

# **MALLARD EXPLORATION**

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

**NW NE SEC. 22 T8N R60W 6th P.M.**

**BLUE TEAL FED 15-10-16HN**

**ORIGINAL WELLBORE**

**19 March, 2018**

**Plan: PROPOSAL #3**





Project: WELD COUNTY, COLORADO (NAD 83)  
Site: NW NE SEC. 22 T8N R60W 6th P.M.  
Well: BLUE TEAL FED 15-10-16HN  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL #3

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: 600ft FNL & 1998ft FEL of Sec 22	
100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
855.94	865.00	15.30	63.53	45.26	90.89	58.35	101.54	EOB TO 15.3° INC	
1555.00	1589.75	15.30	63.53	130.51	262.08	168.26	292.77	SURFACE CASING	
5743.55	5932.20	15.30	63.53	641.27	1287.78	826.77	1438.61	KOP (10°/100ft DGLG)	
6232.25	6761.90	90.00	1.14	1207.43	1417.54	1405.98	2032.13	HZ LP: 600ft FSL & 605ft FEL of Sec 15	
6232.20	16158.75	90.00	1.14	10602.42	1604.77	10723.18	11428.98	BHL: 600ft FNL & 605ft FEL of Sec 10	

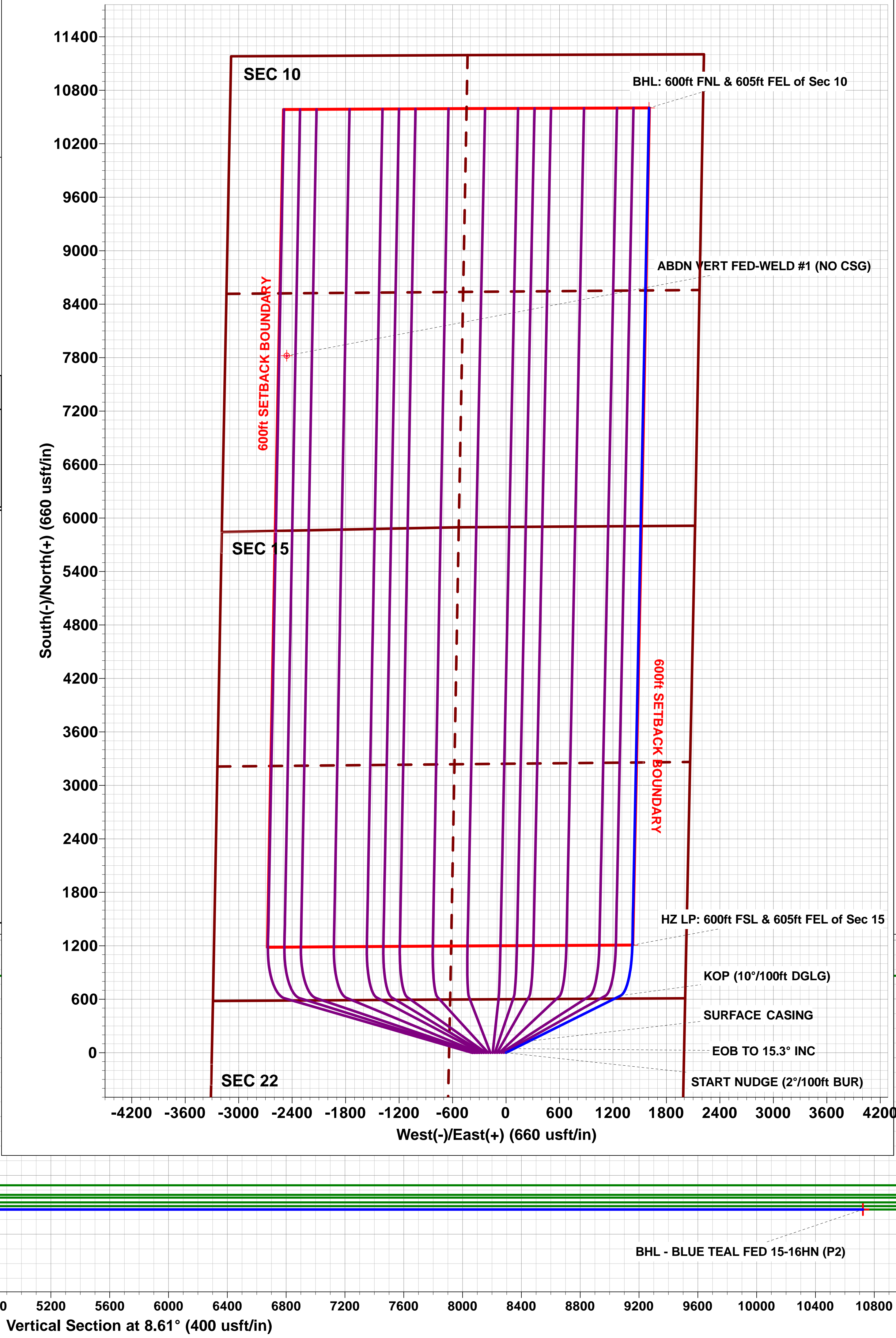
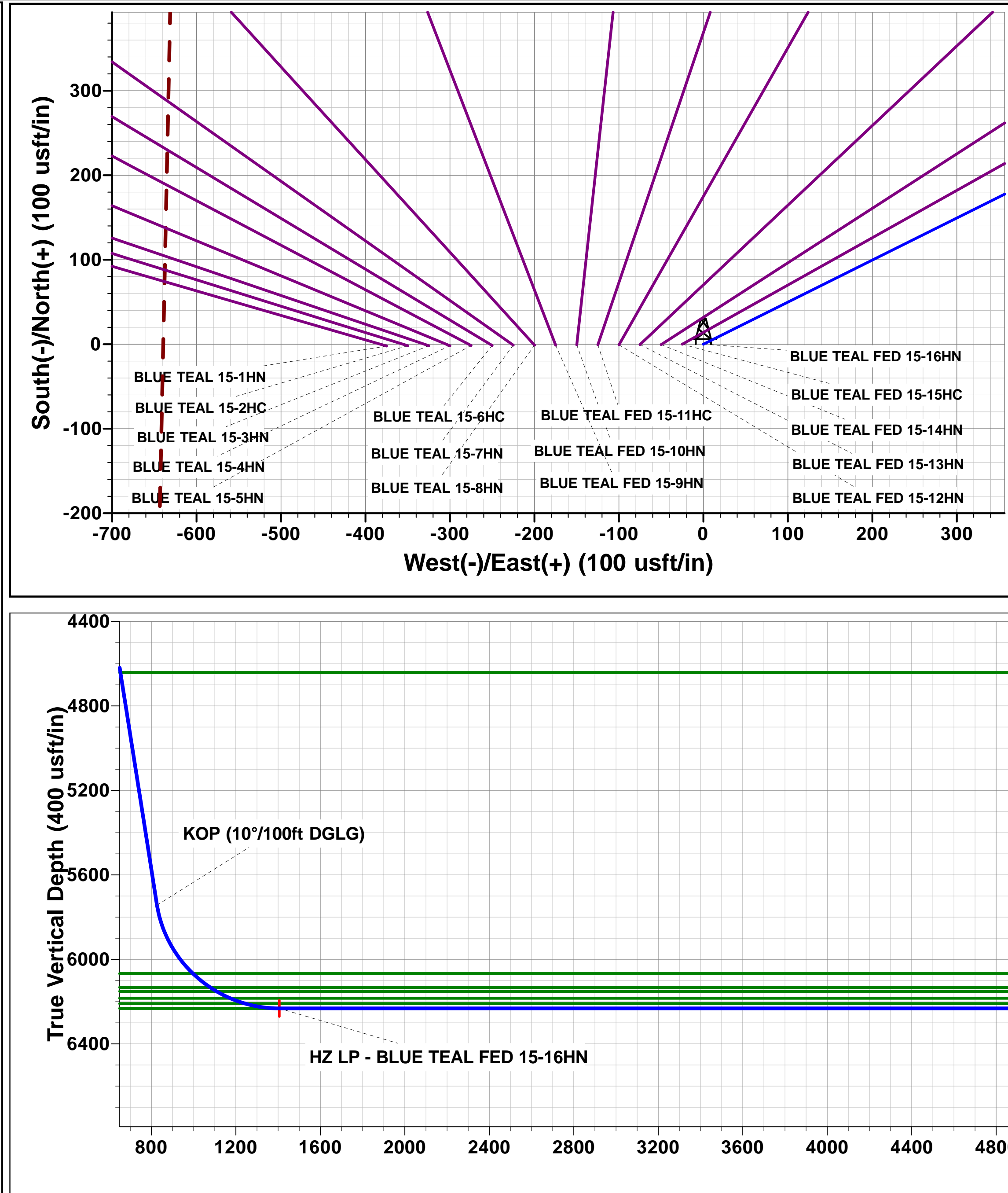
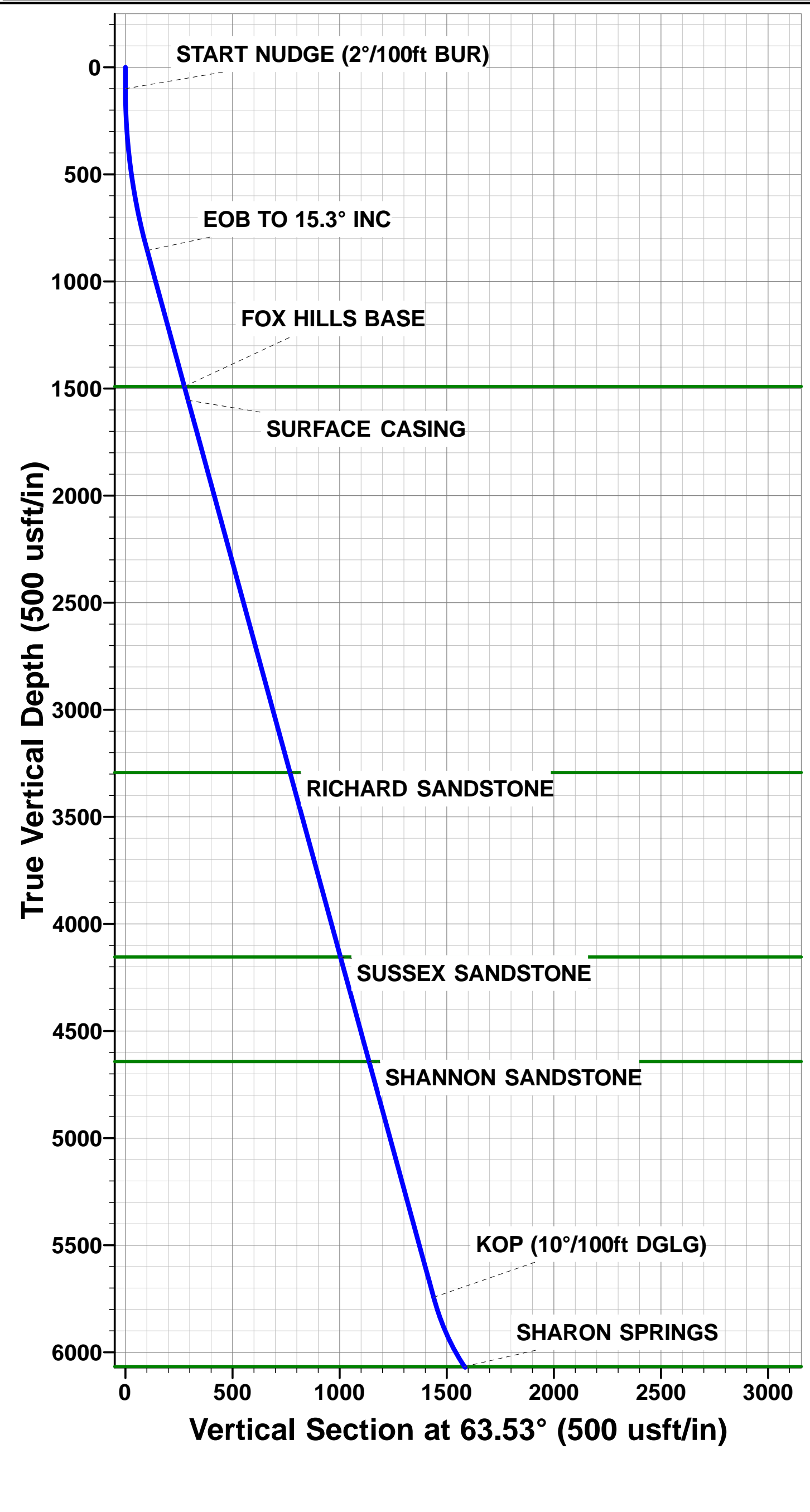
PROPOSED LOCAL COORDINATES:

SHL: 600ft FNL & 1998ft FEL Sec 22

HZ LP: 600ft FSL & 605ft FEL Sec 15

BHL: 600ft FNL & 605ft FEL of Sec 10

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
HZ LP - BLUE TEAL FED 15-16HN	6232.25	1207.45	1417.55	40.656819	-104.069882
BHL - BLUE TEAL FED 15-16HN (P2)	6232.20	10602.42	1604.77	40.682606	-104.069205



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-10-16HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4906.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4906.00usft (Original Well Elev)
<b>Site:</b>	NW NE SEC. 22 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-10-16HN	<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

Site	NW NE SEC. 22 T8N R60W 6th P.M.				
Site Position:		Northing:	1,484,083.08 usft	Latitude:	40.653499
From:	Lat/Long	Easting:	3,395,003.84 usft	Longitude:	-104.076342
Position Uncertainty:	0.00 usft	Slot Radius:	1.10000 ft	Grid Convergence:	0.92 °

Well	BLUE TEAL FED 15-10-16HN					
Well Position	+N/-S	2.16 usft	Northing:	1,484,091.25 usft	Latitude:	40.653505
	+E/-W	374.87 usft	Easting:	3,395,378.61 usft	Longitude:	-104.074991
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,890.00 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	16/03/2018	7.78	67.14	52,508

<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>
	0.00	0.00	0.00	8.61

<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	-4,906.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	-4,806.00	0.00	0.00	0.00	0.00	0.00	0.00	
864.99	15.30	63.53	855.93	-4,050.07	45.26	90.89	2.00	2.00	0.00	63.53	
5,932.17	15.30	63.53	5,743.52	837.52	641.26	1,287.77	0.00	0.00	0.00	0.00	
6,761.92	90.00	1.14	6,232.25	1,326.25	1,207.45	1,417.55	10.00	9.00	-7.52	-63.23	HZ LP - BLUE TEAL F
16,158.75	90.00	1.14	6,232.20	1,326.20	10,602.42	1,604.77	0.00	0.00	0.00	0.00	BHL - BLUE TEAL FE

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-10-16HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4906.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4906.00usft (Original Well Elev)
<b>Site:</b>	NW NE SEC. 22 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-10-16HN	<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: 600ft FNL &amp; 1998ft FEL of Sec 22</b>										
0.00	0.00	0.00	0.00	4,906.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>START NUDGE (2°/100ft BUR)</b>										
100.00	0.00	0.00	100.00	4,806.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	2.00	63.53	199.98	4,706.02	0.78	1.56	1.00	2.00	2.00	0.00
300.00	4.00	63.53	299.84	4,606.16	3.11	6.25	4.01	2.00	2.00	0.00
400.00	6.00	63.53	399.45	4,506.55	7.00	14.05	9.02	2.00	2.00	0.00
500.00	8.00	63.53	498.70	4,407.30	12.43	24.96	16.02	2.00	2.00	0.00
600.00	10.00	63.53	597.47	4,308.53	19.40	38.96	25.01	2.00	2.00	0.00
700.00	12.00	63.53	695.62	4,210.38	27.91	56.04	35.98	2.00	2.00	0.00
800.00	14.00	63.53	793.06	4,112.94	37.93	76.17	48.90	2.00	2.00	0.00
864.99	15.30	63.53	855.93	4,050.07	45.26	90.89	58.35	2.00	2.00	0.00
<b>EOB TO 15.3° INC</b>										
865.00	15.30	63.53	855.94	4,050.06	45.26	90.89	58.35	0.00	0.00	0.00
900.00	15.30	63.53	889.70	4,016.30	49.38	99.16	63.66	0.00	0.00	0.00
1,000.00	15.30	63.53	986.16	3,919.84	61.14	122.78	78.82	0.00	0.00	0.00
1,100.00	15.30	63.53	1,082.61	3,823.39	72.90	146.40	93.99	0.00	0.00	0.00
1,200.00	15.30	63.53	1,179.07	3,726.93	84.66	170.02	109.15	0.00	0.00	0.00
1,300.00	15.30	63.53	1,275.52	3,630.48	96.43	193.64	124.32	0.00	0.00	0.00
1,400.00	15.30	63.53	1,371.98	3,534.02	108.19	217.26	139.48	0.00	0.00	0.00
1,500.00	15.30	63.53	1,468.44	3,437.56	119.95	240.88	154.65	0.00	0.00	0.00
<b>FOX HILLS BASE</b>										
1,523.13	15.30	63.53	1,490.75	3,415.25	122.67	246.34	158.16	0.00	0.00	0.00
<b>SURFACE CASING</b>										
1,589.75	15.30	63.53	1,555.00	3,351.00	130.51	262.08	168.26	0.00	0.00	0.00
1,600.00	15.30	63.53	1,564.89	3,341.11	131.71	264.50	169.81	0.00	0.00	0.00
1,700.00	15.30	63.53	1,661.35	3,244.65	143.47	288.12	184.98	0.00	0.00	0.00
1,800.00	15.30	63.53	1,757.80	3,148.20	155.24	311.74	200.14	0.00	0.00	0.00
1,900.00	15.30	63.53	1,854.26	3,051.74	167.00	335.36	215.31	0.00	0.00	0.00
2,000.00	15.30	63.53	1,950.71	2,955.29	178.76	358.98	230.47	0.00	0.00	0.00
2,100.00	15.30	63.53	2,047.17	2,858.83	190.52	382.60	245.63	0.00	0.00	0.00
2,200.00	15.30	63.53	2,143.63	2,762.37	202.28	406.22	260.80	0.00	0.00	0.00
2,300.00	15.30	63.53	2,240.08	2,665.92	214.05	429.84	275.96	0.00	0.00	0.00
2,400.00	15.30	63.53	2,336.54	2,569.46	225.81	453.46	291.13	0.00	0.00	0.00
2,500.00	15.30	63.53	2,432.99	2,473.01	237.57	477.08	306.29	0.00	0.00	0.00
2,600.00	15.30	63.53	2,529.45	2,376.55	249.33	500.70	321.46	0.00	0.00	0.00
2,700.00	15.30	63.53	2,625.91	2,280.09	261.09	524.32	336.62	0.00	0.00	0.00
2,800.00	15.30	63.53	2,722.36	2,183.64	272.86	547.94	351.79	0.00	0.00	0.00
2,900.00	15.30	63.53	2,818.82	2,087.18	284.62	571.56	366.95	0.00	0.00	0.00
3,000.00	15.30	63.53	2,915.27	1,990.73	296.38	595.18	382.11	0.00	0.00	0.00
3,100.00	15.30	63.53	3,011.73	1,894.27	308.14	618.80	397.28	0.00	0.00	0.00
3,200.00	15.30	63.53	3,108.19	1,797.81	319.90	642.42	412.44	0.00	0.00	0.00
3,300.00	15.30	63.53	3,204.64	1,701.36	331.67	666.04	427.61	0.00	0.00	0.00
<b>RICHARD SANDSTONE</b>										
3,391.86	15.30	63.53	3,293.25	1,612.75	342.47	687.74	441.54	0.00	0.00	0.00
3,400.00	15.30	63.53	3,301.10	1,604.90	343.43	689.66	442.77	0.00	0.00	0.00
3,500.00	15.30	63.53	3,397.55	1,508.45	355.19	713.28	457.94	0.00	0.00	0.00
3,600.00	15.30	63.53	3,494.01	1,411.99	366.95	736.90	473.10	0.00	0.00	0.00
3,700.00	15.30	63.53	3,590.46	1,315.54	378.72	760.52	488.27	0.00	0.00	0.00
3,800.00	15.30	63.53	3,686.92	1,219.08	390.48	784.14	503.43	0.00	0.00	0.00
3,900.00	15.30	63.53	3,783.38	1,122.62	402.24	807.76	518.60	0.00	0.00	0.00
4,000.00	15.30	63.53	3,879.83	1,026.17	414.00	831.39	533.76	0.00	0.00	0.00
4,100.00	15.30	63.53	3,976.29	929.71	425.76	855.01	548.92	0.00	0.00	0.00



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<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4906.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4906.00usft (Original Well Elev)
<b>Site:</b>	NW NE SEC. 22 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-10-16HN	<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)
4,200.00	15.30	63.53	4,072.74	833.26	437.53	878.63	564.09	0.00	0.00	0.00
<b>SUSSEX SANDSTONE</b>										
<b>4,285.02</b>	<b>15.30</b>	<b>63.53</b>	<b>4,154.75</b>	<b>751.25</b>	<b>447.53</b>	<b>898.71</b>	<b>576.98</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
4,300.00	15.30	63.53	4,169.20	736.80	449.29	902.25	579.25	0.00	0.00	0.00
4,400.00	15.30	63.53	4,265.66	640.34	461.05	925.87	594.42	0.00	0.00	0.00
4,500.00	15.30	63.53	4,362.11	543.89	472.81	949.49	609.58	0.00	0.00	0.00
4,600.00	15.30	63.53	4,458.57	447.43	484.57	973.11	624.75	0.00	0.00	0.00
4,700.00	15.30	63.53	4,555.02	350.98	496.34	996.73	639.91	0.00	0.00	0.00
<b>SHANNON SANDSTONE</b>										
<b>4,790.95</b>	<b>15.30</b>	<b>63.53</b>	<b>4,642.75</b>	<b>263.25</b>	<b>507.03</b>	<b>1,018.21</b>	<b>653.70</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
4,800.00	15.30	63.53	4,651.48	254.52	508.10	1,020.35	655.08	0.00	0.00	0.00
4,900.00	15.30	63.53	4,747.94	158.06	519.86	1,043.97	670.24	0.00	0.00	0.00
5,000.00	15.30	63.53	4,844.39	61.61	531.62	1,067.59	685.40	0.00	0.00	0.00
5,100.00	15.30	63.53	4,940.85	-34.85	543.38	1,091.21	700.57	0.00	0.00	0.00
5,200.00	15.30	63.53	5,037.30	-131.30	555.15	1,114.83	715.73	0.00	0.00	0.00
5,300.00	15.30	63.53	5,133.76	-227.76	566.91	1,138.45	730.90	0.00	0.00	0.00
5,400.00	15.30	63.53	5,230.21	-324.21	578.67	1,162.07	746.06	0.00	0.00	0.00
5,500.00	15.30	63.53	5,326.67	-420.67	590.43	1,185.69	761.23	0.00	0.00	0.00
5,600.00	15.30	63.53	5,423.13	-517.13	602.19	1,209.31	776.39	0.00	0.00	0.00
5,700.00	15.30	63.53	5,519.58	-613.58	613.96	1,232.93	791.56	0.00	0.00	0.00
5,800.00	15.30	63.53	5,616.04	-710.04	625.72	1,256.55	806.72	0.00	0.00	0.00
5,900.00	15.30	63.53	5,712.49	-806.49	637.48	1,280.17	821.89	0.00	0.00	0.00
5,932.17	15.30	63.53	5,743.52	-837.52	641.26	1,287.77	826.76	0.00	0.00	0.00
<b>KOP (10°/100ft DGLG)</b>										
<b>5,932.20</b>	<b>15.30</b>	<b>63.53</b>	<b>5,743.55</b>	<b>-837.55</b>	<b>641.27</b>	<b>1,287.78</b>	<b>826.77</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
5,950.00	16.18	57.81	5,760.69	-854.69	643.64	1,291.98	829.74	10.02	4.94	-32.14
6,000.00	19.31	44.93	5,808.32	-902.32	653.21	1,303.72	840.96	10.00	6.25	-25.76
6,050.00	23.08	35.81	5,854.94	-948.94	667.01	1,315.30	856.34	10.00	7.55	-18.23
6,100.00	27.23	29.24	5,900.20	-994.20	684.96	1,326.63	875.78	10.00	8.31	-13.14
6,150.00	31.62	24.33	5,943.75	-1,037.75	706.89	1,337.62	899.11	10.00	8.77	-9.82
6,200.00	36.15	20.52	5,985.25	-1,079.25	732.66	1,348.20	926.18	10.00	9.06	-7.61
6,250.00	40.77	17.47	6,024.39	-1,118.39	762.06	1,358.27	956.75	10.00	9.25	-6.11
6,300.00	45.46	14.94	6,060.88	-1,154.88	794.88	1,367.77	990.62	10.00	9.39	-5.06
<b>SHARON SPRINGS</b>										
<b>6,309.15</b>	<b>46.33</b>	<b>14.52</b>	<b>6,067.25</b>	<b>-1,161.25</b>	<b>801.23</b>	<b>1,369.44</b>	<b>997.15</b>	<b>10.00</b>	<b>9.45</b>	<b>-4.57</b>
6,350.00	50.20	12.79	6,094.44	-1,188.44	830.85	1,376.63	1,027.51	10.00	9.49	-4.24
6,400.00	54.98	10.92	6,124.81	-1,218.81	869.71	1,384.76	1,067.15	10.00	9.55	-3.74
<b>NIORARA A CHALK</b>										
<b>6,414.08</b>	<b>56.33</b>	<b>10.43</b>	<b>6,132.75</b>	<b>-1,226.75</b>	<b>881.13</b>	<b>1,386.92</b>	<b>1,078.77</b>	<b>10.00</b>	<b>9.58</b>	<b>-3.46</b>
<b>NIORARA A CHALK BASE</b>										
<b>6,449.00</b>	<b>59.68</b>	<b>9.29</b>	<b>6,151.25</b>	<b>-1,245.25</b>	<b>910.31</b>	<b>1,391.98</b>	<b>1,108.37</b>	<b>10.00</b>	<b>9.61</b>	<b>-3.28</b>
6,450.00	59.78	9.26	6,151.75	-1,245.75	911.16	1,392.12	1,109.24	10.00	9.62	-3.16
6,500.00	64.60	7.75	6,175.08	-1,269.08	954.88	1,398.65	1,153.45	10.00	9.64	-3.01
<b>NIORARA B1 CHALK TOP</b>										
<b>6,521.01</b>	<b>66.63</b>	<b>7.15</b>	<b>6,183.75</b>	<b>-1,277.75</b>	<b>973.86</b>	<b>1,401.13</b>	<b>1,172.57</b>	<b>10.00</b>	<b>9.66</b>	<b>-2.84</b>
6,550.00	69.43	6.36	6,194.60	-1,288.60	1,000.55	1,404.29	1,199.44	10.00	9.67	-2.74
<b>NIORARA B1 CHALK BASE</b>										
<b>6,596.66</b>	<b>73.95</b>	<b>5.14</b>	<b>6,209.25</b>	<b>-1,303.25</b>	<b>1,044.62</b>	<b>1,408.72</b>	<b>1,243.68</b>	<b>10.00</b>	<b>9.69</b>	<b>-2.62</b>
6,600.00	74.28	5.05	6,210.16	-1,304.16	1,047.82	1,409.01	1,246.88	10.00	9.70	-2.55
6,650.00	79.13	3.81	6,221.66	-1,315.66	1,096.31	1,412.76	1,295.40	10.00	9.70	-2.49
6,700.00	83.98	2.61	6,229.00	-1,323.00	1,145.68	1,415.53	1,344.62	10.00	9.71	-2.41
6,750.00	88.84	1.42	6,232.13	-1,326.13	1,195.54	1,417.28	1,394.17	10.00	9.72	-2.37
<b>HZ LP: 600ft FSL &amp; 605ft FEL of Sec 15</b>										

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-10-16HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4906.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4906.00usft (Original Well Elev)
<b>Site:</b>	NW NE SEC. 22 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-10-16HN	<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)
6,761.90	90.00	1.14	6,232.25	-1,326.25	1,207.43	1,417.54	1,405.98	10.00	9.72	-2.36
NIOBRARA B2 CHALK TOP										
6,761.92	90.00	1.14	6,232.25	-1,326.25	1,207.45	1,417.55	1,405.99	10.00	9.72	-2.36
6,800.00	90.00	1.14	6,232.25	-1,326.25	1,245.52	1,418.30	1,443.75	0.00	0.00	0.00
6,900.00	90.00	1.14	6,232.25	-1,326.25	1,345.50	1,420.30	1,542.91	0.00	0.00	0.00
7,000.00	90.00	1.14	6,232.25	-1,326.25	1,445.48	1,422.29	1,642.06	0.00	0.00	0.00
7,100.00	90.00	1.14	6,232.25	-1,326.25	1,545.46	1,424.28	1,741.21	0.00	0.00	0.00
7,200.00	90.00	1.14	6,232.25	-1,326.25	1,645.44	1,426.27	1,840.36	0.00	0.00	0.00
7,300.00	90.00	1.14	6,232.25	-1,326.25	1,745.42	1,428.27	1,939.51	0.00	0.00	0.00
7,400.00	90.00	1.14	6,232.25	-1,326.25	1,845.40	1,430.26	2,038.67	0.00	0.00	0.00
7,500.00	90.00	1.14	6,232.25	-1,326.25	1,945.38	1,432.25	2,137.82	0.00	0.00	0.00
7,600.00	90.00	1.14	6,232.25	-1,326.25	2,045.37	1,434.24	2,236.97	0.00	0.00	0.00
7,700.00	90.00	1.14	6,232.25	-1,326.25	2,145.35	1,436.24	2,336.12	0.00	0.00	0.00
7,800.00	90.00	1.14	6,232.24	-1,326.24	2,245.33	1,438.23	2,435.28	0.00	0.00	0.00
7,900.00	90.00	1.14	6,232.24	-1,326.24	2,345.31	1,440.22	2,534.43	0.00	0.00	0.00
8,000.00	90.00	1.14	6,232.24	-1,326.24	2,445.29	1,442.21	2,633.58	0.00	0.00	0.00
8,100.00	90.00	1.14	6,232.24	-1,326.24	2,545.27	1,444.21	2,732.73	0.00	0.00	0.00
8,200.00	90.00	1.14	6,232.24	-1,326.24	2,645.25	1,446.20	2,831.89	0.00	0.00	0.00
8,300.00	90.00	1.14	6,232.24	-1,326.24	2,745.23	1,448.19	2,931.04	0.00	0.00	0.00
8,400.00	90.00	1.14	6,232.24	-1,326.24	2,845.21	1,450.18	3,030.19	0.00	0.00	0.00
8,500.00	90.00	1.14	6,232.24	-1,326.24	2,945.19	1,452.18	3,129.34	0.00	0.00	0.00
8,600.00	90.00	1.14	6,232.24	-1,326.24	3,045.17	1,454.17	3,228.50	0.00	0.00	0.00
8,700.00	90.00	1.14	6,232.24	-1,326.24	3,145.15	1,456.16	3,327.65	0.00	0.00	0.00
8,800.00	90.00	1.14	6,232.24	-1,326.24	3,245.13	1,458.15	3,426.80	0.00	0.00	0.00
8,900.00	90.00	1.14	6,232.24	-1,326.24	3,345.11	1,460.15	3,525.95	0.00	0.00	0.00
9,000.00	90.00	1.14	6,232.24	-1,326.24	3,445.09	1,462.14	3,625.11	0.00	0.00	0.00
9,100.00	90.00	1.14	6,232.24	-1,326.24	3,545.07	1,464.13	3,724.26	0.00	0.00	0.00
9,200.00	90.00	1.14	6,232.24	-1,326.24	3,645.05	1,466.12	3,823.41	0.00	0.00	0.00
9,300.00	90.00	1.14	6,232.24	-1,326.24	3,745.03	1,468.12	3,922.56	0.00	0.00	0.00
9,400.00	90.00	1.14	6,232.24	-1,326.24	3,845.01	1,470.11	4,021.71	0.00	0.00	0.00
9,500.00	90.00	1.14	6,232.24	-1,326.24	3,944.99	1,472.10	4,120.87	0.00	0.00	0.00
9,600.00	90.00	1.14	6,232.23	-1,326.23	4,044.97	1,474.09	4,220.02	0.00	0.00	0.00
9,700.00	90.00	1.14	6,232.23	-1,326.23	4,144.95	1,476.09	4,319.17	0.00	0.00	0.00
9,800.00	90.00	1.14	6,232.23	-1,326.23	4,244.93	1,478.08	4,418.32	0.00	0.00	0.00
9,900.00	90.00	1.14	6,232.23	-1,326.23	4,344.91	1,480.07	4,517.48	0.00	0.00	0.00
10,000.00	90.00	1.14	6,232.23	-1,326.23	4,444.89	1,482.06	4,616.63	0.00	0.00	0.00
10,100.00	90.00	1.14	6,232.23	-1,326.23	4,544.87	1,484.05	4,715.78	0.00	0.00	0.00
10,200.00	90.00	1.14	6,232.23	-1,326.23	4,644.85	1,486.05	4,814.93	0.00	0.00	0.00
10,300.00	90.00	1.14	6,232.23	-1,326.23	4,744.83	1,488.04	4,914.09	0.00	0.00	0.00
10,400.00	90.00	1.14	6,232.23	-1,326.23	4,844.81	1,490.03	5,013.24	0.00	0.00	0.00
10,500.00	90.00	1.14	6,232.23	-1,326.23	4,944.79	1,492.02	5,112.39	0.00	0.00	0.00
10,600.00	90.00	1.14	6,232.23	-1,326.23	5,044.77	1,494.02	5,211.54	0.00	0.00	0.00
10,700.00	90.00	1.14	6,232.23	-1,326.23	5,144.75	1,496.01	5,310.70	0.00	0.00	0.00
10,800.00	90.00	1.14	6,232.23	-1,326.23	5,244.73	1,498.00	5,409.85	0.00	0.00	0.00
10,900.00	90.00	1.14	6,232.23	-1,326.23	5,344.71	1,499.99	5,509.00	0.00	0.00	0.00
11,000.00	90.00	1.14	6,232.23	-1,326.23	5,444.69	1,501.99	5,608.15	0.00	0.00	0.00
11,100.00	90.00	1.14	6,232.23	-1,326.23	5,544.67	1,503.98	5,707.31	0.00	0.00	0.00
11,200.00	90.00	1.14	6,232.23	-1,326.23	5,644.65	1,505.97	5,806.46	0.00	0.00	0.00
11,300.00	90.00	1.14	6,232.23	-1,326.23	5,744.63	1,507.96	5,905.61	0.00	0.00	0.00
11,400.00	90.00	1.14	6,232.23	-1,326.23	5,844.61	1,509.96	6,004.76	0.00	0.00	0.00
11,500.00	90.00	1.14	6,232.22	-1,326.22	5,944.59	1,511.95	6,103.92	0.00	0.00	0.00
11,600.00	90.00	1.14	6,232.22	-1,326.22	6,044.57	1,513.94	6,203.07	0.00	0.00	0.00
11,700.00	90.00	1.14	6,232.22	-1,326.22	6,144.55	1,515.93	6,302.22	0.00	0.00	0.00
11,800.00	90.00	1.14	6,232.22	-1,326.22	6,244.53	1,517.93	6,401.37	0.00	0.00	0.00

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-10-16HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4906.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4906.00usft (Original Well Elev)
<b>Site:</b>	NW NE SEC. 22 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-10-16HN	<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)
11,900.00	90.00	1.14	6,232.22	-1,326.22	6,344.51	1,519.92	6,500.52	0.00	0.00	0.00
12,000.00	90.00	1.14	6,232.22	-1,326.22	6,444.49	1,521.91	6,599.68	0.00	0.00	0.00
12,100.00	90.00	1.14	6,232.22	-1,326.22	6,544.47	1,523.90	6,698.83	0.00	0.00	0.00
12,200.00	90.00	1.14	6,232.22	-1,326.22	6,644.45	1,525.90	6,797.98	0.00	0.00	0.00
12,300.00	90.00	1.14	6,232.22	-1,326.22	6,744.43	1,527.89	6,897.13	0.00	0.00	0.00
12,400.00	90.00	1.14	6,232.22	-1,326.22	6,844.41	1,529.88	6,996.29	0.00	0.00	0.00
12,500.00	90.00	1.14	6,232.22	-1,326.22	6,944.39	1,531.87	7,095.44	0.00	0.00	0.00
12,600.00	90.00	1.14	6,232.22	-1,326.22	7,044.37	1,533.87	7,194.59	0.00	0.00	0.00
12,700.00	90.00	1.14	6,232.22	-1,326.22	7,144.35	1,535.86	7,293.74	0.00	0.00	0.00
12,800.00	90.00	1.14	6,232.22	-1,326.22	7,244.33	1,537.85	7,392.90	0.00	0.00	0.00
12,900.00	90.00	1.14	6,232.22	-1,326.22	7,344.31	1,539.84	7,492.05	0.00	0.00	0.00
13,000.00	90.00	1.14	6,232.22	-1,326.22	7,444.29	1,541.84	7,591.20	0.00	0.00	0.00
13,100.00	90.00	1.14	6,232.22	-1,326.22	7,544.27	1,543.83	7,690.35	0.00	0.00	0.00
13,200.00	90.00	1.14	6,232.22	-1,326.22	7,644.25	1,545.82	7,789.51	0.00	0.00	0.00
13,300.00	90.00	1.14	6,232.22	-1,326.22	7,744.23	1,547.81	7,888.66	0.00	0.00	0.00
13,400.00	90.00	1.14	6,232.21	-1,326.21	7,844.21	1,549.81	7,987.81	0.00	0.00	0.00
13,500.00	90.00	1.14	6,232.21	-1,326.21	7,944.19	1,551.80	8,086.96	0.00	0.00	0.00
13,600.00	90.00	1.14	6,232.21	-1,326.21	8,044.17	1,553.79	8,186.12	0.00	0.00	0.00
13,700.00	90.00	1.14	6,232.21	-1,326.21	8,144.15	1,555.78	8,285.27	0.00	0.00	0.00
13,800.00	90.00	1.14	6,232.21	-1,326.21	8,244.13	1,557.78	8,384.42	0.00	0.00	0.00
13,900.00	90.00	1.14	6,232.21	-1,326.21	8,344.11	1,559.77	8,483.57	0.00	0.00	0.00
14,000.00	90.00	1.14	6,232.21	-1,326.21	8,444.09	1,561.76	8,582.72	0.00	0.00	0.00
14,100.00	90.00	1.14	6,232.21	-1,326.21	8,544.07	1,563.75	8,681.88	0.00	0.00	0.00
14,200.00	90.00	1.14	6,232.21	-1,326.21	8,644.05	1,565.75	8,781.03	0.00	0.00	0.00
14,300.00	90.00	1.14	6,232.21	-1,326.21	8,744.04	1,567.74	8,880.18	0.00	0.00	0.00
14,400.00	90.00	1.14	6,232.21	-1,326.21	8,844.02	1,569.73	8,979.33	0.00	0.00	0.00
14,500.00	90.00	1.14	6,232.21	-1,326.21	8,944.00	1,571.72	9,078.49	0.00	0.00	0.00
14,600.00	90.00	1.14	6,232.21	-1,326.21	9,043.98	1,573.72	9,177.64	0.00	0.00	0.00
14,700.00	90.00	1.14	6,232.21	-1,326.21	9,143.96	1,575.71	9,276.79	0.00	0.00	0.00
14,800.00	90.00	1.14	6,232.21	-1,326.21	9,243.94	1,577.70	9,375.94	0.00	0.00	0.00
14,900.00	90.00	1.14	6,232.21	-1,326.21	9,343.92	1,579.69	9,475.10	0.00	0.00	0.00
15,000.00	90.00	1.14	6,232.21	-1,326.21	9,443.90	1,581.69	9,574.25	0.00	0.00	0.00
15,100.00	90.00	1.14	6,232.21	-1,326.21	9,543.88	1,583.68	9,673.40	0.00	0.00	0.00
15,200.00	90.00	1.14	6,232.21	-1,326.21	9,643.86	1,585.67	9,772.55	0.00	0.00	0.00
15,300.00	90.00	1.14	6,232.20	-1,326.20	9,743.84	1,587.66	9,871.71	0.00	0.00	0.00
15,400.00	90.00	1.14	6,232.20	-1,326.20	9,843.82	1,589.65	9,970.86	0.00	0.00	0.00
15,500.00	90.00	1.14	6,232.20	-1,326.20	9,943.80	1,591.65	10,070.01	0.00	0.00	0.00
15,600.00	90.00	1.14	6,232.20	-1,326.20	10,043.78	1,593.64	10,169.16	0.00	0.00	0.00
15,700.00	90.00	1.14	6,232.20	-1,326.20	10,143.76	1,595.63	10,268.32	0.00	0.00	0.00
15,800.00	90.00	1.14	6,232.20	-1,326.20	10,243.74	1,597.62	10,367.47	0.00	0.00	0.00
15,900.00	90.00	1.14	6,232.20	-1,326.20	10,343.72	1,599.62	10,466.62	0.00	0.00	0.00
16,000.00	90.00	1.14	6,232.20	-1,326.20	10,443.70	1,601.61	10,565.77	0.00	0.00	0.00
16,100.00	90.00	1.14	6,232.20	-1,326.20	10,543.68	1,603.60	10,664.92	0.00	0.00	0.00
<b>BHL: 600ft FNL &amp; 605ft FEL of Sec 10</b>										
<b>16,158.75</b>	<b>90.00</b>	<b>1.14</b>	<b>6,232.20</b>	<b>-1,326.20</b>	<b>10,602.42</b>	<b>1,604.77</b>	<b>10,723.18</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-10-16HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4906.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4906.00usft (Original Well Elev)
<b>Site:</b>	NW NE SEC. 22 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-10-16HN	<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 (°)
1,523.13	1,490.75	FOX HILLS BASE			
3,391.86	3,293.25	RICHARD SANDSTONE			
4,285.02	4,154.75	SUSSEX SANDSTONE			
4,790.95	4,642.75	SHANNON SANDSTONE			
6,309.15	6,067.25	SHARON SPRINGS			
6,414.08	6,132.75	NIOBRARA A CHALK			
6,449.00	6,151.25	NIOBRARA A CHALK BASE			
6,521.01	6,183.75	NIOBRARA B1 CHALK TOP			
6,596.66	6,209.25	NIOBRARA B1 CHALK BASE			
6,761.92	6,232.25	NIOBRARA B2 CHALK TOP			

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.00	0.00	0.00	0.00	SHL: 600ft FNL & 1998ft FEL of Sec 22
100.00	100.00	0.00	0.00	START NUDGE (2°/100ft BUR)
865.00	855.94	45.26	90.89	EOB TO 15.3° INC
1,589.75	1,555.00	130.51	262.08	SURFACE CASING
5,932.20	5,743.55	641.27	1,287.78	KOP (10°/100ft DGLG)
6,761.90	6,232.25	1,207.43	1,417.54	HZ LP: 600ft FSL & 605ft FEL of Sec 15
16,158.75	6,232.20	10,602.42	1,604.77	BHL: 600ft FNL & 605ft FEL of Sec 10