.99	1,191.01	-1,505.69	-804.74	-282.57	0.00	0.00	0.00
4,300.00	34.04	208.12	3,794.86	1,108.14	-1,555.06	-831.13	-291.84	0.00	0.00	0.00
4,400.00	34.04	208.12	3,877.73	1,025.27	-1,604.43	-857.51	-301.10	0.00	0.00	0.00
4,500.00	34.04	208.12	3,960.59	942.41	-1,653.80	-883.90	-310.37	0.00	0.00	0.00
4,600.00	34.04	208.12	4,043.46	859.54	-1,703.16	-910.28	-319.63	0.00	0.00	0.00
4,700.00	34.04	208.12	4,126.32	776.68	-1,752.53	-936.67	-328.90	0.00	0.00	0.00
<b>Sussex Sandstone</b>										
<b>4,712.89</b>	<b>34.04</b>	<b>208.12</b>	<b>4,137.00</b>	<b>766.00</b>	<b>-1,758.89</b>	<b>-940.07</b>	<b>-330.09</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
4,800.00	34.04	208.12	4,209.19	693.81	-1,801.90	-963.05	-338.16	0.00	0.00	0.00
4,900.00	34.04	208.12	4,292.05	610.95	-1,851.27	-989.44	-347.43	0.00	0.00	0.00
5,000.00	34.04	208.12	4,374.92	528.08	-1,900.63	-1,015.82	-356.69	0.00	0.00	0.00
5,100.00	34.04	208.12	4,457.78	445.22	-1,950.00	-1,042.21	-365.96	0.00	0.00	0.00
5,200.00	34.04	208.12	4,540.65	362.35	-1,999.37	-1,068.59	-375.22	0.00	0.00	0.00
<b>Shannon Sandstone</b>										
<b>5,276.45</b>	<b>34.04</b>	<b>208.12</b>	<b>4,604.00</b>	<b>299.00</b>	<b>-2,037.11</b>	<b>-1,088.77</b>	<b>-382.30</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
5,300.00	34.04	208.12	4,623.51	279.49	-2,048.74	-1,094.98	-384.49	0.00	0.00	0.00
5,400.00	34.04	208.12	4,706.38	196.62	-2,098.10	-1,121.36	-393.75	0.00	0.00	0.00
5,500.00	34.04	208.12	4,789.24	113.76	-2,147.47	-1,147.75	-403.01	0.00	0.00	0.00
5,600.00	34.04	208.12	4,872.11	30.89	-2,196.84	-1,174.13	-412.28	0.00	0.00	0.00
5,700.00	34.04	208.12	4,954.98	-51.98	-2,246.21	-1,200.52	-421.54	0.00	0.00	0.00
5,800.00	34.04	208.12	5,037.84	-134.84	-2,295.57	-1,226.90	-430.81	0.00	0.00	0.00
5,900.00	34.04	208.12	5,120.71	-217.71	-2,344.94	-1,253.29	-440.07	0.00	0.00	0.00
6,000.00	34.04	208.12	5,203.57	-300.57	-2,394.31	-1,279.67	-449.34	0.00	0.00	0.00
6,100.00	34.04	208.12	5,286.44	-383.44	-2,443.68	-1,306.06	-458.60	0.00	0.00	0.00
6,200.00	34.04	208.12	5,369.30	-466.30	-2,493.04	-1,332.45	-467.87	0.00	0.00	0.00
<b>TeePee Buttes</b>										
<b>6,204.46</b>	<b>34.04</b>	<b>208.12</b>	<b>5,373.00</b>	<b>-470.00</b>	<b>-2,495.24</b>	<b>-1,333.62</b>	<b>-468.28</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
6,300.00	34.04	208.12	5,452.17	-549.17	-2,542.41	-1,358.83	-477.13	0.00	0.00	0.00
<b>KOP (10°/100ft DGLG)</b>										
<b>6,397.52</b>	<b>34.04</b>	<b>208.12</b>	<b>5,532.98</b>	<b>-629.98</b>	<b>-2,590.55</b>	<b>-1,384.56</b>	<b>-486.17</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
6,400.00	33.94	207.72	5,535.04	-632.04	-2,591.78	-1,385.21	-486.39	10.00	-4.02	-16.37
6,500.00	31.16	189.80	5,619.52	-716.52	-2,642.11	-1,402.64	-486.86	10.00	-2.78	-17.92
6,600.00	31.15	170.40	5,705.32	-802.32	-2,693.23	-1,402.73	-470.64	10.00	-0.01	-19.40
6,700.00	33.90	152.45	5,789.82	-886.82	-2,743.59	-1,385.47	-438.23	10.00	2.76	-17.94
6,800.00	38.84	137.74	5,870.47	-967.47	-2,791.65	-1,351.40	-390.61	10.00	4.94	-14.72
6,900.00	45.24	126.23	5,944.80	-1,041.80	-2,835.95	-1,301.54	-329.22	10.00	6.40	-11.51
<b>Sharon Springs</b>										
<b>6,957.81</b>	<b>49.39</b>	<b>120.74</b>	<b>5,984.00</b>	<b>-1,081.00</b>	<b>-2,859.32</b>	<b>-1,266.09</b>	<b>-288.18</b>	<b>10.00</b>	<b>7.17</b>	<b>-9.49</b>
<b>Niobrara Top</b>										
<b>6,979.68</b>	<b>51.02</b>	<b>118.84</b>	<b>5,998.00</b>	<b>-1,095.00</b>	<b>-2,867.66</b>	<b>-1,251.51</b>	<b>-271.69</b>	<b>10.00</b>	<b>7.46</b>	<b>-8.67</b>
7,000.00	52.56	117.16	6,010.57	-1,107.57	-2,875.15	-1,237.41	-255.94	10.00	7.59	-8.29
<b>Niobrara A Chalk</b>										
<b>7,029.44</b>	<b>54.83</b>	<b>114.83</b>	<b>6,028.00</b>	<b>-1,125.00</b>	<b>-2,885.54</b>	<b>-1,216.08</b>	<b>-232.42</b>	<b>10.00</b>	<b>7.72</b>	<b>-7.88</b>
<b>Niobrara A Chalk Base</b>										
<b>7,072.98</b>	<b>58.27</b>	<b>111.63</b>	<b>6,052.00</b>	<b>-1,149.00</b>	<b>-2,899.85</b>	<b>-1,182.70</b>	<b>-196.21</b>	<b>10.00</b>	<b>7.90</b>	<b>-7.36</b>
7,100.00	60.44	109.76	6,065.77	-1,162.77	-2,908.06	-1,160.96	-172.99	10.00	8.04	-6.92
<b>Niobrara B1 Chalk Top</b>										
<b>7,152.64</b>	<b>64.74</b>	<b>106.34</b>	<b>6,090.00</b>	<b>-1,187.00</b>	<b>-2,922.51</b>	<b>-1,116.54</b>	<b>-126.28</b>	<b>10.00</b>	<b>8.17</b>	<b>-6.50</b>
7,200.00	68.68	103.46	6,108.73	-1,205.73	-2,933.68	-1,074.51	-82.88	10.00	8.30	-6.07
<b>Niobrara B1 Chalk Base</b>										
<b>7,200.76</b>	<b>68.74</b>	<b>103.42</b>	<b>6,109.00</b>	<b>-1,206.00</b>	<b>-2,933.84</b>	<b>-1,073.83</b>	<b>-82.18</b>	<b>10.00</b>	<b>8.36</b>	<b>-5.90</b>
<b>Niobrara B2 Chalk Target Top</b>										

# Planning Report



<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well ANDERSON FED 6-5-5HN
<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 6-5-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #3		

## 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>7,295.01</b>	<b>76.69</b>	<b>98.12</b>	<b>6,137.00</b>	<b>-1,234.00</b>	<b>-2,950.55</b>	<b>-985.51</b>	<b>6.85</b>	<b>10.00</b>	<b>8.44</b>	<b>-5.63</b>
7,300.00	77.12	97.85	6,138.13	-1,235.13	-2,951.22	-980.69	11.63	10.00	8.51	-5.40
7,400.00	85.67	92.60	6,153.09	-1,250.09	-2,960.16	-882.35	107.69	10.00	8.55	-5.25
<b>LP *NEW*: 2355ft FNL &amp; 600ft FWL of Sec 6 - Niobrara B2 Chalk Target Center</b>										
<b>7,450.44</b>	<b>90.00</b>	<b>90.01</b>	<b>6,155.00</b>	<b>-1,252.00</b>	<b>-2,961.31</b>	<b>-831.98</b>	<b>155.80</b>	<b>10.00</b>	<b>8.59</b>	<b>-5.13</b>
7,500.00	90.00	90.01	6,155.00	-1,252.00	-2,961.32	-782.42	202.78	0.00	0.00	0.00
7,600.00	90.00	90.01	6,155.00	-1,252.00	-2,961.35	-682.42	297.56	0.00	0.00	0.00
7,700.00	90.00	90.01	6,155.00	-1,252.00	-2,961.37	-582.42	392.35	0.00	0.00	0.00
7,800.00	90.00	90.01	6,155.00	-1,252.00	-2,961.40	-482.42	487.14	0.00	0.00	0.00
7,900.00	90.00	90.01	6,155.00	-1,252.00	-2,961.42	-382.42	581.92	0.00	0.00	0.00
8,000.00	90.00	90.01	6,155.00	-1,252.00	-2,961.45	-282.42	676.71	0.00	0.00	0.00
8,100.00	90.00	90.01	6,155.00	-1,252.00	-2,961.47	-182.42	771.50	0.00	0.00	0.00
8,200.00	90.00	90.01	6,155.00	-1,252.00	-2,961.50	-82.42	866.28	0.00	0.00	0.00
8,300.00	90.00	90.01	6,155.00	-1,252.00	-2,961.52	17.58	961.07	0.00	0.00	0.00
8,400.00	90.00	90.01	6,155.00	-1,252.00	-2,961.54	117.58	1,055.86	0.00	0.00	0.00
8,500.00	90.00	90.01	6,155.00	-1,252.00	-2,961.57	217.58	1,150.65	0.00	0.00	0.00
8,600.00	90.00	90.01	6,155.00	-1,252.00	-2,961.59	317.58	1,245.43	0.00	0.00	0.00
8,700.00	90.00	90.01	6,155.00	-1,252.00	-2,961.62	417.58	1,340.22	0.00	0.00	0.00
8,800.00	90.00	90.01	6,155.00	-1,252.00	-2,961.64	517.58	1,435.01	0.00	0.00	0.00
8,900.00	90.00	90.01	6,155.00	-1,252.00	-2,961.67	617.58	1,529.79	0.00	0.00	0.00
9,000.00	90.00	90.01	6,155.00	-1,252.00	-2,961.69	717.58	1,624.58	0.00	0.00	0.00
9,100.00	90.00	90.01	6,155.00	-1,252.00	-2,961.72	817.58	1,719.37	0.00	0.00	0.00
9,200.00	90.00	90.01	6,155.00	-1,252.00	-2,961.74	917.58	1,814.15	0.00	0.00	0.00
9,300.00	90.00	90.01	6,155.00	-1,252.00	-2,961.77	1,017.58	1,908.94	0.00	0.00	0.00
9,400.00	90.00	90.01	6,155.00	-1,252.00	-2,961.79	1,117.58	2,003.73	0.00	0.00	0.00
9,500.00	90.00	90.01	6,155.00	-1,252.00	-2,961.82	1,217.58	2,098.52	0.00	0.00	0.00
9,600.00	90.00	90.01	6,155.00	-1,252.00	-2,961.84	1,317.58	2,193.30	0.00	0.00	0.00
9,700.00	90.00	90.01	6,155.00	-1,252.00	-2,961.87	1,417.58	2,288.09	0.00	0.00	0.00
9,800.00	90.00	90.01	6,155.00	-1,252.00	-2,961.89	1,517.58	2,382.88	0.00	0.00	0.00
9,900.00	90.00	90.01	6,155.00	-1,252.00	-2,961.92	1,617.58	2,477.66	0.00	0.00	0.00
10,000.00	90.00	90.01	6,155.00	-1,252.00	-2,961.94	1,717.58	2,572.45	0.00	0.00	0.00
10,100.00	90.00	90.01	6,155.00	-1,252.00	-2,961.96	1,817.58	2,667.24	0.00	0.00	0.00
10,200.00	90.00	90.01	6,155.00	-1,252.00	-2,961.99	1,917.58	2,762.02	0.00	0.00	0.00
10,300.00	90.00	90.01	6,155.00	-1,252.00	-2,962.01	2,017.58	2,856.81	0.00	0.00	0.00
10,400.00	90.00	90.01	6,155.00	-1,252.00	-2,962.04	2,117.58	2,951.60	0.00	0.00	0.00
10,500.00	90.00	90.01	6,155.00	-1,252.00	-2,962.06	2,217.58	3,046.38	0.00	0.00	0.00
10,600.00	90.00	90.01	6,155.00	-1,252.00	-2,962.09	2,317.58	3,141.17	0.00	0.00	0.00
10,700.00	90.00	90.01	6,155.00	-1,252.00	-2,962.11	2,417.58	3,235.96	0.00	0.00	0.00
10,800.00	90.00	90.01	6,155.00	-1,252.00	-2,962.14	2,517.58	3,330.75	0.00	0.00	0.00
10,900.00	90.00	90.01	6,155.00	-1,252.00	-2,962.16	2,617.58	3,425.53	0.00	0.00	0.00
11,000.00	90.00	90.01	6,155.00	-1,252.00	-2,962.19	2,717.58	3,520.32	0.00	0.00	0.00
11,100.00	90.00	90.01	6,155.00	-1,252.00	-2,962.21	2,817.58	3,615.11	0.00	0.00	0.00
11,200.00	90.00	90.01	6,155.00	-1,252.00	-2,962.24	2,917.58	3,709.89	0.00	0.00	0.00
11,300.00	90.00	90.01	6,155.00	-1,252.00	-2,962.26	3,017.58	3,804.68	0.00	0.00	0.00
11,400.00	90.00	90.01	6,155.00	-1,252.00	-2,962.29	3,117.58	3,899.47	0.00	0.00	0.00
11,500.00	90.00	90.01	6,155.00	-1,252.00	-2,962.31	3,217.58	3,994.25	0.00	0.00	0.00
11,600.00	90.00	90.01	6,155.00	-1,252.00	-2,962.34	3,317.58	4,089.04	0.00	0.00	0.00
11,700.00	90.00	90.01	6,155.00	-1,252.00	-2,962.36	3,417.58	4,183.83	0.00	0.00	0.00
11,800.00	90.00	90.01	6,155.00	-1,252.00	-2,962.38	3,517.58	4,278.62	0.00	0.00	0.00
11,900.00	90.00	90.01	6,155.00	-1,252.00	-2,962.41	3,617.58	4,373.40	0.00	0.00	0.00
12,000.00	90.00	90.01	6,155.00	-1,252.00	-2,962.43	3,717.58	4,468.19	0.00	0.00	0.00
12,100.00	90.00	90.01	6,155.00	-1,252.00	-2,962.46	3,817.58	4,562.98	0.00	0.00	0.00
12,200.00	90.00	90.01	6,155.00	-1,252.00	-2,962.48	3,917.58	4,657.76	0.00	0.00	0.00

# Planning Report



<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well ANDERSON FED 6-5-5HN
<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 6-5-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #3		

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)
12,300.00	90.00	90.01	6,155.00	-1,252.00	-2,962.51	4,017.58	4,752.55	0.00	0.00	0.00
12,400.00	90.00	90.01	6,155.00	-1,252.00	-2,962.53	4,117.58	4,847.34	0.00	0.00	0.00
12,500.00	90.00	90.01	6,155.00	-1,252.00	-2,962.56	4,217.58	4,942.12	0.00	0.00	0.00
12,600.00	90.00	90.01	6,155.00	-1,252.00	-2,962.58	4,317.58	5,036.91	0.00	0.00	0.00
12,700.00	90.00	90.01	6,155.00	-1,252.00	-2,962.61	4,417.58	5,131.70	0.00	0.00	0.00
12,800.00	90.00	90.01	6,155.00	-1,252.00	-2,962.63	4,517.58	5,226.49	0.00	0.00	0.00
12,900.00	90.00	90.01	6,155.00	-1,252.00	-2,962.66	4,617.58	5,321.27	0.00	0.00	0.00
13,000.00	90.00	90.01	6,155.00	-1,252.00	-2,962.68	4,717.58	5,416.06	0.00	0.00	0.00
13,100.00	90.00	90.01	6,155.00	-1,252.00	-2,962.71	4,817.58	5,510.85	0.00	0.00	0.00
13,200.00	90.00	90.01	6,155.00	-1,252.00	-2,962.73	4,917.58	5,605.63	0.00	0.00	0.00
13,300.00	90.00	90.01	6,155.00	-1,252.00	-2,962.76	5,017.58	5,700.42	0.00	0.00	0.00
13,400.00	90.00	90.01	6,155.00	-1,252.00	-2,962.78	5,117.58	5,795.21	0.00	0.00	0.00
13,500.00	90.00	90.01	6,155.00	-1,252.00	-2,962.80	5,217.58	5,889.99	0.00	0.00	0.00
13,600.00	90.00	90.01	6,155.00	-1,252.00	-2,962.83	5,317.58	5,984.78	0.00	0.00	0.00
13,700.00	90.00	90.01	6,155.00	-1,252.00	-2,962.85	5,417.58	6,079.57	0.00	0.00	0.00
13,800.00	90.00	90.01	6,155.00	-1,252.00	-2,962.88	5,517.58	6,174.36	0.00	0.00	0.00
13,900.00	90.00	90.01	6,155.00	-1,252.00	-2,962.90	5,617.58	6,269.14	0.00	0.00	0.00
14,000.00	90.00	90.01	6,155.00	-1,252.00	-2,962.93	5,717.58	6,363.93	0.00	0.00	0.00
14,100.00	90.00	90.01	6,155.00	-1,252.00	-2,962.95	5,817.58	6,458.72	0.00	0.00	0.00
14,200.00	90.00	90.01	6,155.00	-1,252.00	-2,962.98	5,917.58	6,553.50	0.00	0.00	0.00
14,300.00	90.00	90.01	6,155.00	-1,252.00	-2,963.00	6,017.58	6,648.29	0.00	0.00	0.00
14,400.00	90.00	90.01	6,155.00	-1,252.00	-2,963.03	6,117.58	6,743.08	0.00	0.00	0.00
14,500.00	90.00	90.01	6,155.00	-1,252.00	-2,963.05	6,217.58	6,837.86	0.00	0.00	0.00
14,600.00	90.00	90.01	6,155.00	-1,252.00	-2,963.08	6,317.58	6,932.65	0.00	0.00	0.00
14,700.00	90.00	90.01	6,155.00	-1,252.00	-2,963.10	6,417.58	7,027.44	0.00	0.00	0.00
14,800.00	90.00	90.01	6,155.00	-1,252.00	-2,963.13	6,517.58	7,122.22	0.00	0.00	0.00
14,900.00	90.00	90.01	6,155.00	-1,252.00	-2,963.15	6,617.58	7,217.01	0.00	0.00	0.00
15,000.00	90.00	90.01	6,155.00	-1,252.00	-2,963.18	6,717.58	7,311.80	0.00	0.00	0.00
15,100.00	90.00	90.01	6,155.00	-1,252.00	-2,963.20	6,817.58	7,406.59	0.00	0.00	0.00
15,200.00	90.00	90.01	6,155.00	-1,252.00	-2,963.22	6,917.58	7,501.37	0.00	0.00	0.00
15,300.00	90.00	90.01	6,155.00	-1,252.00	-2,963.25	7,017.58	7,596.16	0.00	0.00	0.00
15,400.00	90.00	90.01	6,155.00	-1,252.00	-2,963.27	7,117.58	7,690.95	0.00	0.00	0.00
15,500.00	90.00	90.01	6,155.00	-1,252.00	-2,963.30	7,217.58	7,785.73	0.00	0.00	0.00
15,600.00	90.00	90.01	6,155.00	-1,252.00	-2,963.32	7,317.58	7,880.52	0.00	0.00	0.00
15,700.00	90.00	90.01	6,155.00	-1,252.00	-2,963.35	7,417.58	7,975.31	0.00	0.00	0.00
15,800.00	90.00	90.01	6,155.00	-1,252.00	-2,963.37	7,517.58	8,070.09	0.00	0.00	0.00
15,900.00	90.00	90.01	6,155.00	-1,252.00	-2,963.40	7,617.58	8,164.88	0.00	0.00	0.00
16,000.00	90.00	90.01	6,155.00	-1,252.00	-2,963.42	7,717.58	8,259.67	0.00	0.00	0.00
16,100.00	90.00	90.01	6,155.00	-1,252.00	-2,963.45	7,817.58	8,354.46	0.00	0.00	0.00
16,200.00	90.00	90.01	6,155.00	-1,252.00	-2,963.47	7,917.58	8,449.24	0.00	0.00	0.00
16,300.00	90.00	90.01	6,155.00	-1,252.00	-2,963.50	8,017.58	8,544.03	0.00	0.00	0.00
16,400.00	90.00	90.01	6,155.00	-1,252.00	-2,963.52	8,117.58	8,638.82	0.00	0.00	0.00
16,500.00	90.00	90.01	6,155.00	-1,252.00	-2,963.55	8,217.58	8,733.60	0.00	0.00	0.00
16,600.00	90.00	90.01	6,155.00	-1,252.00	-2,963.57	8,317.58	8,828.39	0.00	0.00	0.00
16,700.00	90.00	90.01	6,155.00	-1,252.00	-2,963.60	8,417.58	8,923.18	0.00	0.00	0.00
16,800.00	90.00	90.01	6,155.00	-1,252.00	-2,963.62	8,517.58	9,017.96	0.00	0.00	0.00
16,900.00	90.00	90.01	6,155.00	-1,252.00	-2,963.64	8,617.58	9,112.75	0.00	0.00	0.00
17,000.00	90.00	90.01	6,155.00	-1,252.00	-2,963.67	8,717.58	9,207.54	0.00	0.00	0.00
<b>BHL: 2355ft FNL &amp; 300ft FEL of Sec 5</b>										
<b>17,090.91</b>	<b>90.00</b>	<b>90.01</b>	<b>6,155.00</b>	<b>-1,252.00</b>	<b>-2,963.69</b>	<b>8,808.49</b>	<b>9,293.71</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

# Planning Report



<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well ANDERSON FED 6-5-5HN
<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 6-5-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #3		

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
495.00	495.00	Fox Hills Base				
1,550.79	1,512.00	Pierre Shale Top				
3,720.92	3,315.00	Richard Sandstone				
3,883.83	3,450.00	Parkman Sandstone				
4,712.89	4,137.00	Sussex Sandstone				
5,276.45	4,604.00	Shannon Sandstone				
6,204.46	5,373.00	TeePee Buttes				
6,957.81	5,984.00	Sharon Springs				
6,979.68	5,998.00	Niobrara Top				
7,029.44	6,028.00	Niobrara A Chalk				
7,072.98	6,052.00	Niobrara A Chalk Base				
7,152.64	6,090.00	Niobrara B1 Chalk Top				
7,200.76	6,109.00	Niobrara B1 Chalk Base				
7,295.01	6,137.00	Niobrara B2 Chalk Target Top				
7,450.44	6,155.00	Niobrara B2 Chalk Target Center				

Plan Annotations					
MD (usft)	TVD (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
0.00	0.00	0.00	0.00	SHL: 622ft FSL & 1911ft FWL of Sec 31	
600.00	600.00	0.00	0.00	START NUDGE (3°/100ft BUR)	
1,734.64	1,669.06	-288.61	-154.25	EOB TO 34.04° INC	
6,397.52	5,532.98	-2,590.55	-1,384.56	KOP (10°/100ft DGLG)	
7,450.44	6,155.00	-2,961.31	-831.98	LP *NEW*: 2355ft FNL & 600ft FWL of Sec 6	
17,090.91	6,155.00	-2,963.69	8,808.49	BHL: 2355ft FNL & 300ft FEL of Sec 5	