

# **MALLARD EXPLORATION**

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

**NW SW SEC. 32 T9N R60W 6th P.M.**

**CANVASBACK 32-2HN**

**ORIGINAL WELLBORE**

**25 October, 2018**

**Plan: PROPOSAL #2**





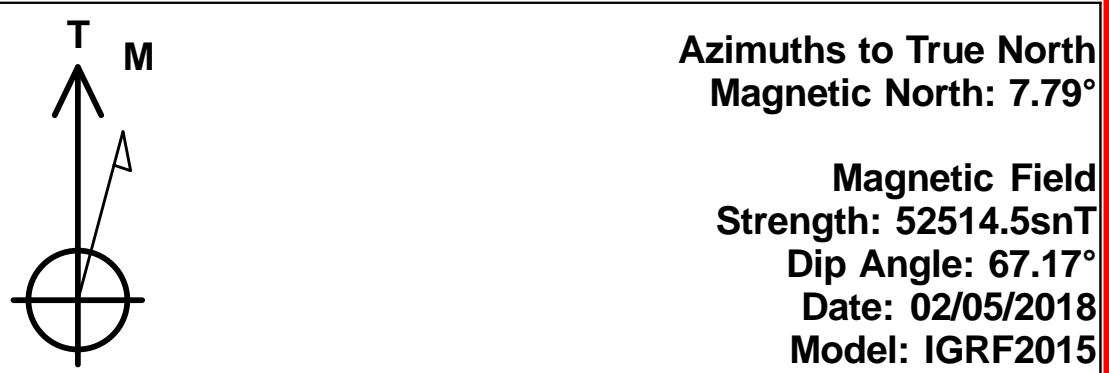
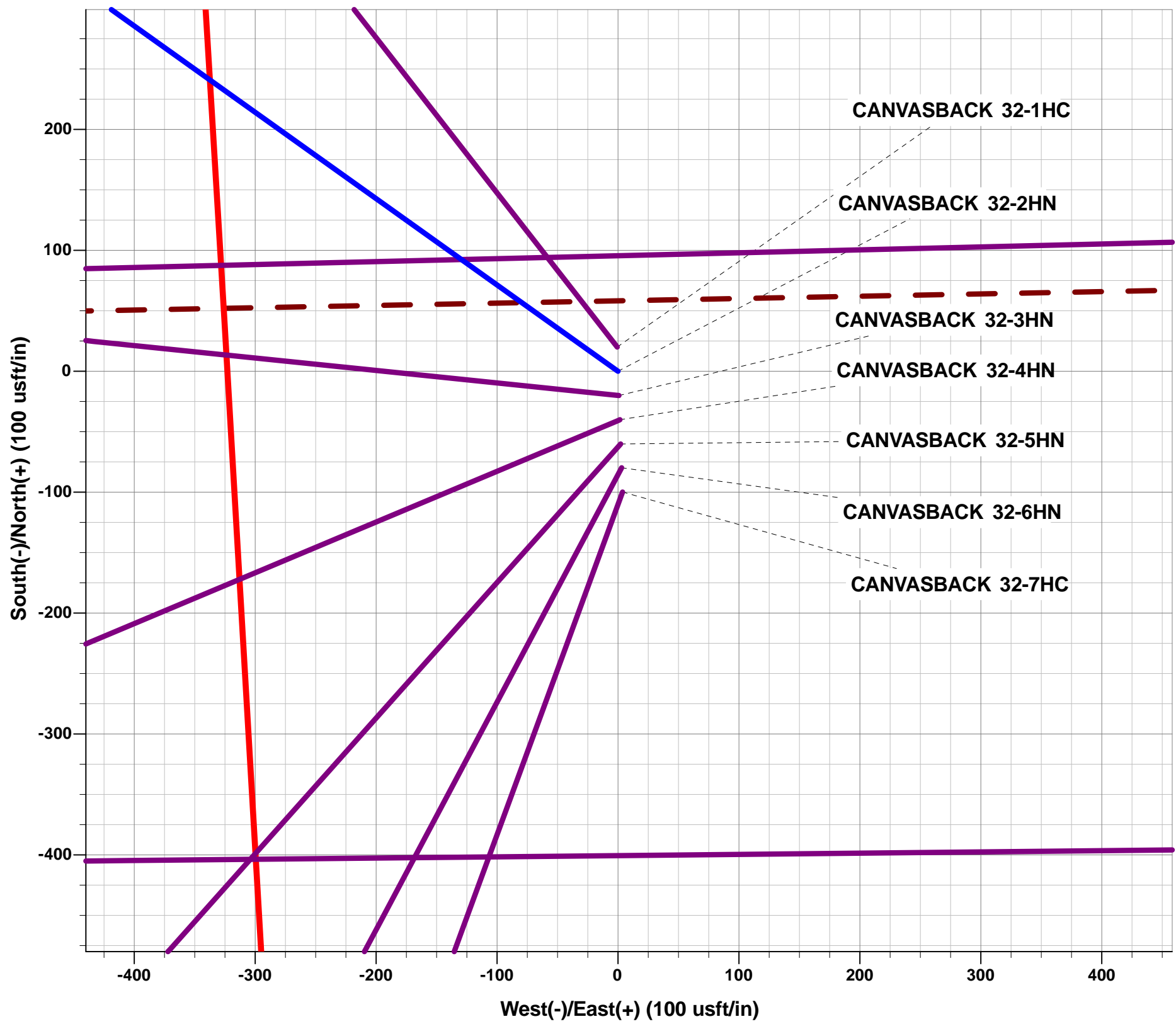
Project: WELD COUNTY, COLORADO (NAD 83)  
Site: NW SW SEC. 32 T9N R60W 6th P.M.  
Well: CANVASBACK 32-2HN  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL #2

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Dep	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 2521ft FSL & 630ft FWL of Sec 32
200.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)
867.79	873.99	13.48	305.54	45.87	-64.22	-54.83	78.92	EOB TO 13.48° INC
5036.25	5160.54	13.48	305.54	626.64	-877.31	-749.07	1078.13	END OF TANGENT
5704.04	5834.53	0.00	0.00	672.51	-941.53	-803.91	1157.04	EOD TO VERTICAL
5804.04	5934.53	0.00	0.00	672.51	-941.53	-803.91	1157.04	KOP (10°/100ft BUR)
6377.00	6834.53	90.00	88.61	686.41	-368.74	-238.10	1730.00	HZ LP: 1961ft FNL & 301ft FWL of Sec 32
6377.00	11545.82	90.00	88.61	800.83	4341.16	4414.41	6441.29	BHL: 1960ft FNL & 300ft FEL of Sec 32

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - CANVASBACK 32-2HN (P2)	5804.04	672.51	-941.53	40.707431	-104.127074
HZ LP - CANVASBACK 32-2HN (P2)	6377.00	686.41	-368.74	40.707469	-104.125008
BHL - CANVASBACK 32-2HN (P2)	6377.00	800.83	4341.17	40.707782	-104.108020

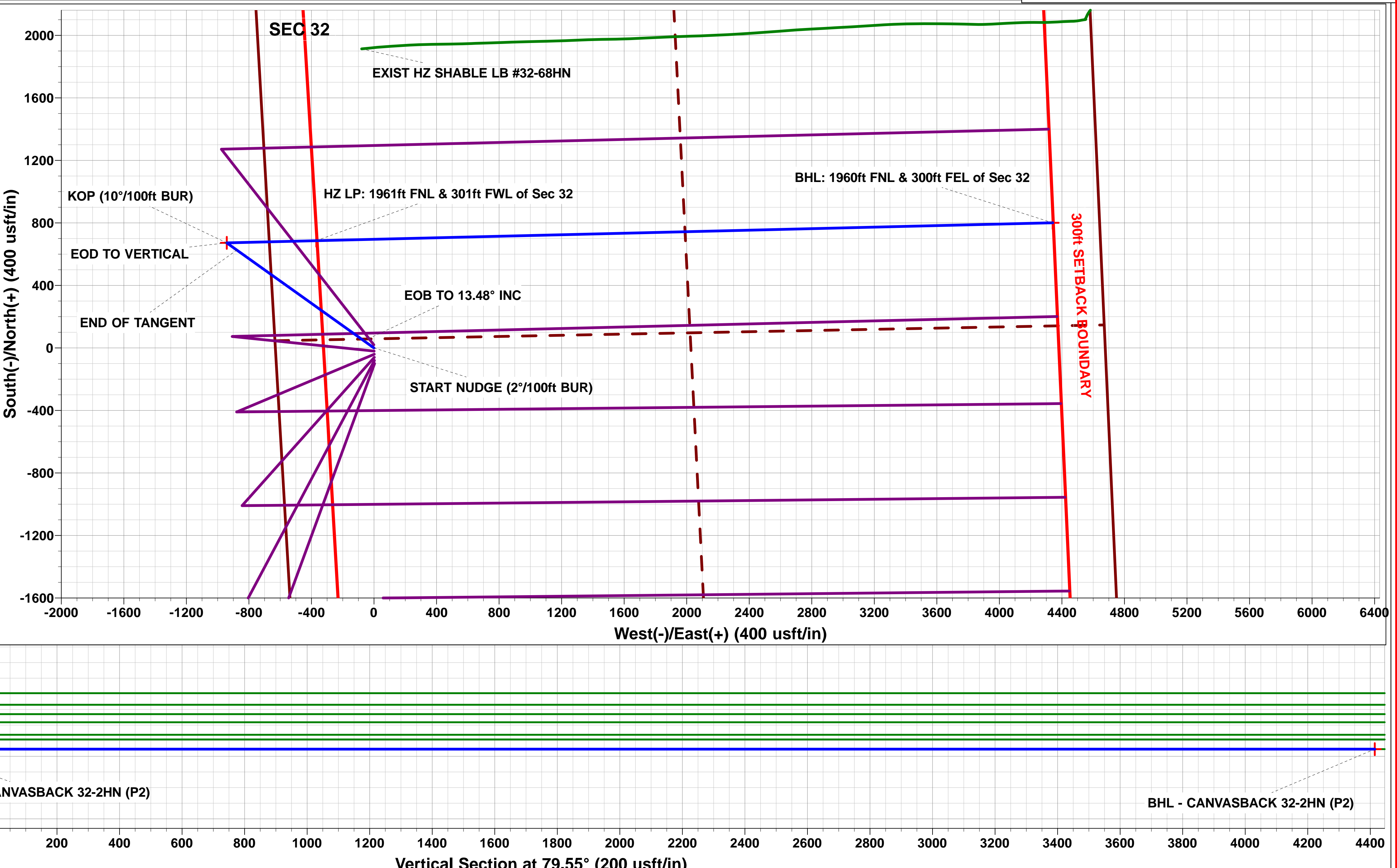
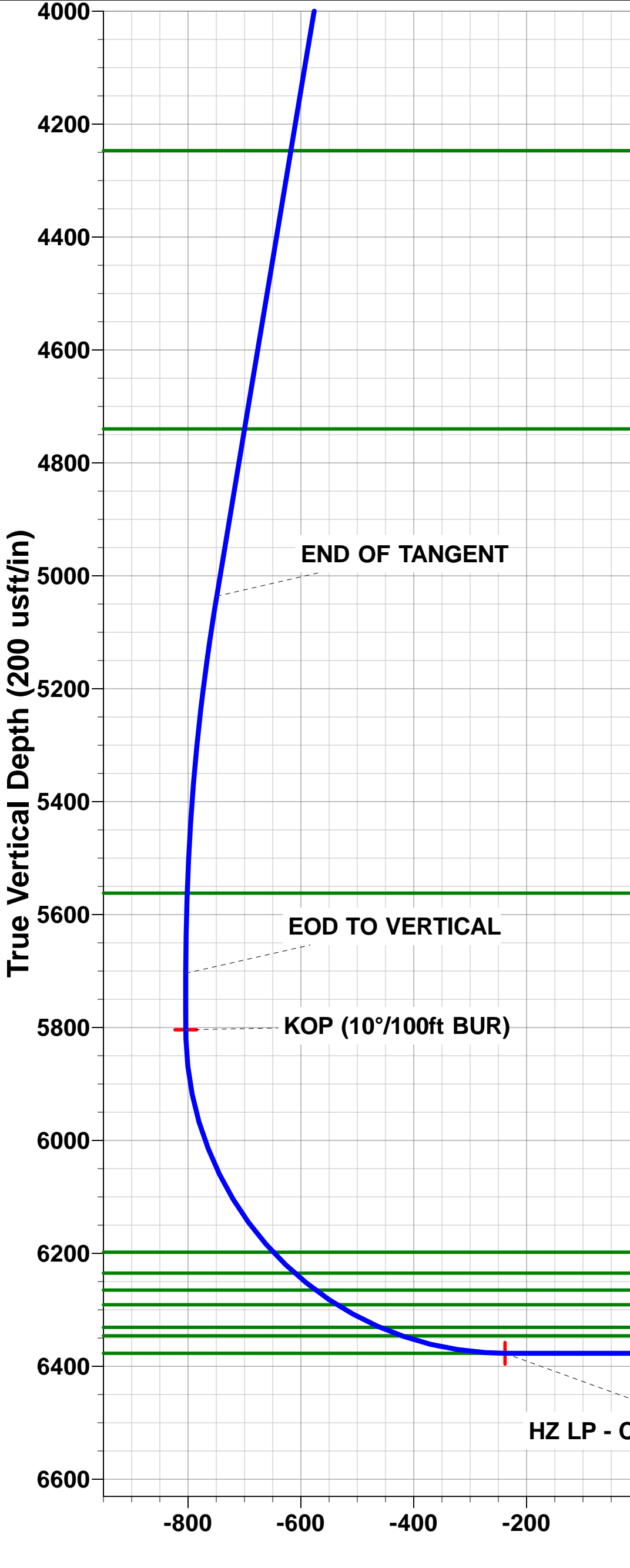
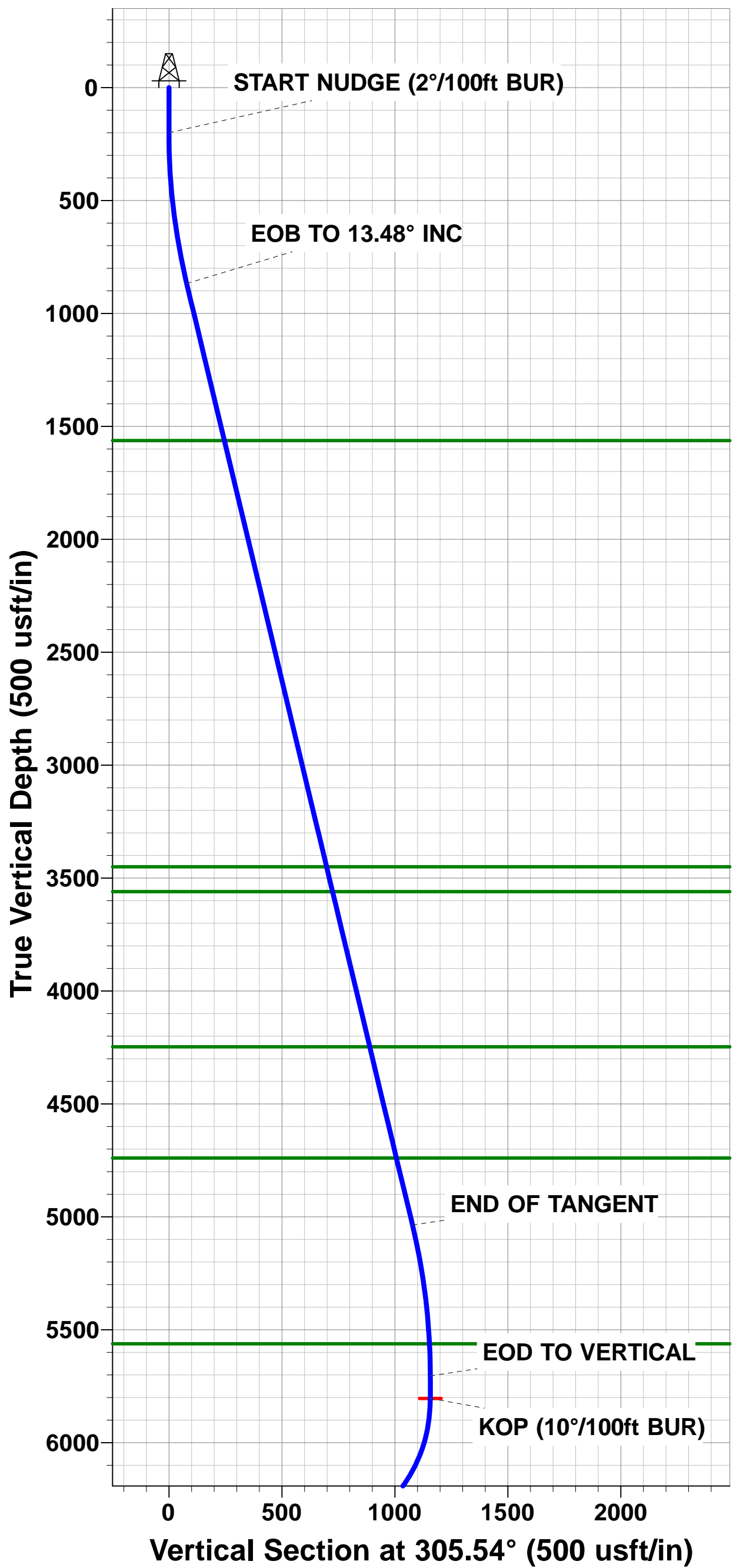


FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1563.00	1588.89	Pierre Shale Top
3450.00	3529.35	Richard Sandstone
3560.00	3642.47	Parkman Sandstone
4247.00	4348.93	Sussex Sandstone
4740.00	4855.89	Shannon Sandstone
5562.00	5692.43	TeePee Buttes
6198.00	6368.92	Sharon Springs
6235.00	6422.31	Niobrara Top
6265.00	6470.17	Niobrara A Chalk
6291.00	6516.54	Niobrara A Chalk Base
6331.00	6603.37	Niobrara B1 Chalk Top
6346.00	6645.19	Niobrara B1 Chalk Base
6377.00	6834.53	Niobrara B2 Chalk Top (Target)

PROPOSED LOCAL COORDINATES:

SHL: 2521ft FSL & 630ft FWL of Sec 32  
HZ LP: 1961ft FNL & 301ft FWL of Sec 32  
BHL: 1960ft FNL & 300ft FEL of Sec 32



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well CANVASBACK 32-2HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4965.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4965.00usft
<b>Site:</b>	NW SW SEC. 32 T9N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	CANVASBACK 32-2HN	<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>	NW SW SEC. 32 T9N R60W 6th P.M.		
<b>Site Position:</b>		<b>Northing:</b>	1,503,686.24 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,381,532.92 usft
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	1.10000ft
		<b>Latitude:</b>	40.707883
		<b>Longitude:</b>	-104.123789
		<b>Grid Convergence:</b>	0.89 °

<b>Well</b>	CANVASBACK 32-2HN		
<b>Well Position</b>	<b>+N-S</b>	-837.24 usft	<b>Northing:</b>
	<b>+E-W</b>	30.78 usft	<b>Easting:</b>
<b>Position Uncertainty</b>		0.00 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	02/05/2018	7.80	67.17	52,515

<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>
	6,377.00	0.00	0.00	79.55

<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	-4,965.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	-4,765.00	0.00	0.00	0.00	0.00	0.00	0.00	
873.99	13.48	305.54	867.79	-4,097.21	45.87	-64.22	2.00	2.00	0.00	305.54	
5,160.54	13.48	305.54	5,036.25	71.25	626.64	-877.31	0.00	0.00	0.00	0.00	
5,834.53	0.00	0.00	5,704.04	739.04	672.51	-941.53	2.00	-2.00	0.00	180.00	
5,934.53	0.00	0.00	5,804.04	839.04	672.51	-941.53	0.00	0.00	0.00	0.00	KOP - CANVASBA
6,834.53	90.00	88.61	6,377.00	1,412.00	686.41	-368.74	10.00	10.00	9.85	88.61	HZ LP - CANVASB
11,545.82	90.00	88.61	6,377.00	1,412.00	800.83	4,341.17	0.00	0.00	0.00	-73.16	BHL - CANVASBA

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well CANVASBACK 32-2HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4965.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4965.00usft
<b>Site:</b>	NW SW SEC. 32 T9N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	CANVASBACK 32-2HN	<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: 2521ft FSL &amp; 630ft FWL of Sec 32</b>										
0.00	0.00	0.00	0.00	4,965.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,865.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>START NUDGE (2°/100ft BUR)</b>										
200.00	0.00	0.00	200.00	4,765.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	2.00	305.54	299.98	4,665.02	1.01	-1.42	-1.21	2.00	2.00	0.00
400.00	4.00	305.54	399.84	4,565.16	4.06	-5.68	-4.85	2.00	2.00	0.00
500.00	6.00	305.54	499.45	4,465.55	9.12	-12.77	-10.90	2.00	2.00	0.00
600.00	8.00	305.54	598.70	4,366.30	16.20	-22.69	-19.37	2.00	2.00	0.00
700.00	10.00	305.54	697.47	4,267.53	25.30	-35.42	-30.24	2.00	2.00	0.00
800.00	12.00	305.54	795.62	4,169.38	36.39	-50.94	-43.50	2.00	2.00	0.00
<b>EOB TO 13.48° INC</b>										
873.99	13.48	305.54	867.79	4,097.21	45.87	-64.22	-54.83	2.00	2.00	0.00
900.00	13.48	305.54	893.08	4,071.92	49.39	-69.15	-59.04	0.00	0.00	0.00
1,000.00	13.48	305.54	990.33	3,974.67	62.94	-88.12	-75.24	0.00	0.00	0.00
1,100.00	13.48	305.54	1,087.57	3,877.43	76.49	-107.09	-91.44	0.00	0.00	0.00
1,200.00	13.48	305.54	1,184.82	3,780.18	90.04	-126.06	-107.63	0.00	0.00	0.00
1,300.00	13.48	305.54	1,282.06	3,682.94	103.59	-145.03	-123.83	0.00	0.00	0.00
1,400.00	13.48	305.54	1,379.31	3,585.69	117.14	-164.00	-140.02	0.00	0.00	0.00
1,500.00	13.48	305.54	1,476.55	3,488.45	130.69	-182.96	-156.22	0.00	0.00	0.00
<b>Pierre Shale Top</b>										
1,588.89	13.48	305.54	1,563.00	3,402.00	142.73	-199.83	-170.62	0.00	0.00	0.00
1,600.00	13.48	305.54	1,573.80	3,391.20	144.23	-201.93	-172.42	0.00	0.00	0.00
1,700.00	13.48	305.54	1,671.04	3,293.96	157.78	-220.90	-188.61	0.00	0.00	0.00
1,800.00	13.48	305.54	1,768.29	3,196.71	171.33	-239.87	-204.81	0.00	0.00	0.00
1,900.00	13.48	305.54	1,865.54	3,099.46	184.88	-258.84	-221.00	0.00	0.00	0.00
2,000.00	13.48	305.54	1,962.78	3,002.22	198.43	-277.81	-237.20	0.00	0.00	0.00
2,100.00	13.48	305.54	2,060.03	2,904.97	211.98	-296.77	-253.39	0.00	0.00	0.00
2,200.00	13.48	305.54	2,157.27	2,807.73	225.53	-315.74	-269.59	0.00	0.00	0.00
2,300.00	13.48	305.54	2,254.52	2,710.48	239.08	-334.71	-285.79	0.00	0.00	0.00
2,400.00	13.48	305.54	2,351.76	2,613.24	252.62	-353.68	-301.98	0.00	0.00	0.00
2,500.00	13.48	305.54	2,449.01	2,515.99	266.17	-372.65	-318.18	0.00	0.00	0.00
2,600.00	13.48	305.54	2,546.25	2,418.75	279.72	-391.62	-334.37	0.00	0.00	0.00
2,700.00	13.48	305.54	2,643.50	2,321.50	293.27	-410.59	-350.57	0.00	0.00	0.00
2,800.00	13.48	305.54	2,740.74	2,224.26	306.82	-429.55	-366.77	0.00	0.00	0.00
2,900.00	13.48	305.54	2,837.99	2,127.01	320.37	-448.52	-382.96	0.00	0.00	0.00
3,000.00	13.48	305.54	2,935.23	2,029.77	333.92	-467.49	-399.16	0.00	0.00	0.00
3,100.00	13.48	305.54	3,032.48	1,932.52	347.46	-486.46	-415.35	0.00	0.00	0.00
3,200.00	13.48	305.54	3,129.72	1,835.28	361.01	-505.43	-431.55	0.00	0.00	0.00
3,300.00	13.48	305.54	3,226.97	1,738.03	374.56	-524.40	-447.74	0.00	0.00	0.00
3,400.00	13.48	305.54	3,324.21	1,640.79	388.11	-543.36	-463.94	0.00	0.00	0.00
3,500.00	13.48	305.54	3,421.46	1,543.54	401.66	-562.33	-480.14	0.00	0.00	0.00
<b>Richard Sandstone</b>										
3,529.35	13.48	305.54	3,450.00	1,515.00	405.64	-567.90	-484.89	0.00	0.00	0.00
3,600.00	13.48	305.54	3,518.70	1,446.30	415.21	-581.30	-496.33	0.00	0.00	0.00
<b>Parkman Sandstone</b>										
3,642.47	13.48	305.54	3,560.00	1,405.00	420.96	-589.36	-503.21	0.00	0.00	0.00
3,700.00	13.48	305.54	3,615.95	1,349.05	428.76	-600.27	-512.53	0.00	0.00	0.00
3,800.00	13.48	305.54	3,713.19	1,251.81	442.31	-619.24	-528.72	0.00	0.00	0.00
3,900.00	13.48	305.54	3,810.44	1,154.56	455.85	-638.21	-544.92	0.00	0.00	0.00
4,000.00	13.48	305.54	3,907.68	1,057.32	469.40	-657.18	-561.12	0.00	0.00	0.00
4,100.00	13.48	305.54	4,004.93	960.07	482.95	-676.14	-577.31	0.00	0.00	0.00
4,200.00	13.48	305.54	4,102.18	862.82	496.50	-695.11	-593.51	0.00	0.00	0.00

# Planning Report



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<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4965.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4965.00usft
<b>Site:</b>	NW SW SEC. 32 T9N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	CANVASBACK 32-2HN	<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)
4,300.00	13.48	305.54	4,199.42	765.58	510.05	-714.08	-609.70	0.00	0.00	0.00
<b>Sussex Sandstone</b>										
<b>4,348.93</b>	<b>13.48</b>	<b>305.54</b>	<b>4,247.00</b>	<b>718.00</b>	<b>516.68</b>	<b>-723.36</b>	<b>-617.63</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
4,400.00	13.48	305.54	4,296.67	668.33	523.60	-733.05	-625.90	0.00	0.00	0.00
4,500.00	13.48	305.54	4,393.91	571.09	537.15	-752.02	-642.09	0.00	0.00	0.00
4,600.00	13.48	305.54	4,491.16	473.84	550.69	-770.99	-658.29	0.00	0.00	0.00
4,700.00	13.48	305.54	4,588.40	376.60	564.24	-789.95	-674.49	0.00	0.00	0.00
4,800.00	13.48	305.54	4,685.65	279.35	577.79	-808.92	-690.68	0.00	0.00	0.00
<b>Shannon Sandstone</b>										
<b>4,855.89</b>	<b>13.48</b>	<b>305.54</b>	<b>4,740.00</b>	<b>225.00</b>	<b>585.36</b>	<b>-819.52</b>	<b>-699.73</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
4,900.00	13.48	305.54	4,782.89	182.11	591.34	-827.89	-706.88	0.00	0.00	0.00
5,000.00	13.48	305.54	4,880.14	84.86	604.89	-846.86	-723.07	0.00	0.00	0.00
5,100.00	13.48	305.54	4,977.38	-12.38	618.44	-865.83	-739.27	0.00	0.00	0.00
<b>END OF TANGENT</b>										
<b>5,160.54</b>	<b>13.48</b>	<b>305.54</b>	<b>5,036.25</b>	<b>-71.25</b>	<b>626.64</b>	<b>-877.31</b>	<b>-749.07</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
5,200.00	12.69	305.54	5,074.69	-109.69	631.83	-884.58	-755.28	2.00	-2.00	0.00
5,300.00	10.69	305.54	5,172.61	-207.61	643.61	-901.07	-769.36	2.00	-2.00	0.00
5,400.00	8.69	305.54	5,271.18	-306.18	653.39	-914.77	-781.05	2.00	-2.00	0.00
5,500.00	6.69	305.54	5,370.27	-405.27	661.17	-925.65	-790.35	2.00	-2.00	0.00
5,600.00	4.69	305.54	5,469.78	-504.78	666.93	-933.72	-797.24	2.00	-2.00	0.00
<b>TeePee Buttes</b>										
<b>5,692.43</b>	<b>2.84</b>	<b>305.54</b>	<b>5,562.00</b>	<b>-597.00</b>	<b>670.46</b>	<b>-938.66</b>	<b>-801.46</b>	<b>2.00</b>	<b>-2.00</b>	<b>0.00</b>
5,700.00	2.69	305.54	5,569.56	-604.56	670.67	-938.96	-801.71	2.00	-2.00	0.00
5,800.00	0.69	305.54	5,669.51	-704.51	672.39	-941.36	-803.76	2.00	-2.00	0.00
<b>EOD TO VERTICAL</b>										
<b>5,834.53</b>	<b>0.00</b>	<b>0.00</b>	<b>5,704.04</b>	<b>-739.04</b>	<b>672.51</b>	<b>-941.53</b>	<b>-803.91</b>	<b>2.00</b>	<b>-2.00</b>	<b>0.00</b>
5,900.00	0.00	0.00	5,769.51	-804.51	672.51	-941.53	-803.91	0.00	0.00	0.00
<b>KOP (10°/100ft BUR)</b>										
<b>5,934.53</b>	<b>0.00</b>	<b>0.00</b>	<b>5,804.04</b>	<b>-839.04</b>	<b>672.51</b>	<b>-941.53</b>	<b>-803.91</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
6,000.00	6.55	88.61	5,869.37	-904.37	672.60	-937.79	-800.22	10.00	10.00	0.00
6,100.00	16.55	88.61	5,967.22	-1,002.22	673.09	-917.81	-780.47	10.00	10.00	0.00
6,200.00	26.55	88.61	6,060.12	-1,095.12	673.98	-881.14	-744.25	10.00	10.00	0.00
6,300.00	36.55	88.61	6,145.23	-1,180.23	675.24	-828.90	-692.65	10.00	10.00	0.00
<b>Sharon Springs</b>										
<b>6,368.92</b>	<b>43.44</b>	<b>88.61</b>	<b>6,198.00</b>	<b>-1,233.00</b>	<b>676.32</b>	<b>-784.64</b>	<b>-648.93</b>	<b>10.00</b>	<b>10.00</b>	<b>0.00</b>
6,400.00	46.55	88.61	6,219.98	-1,254.98	676.85	-762.68	-627.24	10.00	10.00	0.00
<b>Niobrara Top</b>										
<b>6,422.31</b>	<b>48.78</b>	<b>88.61</b>	<b>6,235.00</b>	<b>-1,270.00</b>	<b>677.25</b>	<b>-746.19</b>	<b>-610.95</b>	<b>10.00</b>	<b>10.00</b>	<b>0.00</b>
<b>Niobrara A Chalk</b>										
<b>6,470.17</b>	<b>53.56</b>	<b>88.61</b>	<b>6,265.00</b>	<b>-1,300.00</b>	<b>678.15</b>	<b>-708.93</b>	<b>-574.14</b>	<b>10.00</b>	<b>10.00</b>	<b>0.00</b>
6,500.00	56.55	88.61	6,282.08	-1,317.08	678.75	-684.49	-550.00	10.00	10.00	0.00
<b>Niobrara A Chalk Base</b>										
<b>6,516.54</b>	<b>58.20</b>	<b>88.61</b>	<b>6,291.00</b>	<b>-1,326.00</b>	<b>679.09</b>	<b>-670.57</b>	<b>-536.24</b>	<b>10.00</b>	<b>10.00</b>	<b>0.00</b>
6,600.00	66.55	88.61	6,329.67	-1,364.67	680.88	-596.71	-463.29	10.00	10.00	0.00
<b>Niobrara B1 Chalk Top</b>										
<b>6,603.37</b>	<b>66.88</b>	<b>88.61</b>	<b>6,331.00</b>	<b>-1,366.00</b>	<b>680.95</b>	<b>-593.61</b>	<b>-460.23</b>	<b>10.00</b>	<b>10.00</b>	<b>0.00</b>
<b>Niobrara B1 Chalk Base</b>										
<b>6,645.19</b>	<b>71.07</b>	<b>88.61</b>	<b>6,346.00</b>	<b>-1,381.00</b>	<b>681.90</b>	<b>-554.59</b>	<b>-421.69</b>	<b>10.00</b>	<b>10.00</b>	<b>0.00</b>
6,700.00	76.55	88.61	6,361.28	-1,396.28	683.18	-502.00	-369.73	10.00	10.00	0.00
6,800.00	86.55	88.61	6,375.96	-1,410.96	685.57	-403.24	-272.18	10.00	10.00	0.00
<b>HZ LP: 1961ft FNL &amp; 301ft FWL of Sec 32 - Niobrara B2 Chalk Top (Target)</b>										
<b>6,834.53</b>	<b>90.00</b>	<b>88.61</b>	<b>6,377.00</b>	<b>-1,412.00</b>	<b>686.41</b>	<b>-368.74</b>	<b>-238.10</b>	<b>10.00</b>	<b>10.00</b>	<b>0.00</b>



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well CANVASBACK 32-2HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4965.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4965.00usft
<b>Site:</b>	NW SW SEC. 32 T9N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	CANVASBACK 32-2HN	<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)
6,900.00	90.00	88.61	6,377.00	-1,412.00	688.00	-303.29	-173.44	0.00	0.00	0.00
7,000.00	90.00	88.61	6,377.00	-1,412.00	690.42	-203.32	-74.69	0.00	0.00	0.00
7,100.00	90.00	88.61	6,377.00	-1,412.00	692.85	-103.35	24.06	0.00	0.00	0.00
7,200.00	90.00	88.61	6,377.00	-1,412.00	695.28	-3.38	122.81	0.00	0.00	0.00
7,300.00	90.00	88.61	6,377.00	-1,412.00	697.70	96.59	221.56	0.00	0.00	0.00
7,400.00	90.00	88.61	6,377.00	-1,412.00	700.13	196.57	320.32	0.00	0.00	0.00
7,500.00	90.00	88.61	6,377.00	-1,412.00	702.56	296.54	419.07	0.00	0.00	0.00
7,600.00	90.00	88.61	6,377.00	-1,412.00	704.98	396.51	517.82	0.00	0.00	0.00
7,700.00	90.00	88.61	6,377.01	-1,412.01	707.41	496.48	616.57	0.00	0.00	0.00
7,800.00	90.00	88.61	6,377.01	-1,412.01	709.84	596.45	715.32	0.00	0.00	0.00
7,900.00	90.00	88.61	6,377.01	-1,412.01	712.26	696.42	814.08	0.00	0.00	0.00
8,000.00	90.00	88.61	6,377.01	-1,412.01	714.69	796.39	912.83	0.00	0.00	0.00
8,100.00	90.00	88.61	6,377.01	-1,412.01	717.12	896.36	1,011.58	0.00	0.00	0.00
8,200.00	90.00	88.61	6,377.01	-1,412.01	719.55	996.33	1,110.33	0.00	0.00	0.00
8,300.00	90.00	88.61	6,377.01	-1,412.01	721.97	1,096.30	1,209.08	0.00	0.00	0.00
8,400.00	90.00	88.61	6,377.01	-1,412.01	724.40	1,196.27	1,307.84	0.00	0.00	0.00
8,500.00	90.00	88.61	6,377.01	-1,412.01	726.83	1,296.24	1,406.59	0.00	0.00	0.00
8,600.00	90.00	88.61	6,377.01	-1,412.01	729.26	1,396.21	1,505.34	0.00	0.00	0.00
8,700.00	90.00	88.61	6,377.01	-1,412.01	731.69	1,496.18	1,604.09	0.00	0.00	0.00
8,800.00	90.00	88.61	6,377.01	-1,412.01	734.11	1,596.15	1,702.84	0.00	0.00	0.00
8,900.00	90.00	88.61	6,377.01	-1,412.01	736.54	1,696.12	1,801.60	0.00	0.00	0.00
9,000.00	90.00	88.61	6,377.01	-1,412.01	738.97	1,796.09	1,900.35	0.00	0.00	0.00
9,100.00	90.00	88.61	6,377.01	-1,412.01	741.40	1,896.06	1,999.10	0.00	0.00	0.00
9,200.00	90.00	88.61	6,377.01	-1,412.01	743.83	1,996.03	2,097.85	0.00	0.00	0.00
9,300.00	90.00	88.61	6,377.01	-1,412.01	746.26	2,096.01	2,196.61	0.00	0.00	0.00
9,400.00	90.00	88.61	6,377.01	-1,412.01	748.68	2,195.98	2,295.36	0.00	0.00	0.00
9,500.00	90.00	88.61	6,377.01	-1,412.01	751.11	2,295.95	2,394.11	0.00	0.00	0.00
9,600.00	90.00	88.61	6,377.01	-1,412.01	753.54	2,395.92	2,492.86	0.00	0.00	0.00
9,700.00	90.00	88.61	6,377.01	-1,412.01	755.97	2,495.89	2,591.62	0.00	0.00	0.00
9,800.00	90.00	88.61	6,377.01	-1,412.01	758.40	2,595.86	2,690.37	0.00	0.00	0.00
9,900.00	90.00	88.61	6,377.01	-1,412.01	760.83	2,695.83	2,789.12	0.00	0.00	0.00
10,000.00	90.00	88.61	6,377.01	-1,412.01	763.26	2,795.80	2,887.87	0.00	0.00	0.00
10,100.00	90.00	88.61	6,377.01	-1,412.01	765.69	2,895.77	2,986.63	0.00	0.00	0.00
10,200.00	90.00	88.61	6,377.01	-1,412.01	768.12	2,995.74	3,085.38	0.00	0.00	0.00
10,300.00	90.00	88.61	6,377.01	-1,412.01	770.55	3,095.71	3,184.13	0.00	0.00	0.00
10,400.00	90.00	88.61	6,377.01	-1,412.01	772.98	3,195.68	3,282.88	0.00	0.00	0.00
10,500.00	90.00	88.61	6,377.01	-1,412.01	775.41	3,295.65	3,381.64	0.00	0.00	0.00
10,600.00	90.00	88.61	6,377.01	-1,412.01	777.84	3,395.62	3,480.39	0.00	0.00	0.00
10,700.00	90.00	88.61	6,377.01	-1,412.01	780.27	3,495.59	3,579.14	0.00	0.00	0.00
10,800.00	90.00	88.61	6,377.00	-1,412.00	782.70	3,595.56	3,677.89	0.00	0.00	0.00
10,900.00	90.00	88.61	6,377.00	-1,412.00	785.13	3,695.53	3,776.65	0.00	0.00	0.00
11,000.00	90.00	88.61	6,377.00	-1,412.00	787.56	3,795.50	3,875.40	0.00	0.00	0.00
11,100.00	90.00	88.61	6,377.00	-1,412.00	789.99	3,895.47	3,974.15	0.00	0.00	0.00
11,200.00	90.00	88.61	6,377.00	-1,412.00	792.42	3,995.44	4,072.90	0.00	0.00	0.00
11,300.00	90.00	88.61	6,377.00	-1,412.00	794.85	4,095.41	4,171.66	0.00	0.00	0.00
11,400.00	90.00	88.61	6,377.00	-1,412.00	797.28	4,195.39	4,270.41	0.00	0.00	0.00
11,500.00	90.00	88.61	6,377.00	-1,412.00	799.71	4,295.36	4,369.16	0.00	0.00	0.00
<b>BHL: 1960ft FNL &amp; 300ft FEL of Sec 32</b>										
<b>11,545.82</b>	<b>90.00</b>	<b>88.61</b>	<b>6,377.00</b>	<b>-1,412.00</b>	<b>800.83</b>	<b>4,341.16</b>	<b>4,414.41</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 CANVASBACK 32-2HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4965.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4965.00usft
<b>Site:</b>	NW SW SEC. 32 T9N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	CANVASBACK 32-2HN	<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 (°)	
1,588.89	1,563.00	Pierre Shale Top				
3,529.35	3,450.00	Richard Sandstone				
3,642.47	3,560.00	Parkman Sandstone				
4,348.93	4,247.00	Sussex Sandstone				
4,855.89	4,740.00	Shannon Sandstone				
5,692.43	5,562.00	TeePee Buttes				
6,368.92	6,198.00	Sharon Springs				
6,422.31	6,235.00	Niobrara Top				
6,470.17	6,265.00	Niobrara A Chalk				
6,516.54	6,291.00	Niobrara A Chalk Base				
6,603.37	6,331.00	Niobrara B1 Chalk Top				
6,645.19	6,346.00	Niobrara B1 Chalk Base				
6,834.53	6,377.00	Niobrara B2 Chalk Top (Target)				

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.00	0.00	0.00	0.00	SHL: 2521ft FSL & 630ft FWL of Sec 32
200.00	200.00	0.00	0.00	START NUDGE (2°/100ft BUR)
873.99	867.79	45.87	-64.22	EOB TO 13.48° INC
5,160.54	5,036.25	626.64	-877.31	END OF TANGENT
5,834.53	5,704.04	672.51	-941.53	EOD TO VERTICAL
5,934.53	5,804.04	672.51	-941.53	KOP (10°/100ft BUR)
6,834.53	6,377.00	686.41	-368.74	HZ LP: 1961ft FNL & 301ft FWL of Sec 32
11,545.82	6,377.00	800.83	4,341.16	BHL: 1960ft FNL & 300ft FEL of Sec 32