

# **MALLARD EXPLORATION**

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

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

**BLUE TEAL FED 15-10-9HN**

**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 15-10-9HN  
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 & 2173ft FEL of Sec 22	
900.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2"/100ft BUR)	
1313.42	1314.87	8.30	338.97	27.99	-10.76	28.05	29.99	EOB TO 8.3° INC	
1555.00	1559.00	8.30	338.97	60.88	-23.40	61.01	65.22	SURFACE CASING	
5738.58	5786.84	8.30	338.97	630.38	-242.35	631.75	675.36	KOP (10°/100ft DGLG)	
6234.25	6610.08	90.00	1.20	1198.66	-257.76	1200.10	1244.68	HZ LP: 600ft FSL & 2455ft FEL of Sec 15	
6234.20	16010.39	90.00	1.20	10596.89	-60.19	10597.06	10644.99	BHL: 600ft FNL & 2445ft FEL of Sec 10	

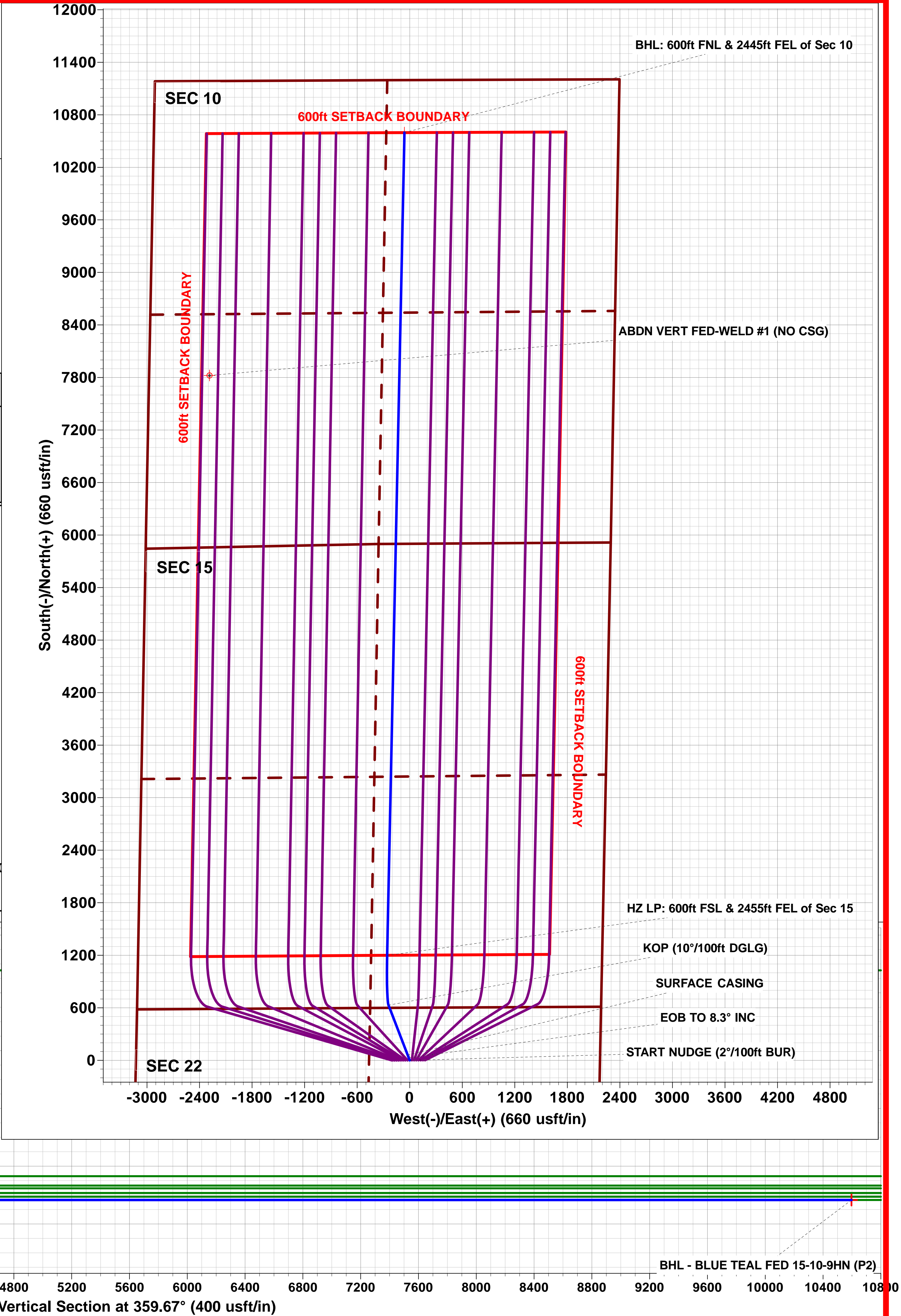
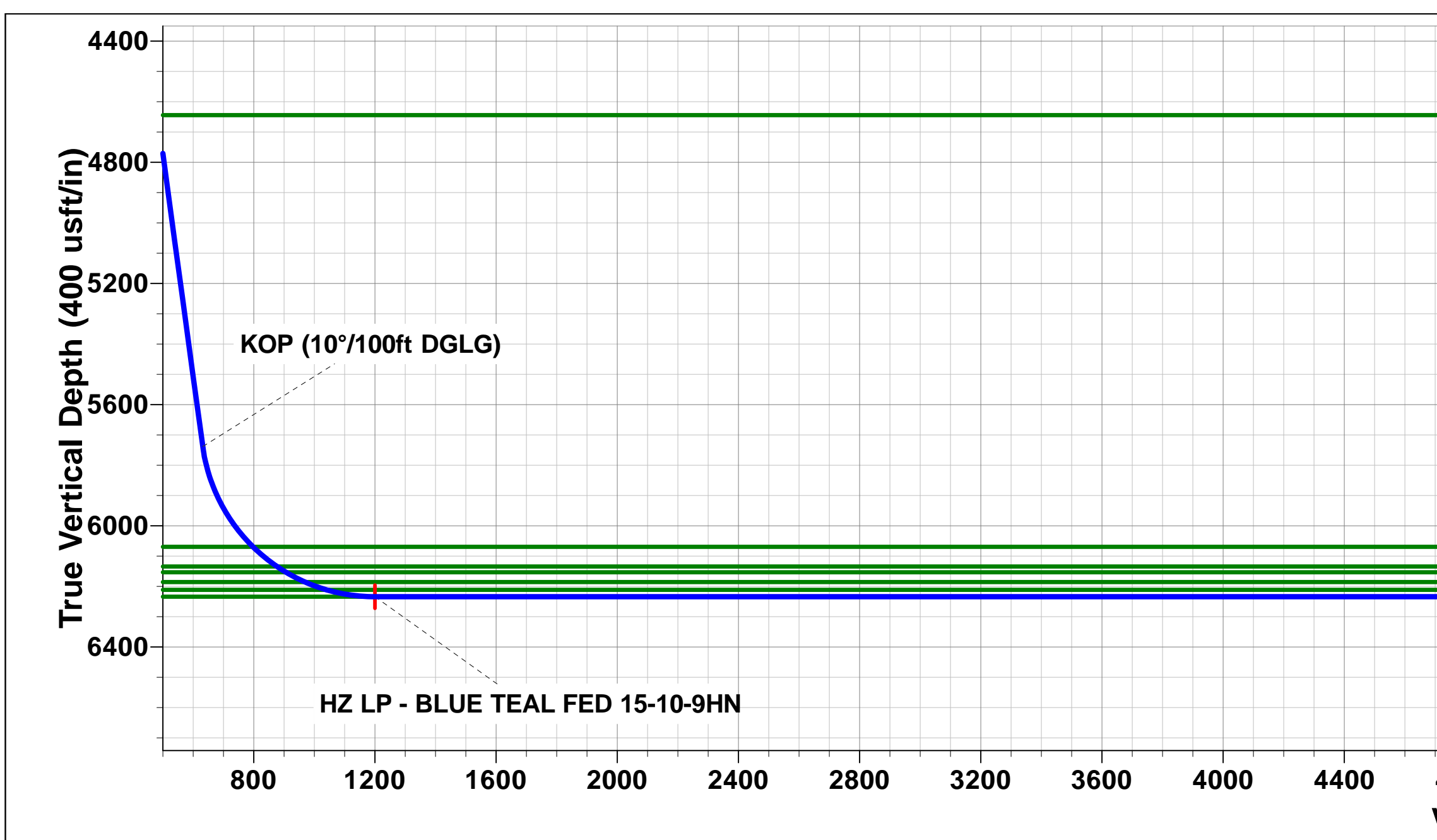
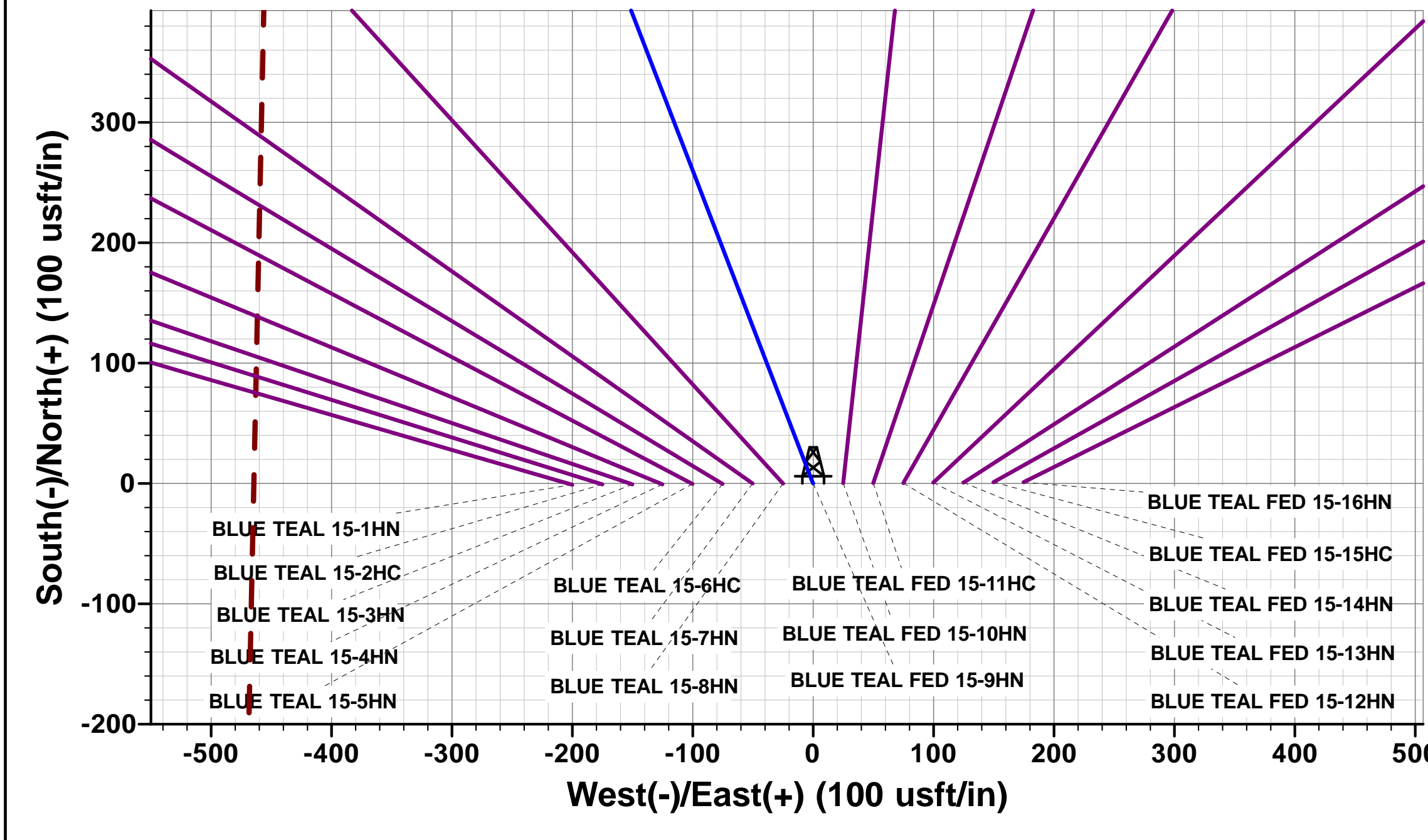
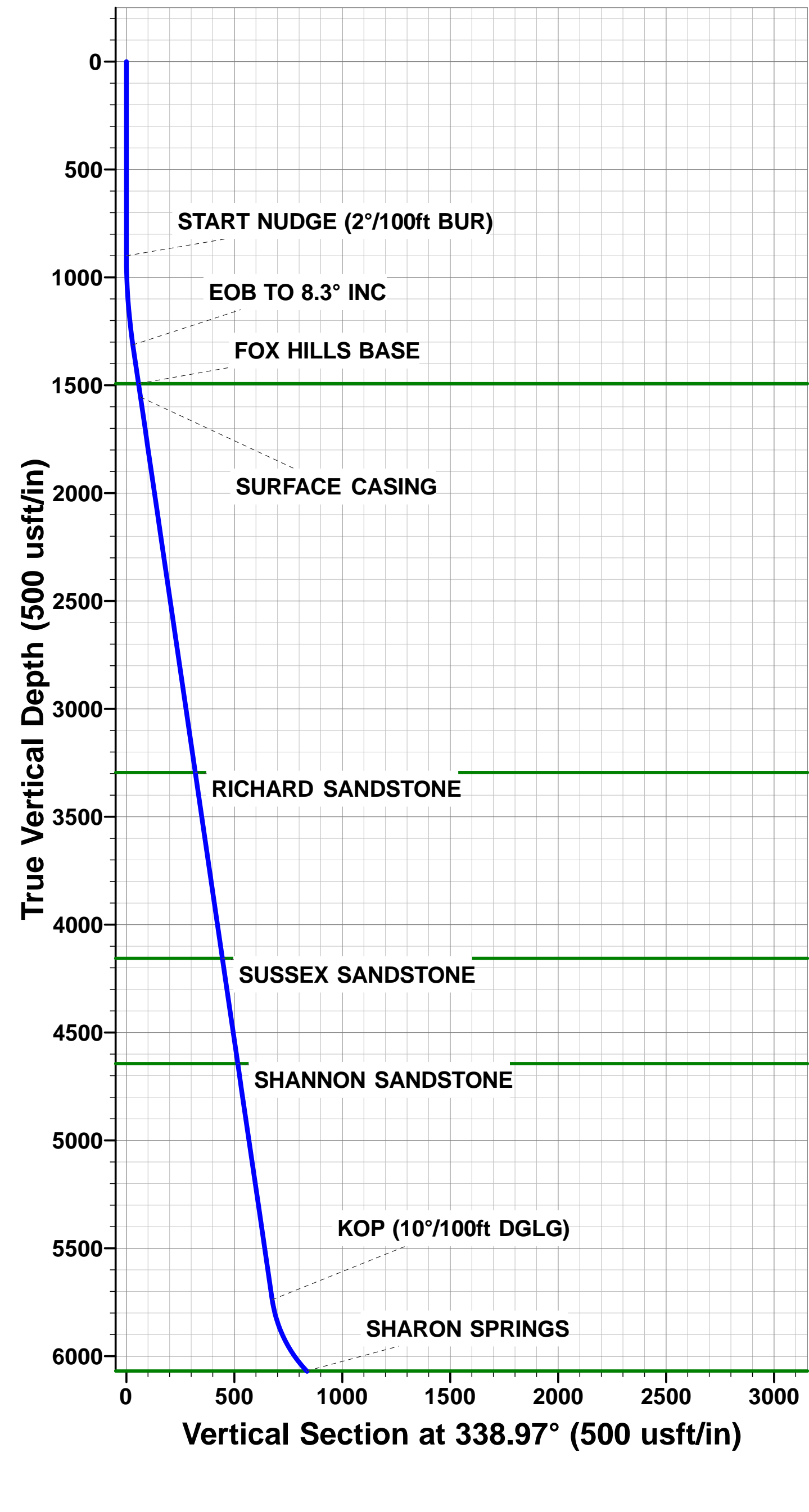
PROPOSED LOCAL COORDINATES:

SHL: 600ft FNL & 2173ft FEL Sec 22

HZ LP: 600ft FSL & 2455ft FEL Sec 15

BHL: 600ft FNL & 2445ft FEL of Sec 10

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
HZ LP - BLUE TEAL FED 15-10-9HN	6234.25	1198.66	-257.76	40.656792	-104.076550
BHL - BLUE TEAL FED 15-10-9HN (P2)	6234.20	10596.89	-60.19	40.682588	-104.075838



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-10-9HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4908.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4908.00usft (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 15-10-9HN	<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 15-10-9HN				
Well Position	+N/-S	1.07 usft	Northing:	1,484,087.36 usft	Latitude:	40.653502
	+E/-W	200.06 usft	Easting:	3,395,203.85 usft	Longitude:	-104.075621
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,892.00 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	359.67

<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	-4,908.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	-4,008.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,314.88	8.30	338.97	1,313.43	-3,594.57	27.99	-10.76	2.00	2.00	0.00	338.97	
5,786.85	8.30	338.97	5,738.59	830.59	630.38	-242.35	0.00	0.00	0.00	0.00	
6,610.08	90.00	1.20	6,234.25	1,326.25	1,198.66	-257.76	10.00	9.92	2.70	22.45	HZ LP - BLUE TEAL F
16,010.39	90.00	1.20	6,234.20	1,326.20	10,596.89	-60.19	0.00	0.00	0.00	0.00	BHL - BLUE TEAL FE

# Planning Report



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<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4908.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4908.00usft (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 15-10-9HN	<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; 2173ft FEL of Sec 22</b>										
0.00	0.00	0.00	0.00	4,908.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,808.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	4,708.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	4,608.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	4,508.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	4,408.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	4,308.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	4,208.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	4,108.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>START NUDGE (2°/100ft BUR)</b>										
900.00	0.00	0.00	900.00	4,008.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	2.00	338.97	999.98	3,908.02	1.63	-0.63	1.63	2.00	2.00	0.00
1,100.00	4.00	338.97	1,099.84	3,808.16	6.51	-2.50	6.53	2.00	2.00	0.00
1,200.00	6.00	338.97	1,199.45	3,708.55	14.65	-5.63	14.68	2.00	2.00	0.00
1,300.00	8.00	338.97	1,298.70	3,609.30	26.02	-10.00	26.08	2.00	2.00	0.00
<b>EOB TO 8.3° INC</b>										
1,314.87	8.30	338.97	1,313.42	3,594.58	27.99	-10.76	28.05	2.00	2.00	0.00
1,314.88	8.30	338.97	1,313.43	3,594.57	27.99	-10.76	28.05	2.00	2.00	0.00
1,400.00	8.30	338.97	1,397.66	3,510.34	39.46	-15.17	39.54	0.00	0.00	0.00
<b>FOX HILLS BASE</b>										
1,496.10	8.30	338.97	1,492.75	3,415.25	52.40	-20.15	52.52	0.00	0.00	0.00
1,500.00	8.30	338.97	1,496.61	3,411.39	52.93	-20.35	53.04	0.00	0.00	0.00
<b>SURFACE CASING</b>										
1,559.00	8.30	338.97	1,555.00	3,353.00	60.88	-23.40	61.01	0.00	0.00	0.00
1,600.00	8.30	338.97	1,595.57	3,312.43	66.40	-25.53	66.54	0.00	0.00	0.00
1,700.00	8.30	338.97	1,694.52	3,213.48	79.87	-30.71	80.04	0.00	0.00	0.00
1,800.00	8.30	338.97	1,793.47	3,114.53	93.34	-35.88	93.54	0.00	0.00	0.00
1,900.00	8.30	338.97	1,892.43	3,015.57	106.81	-41.06	107.04	0.00	0.00	0.00
2,000.00	8.30	338.97	1,991.38	2,916.62	120.28	-46.24	120.54	0.00	0.00	0.00
2,100.00	8.30	338.97	2,090.33	2,817.67	133.75	-51.42	134.04	0.00	0.00	0.00
2,200.00	8.30	338.97	2,189.29	2,718.71	147.22	-56.60	147.54	0.00	0.00	0.00
2,300.00	8.30	338.97	2,288.24	2,619.76	160.69	-61.78	161.04	0.00	0.00	0.00
2,400.00	8.30	338.97	2,387.19	2,520.81	174.16	-66.96	174.54	0.00	0.00	0.00
2,500.00	8.30	338.97	2,486.15	2,421.85	187.63	-72.13	188.04	0.00	0.00	0.00
2,600.00	8.30	338.97	2,585.10	2,322.90	201.10	-77.31	201.54	0.00	0.00	0.00
2,700.00	8.30	338.97	2,684.05	2,223.95	214.57	-82.49	215.04	0.00	0.00	0.00
2,800.00	8.30	338.97	2,783.00	2,125.00	228.04	-87.67	228.54	0.00	0.00	0.00
2,900.00	8.30	338.97	2,881.96	2,026.04	241.51	-92.85	242.04	0.00	0.00	0.00
3,000.00	8.30	338.97	2,980.91	1,927.09	254.98	-98.03	255.54	0.00	0.00	0.00
3,100.00	8.30	338.97	3,079.86	1,828.14	268.45	-103.21	269.04	0.00	0.00	0.00
3,200.00	8.30	338.97	3,178.82	1,729.18	281.93	-108.38	282.54	0.00	0.00	0.00
3,300.00	8.30	338.97	3,277.77	1,630.23	295.40	-113.56	296.04	0.00	0.00	0.00
<b>RICHARD SANDSTONE</b>										
3,377.66	8.30	338.97	3,295.25	1,612.75	297.77	-114.48	298.42	0.00	0.00	0.00
3,400.00	8.30	338.97	3,376.72	1,531.28	308.87	-118.74	309.54	0.00	0.00	0.00
3,500.00	8.30	338.97	3,475.68	1,432.32	322.34	-123.92	323.03	0.00	0.00	0.00
3,600.00	8.30	338.97	3,574.63	1,333.37	335.81	-129.10	336.53	0.00	0.00	0.00
3,700.00	8.30	338.97	3,673.58	1,234.42	349.28	-134.28	350.03	0.00	0.00	0.00
3,800.00	8.30	338.97	3,772.54	1,135.46	362.75	-139.46	363.53	0.00	0.00	0.00
3,900.00	8.30	338.97	3,871.49	1,036.51	376.22	-144.64	377.03	0.00	0.00	0.00
4,000.00	8.30	338.97	3,970.44	937.56	389.69	-149.81	390.53	0.00	0.00	0.00
4,100.00	8.30	338.97	4,069.40	838.60	403.16	-154.99	404.03	0.00	0.00	0.00



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<b>Site:</b>	NW NE SEC. 22 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-10-9HN	<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>SUSSEX SANDSTONE</b>										
4,188.28	8.30	338.97	4,156.75	751.25	415.05	-159.56	415.95	0.00	0.00	0.00
4,200.00	8.30	338.97	4,168.35	739.65	416.63	-160.17	417.53	0.00	0.00	0.00
4,300.00	8.30	338.97	4,267.30	640.70	430.10	-165.35	431.03	0.00	0.00	0.00
4,400.00	8.30	338.97	4,366.26	541.74	443.57	-170.53	444.53	0.00	0.00	0.00
4,500.00	8.30	338.97	4,465.21	442.79	457.04	-175.71	458.03	0.00	0.00	0.00
4,600.00	8.30	338.97	4,564.16	343.84	470.51	-180.89	471.53	0.00	0.00	0.00
<b>SHANNON SANDSTONE</b>										
4,681.44	8.30	338.97	4,644.75	263.25	481.48	-185.10	482.52	0.00	0.00	0.00
4,700.00	8.30	338.97	4,663.11	244.89	483.98	-186.06	485.03	0.00	0.00	0.00
4,800.00	8.30	338.97	4,762.07	145.93	497.45	-191.24	498.53	0.00	0.00	0.00
4,900.00	8.30	338.97	4,861.02	46.98	510.92	-196.42	512.03	0.00	0.00	0.00
5,000.00	8.30	338.97	4,959.97	-51.97	524.39	-201.60	525.53	0.00	0.00	0.00
5,100.00	8.30	338.97	5,058.93	-150.93	537.86	-206.78	539.03	0.00	0.00	0.00
5,200.00	8.30	338.97	5,157.88	-249.88	551.33	-211.96	552.53	0.00	0.00	0.00
5,300.00	8.30	338.97	5,256.83	-348.83	564.80	-217.14	566.03	0.00	0.00	0.00
5,400.00	8.30	338.97	5,355.79	-447.79	578.27	-222.32	579.53	0.00	0.00	0.00
5,500.00	8.30	338.97	5,454.74	-546.74	591.74	-227.49	593.03	0.00	0.00	0.00
5,600.00	8.30	338.97	5,553.69	-645.69	605.21	-232.67	606.53	0.00	0.00	0.00
5,700.00	8.30	338.97	5,652.65	-744.65	618.69	-237.85	620.03	0.00	0.00	0.00
<b>KOP (10°/100ft DGLG)</b>										
5,786.84	8.30	338.97	5,738.58	-830.58	630.38	-242.35	631.75	0.00	0.00	0.00
5,800.00	9.53	342.01	5,751.58	-843.58	632.31	-243.03	633.68	10.00	9.34	23.07
5,850.00	14.34	348.74	5,800.49	-892.49	642.32	-245.51	643.70	10.00	9.62	13.46
5,900.00	19.24	352.11	5,848.34	-940.34	656.56	-247.86	657.96	10.00	9.81	6.75
5,950.00	24.19	354.15	5,894.78	-986.78	674.92	-250.03	676.33	10.00	9.89	4.08
6,000.00	29.15	355.53	5,939.45	-1,031.45	697.27	-252.03	698.69	10.00	9.92	2.76
6,050.00	34.12	356.53	5,982.00	-1,074.00	723.42	-253.83	724.85	10.00	9.94	2.01
6,100.00	39.10	357.31	6,022.13	-1,114.13	753.19	-255.42	754.63	10.00	9.96	1.56
6,150.00	44.08	357.94	6,059.51	-1,151.51	786.34	-256.78	787.78	10.00	9.97	1.25
<b>SHARON SPRINGS</b>										
6,163.72	45.45	358.09	6,069.25	-1,161.25	795.99	-257.12	797.44	10.00	9.97	1.11
6,200.00	49.07	358.46	6,093.87	-1,185.87	822.62	-257.92	824.07	10.00	9.97	1.02
6,250.00	54.06	358.91	6,124.94	-1,216.94	861.76	-258.81	863.22	10.00	9.98	0.90
<b>NIORARA A CHALK</b>										
6,267.06	55.76	359.05	6,134.75	-1,226.75	875.72	-259.06	877.17	10.00	9.98	0.82
6,300.00	59.04	359.31	6,152.50	-1,244.50	903.46	-259.45	904.92	10.00	9.98	0.78
<b>NIORARA A CHALK BASE</b>										
6,301.47	59.19	359.32	6,153.25	-1,245.25	904.72	-259.47	906.18	10.00	9.98	0.75
6,350.00	64.03	359.66	6,176.32	-1,268.32	947.40	-259.85	948.87	10.00	9.98	0.71
<b>NIORARA B1 CHALK TOP</b>										
6,372.45	66.28	359.81	6,185.75	-1,277.75	967.78	-259.94	969.24	10.00	9.98	0.67
6,400.00	69.03	359.99	6,196.22	-1,288.22	993.25	-259.98	994.71	10.00	9.98	0.64
<b>NIORARA B1 CHALK BASE</b>										
6,447.06	73.72	0.28	6,211.25	-1,303.25	1,037.84	-259.87	1,039.30	10.00	9.98	0.61
6,450.00	74.02	0.30	6,212.07	-1,304.07	1,040.66	-259.86	1,042.12	10.00	9.98	0.60
6,500.00	79.01	0.59	6,223.72	-1,315.72	1,089.26	-259.48	1,090.72	10.00	9.98	0.58
6,550.00	84.00	0.87	6,231.11	-1,323.11	1,138.70	-258.85	1,140.15	10.00	9.98	0.56
6,600.00	88.99	1.15	6,234.16	-1,326.16	1,188.58	-257.97	1,190.03	10.00	9.98	0.55
<b>HZ LP: 600ft FSL &amp; 2455ft FEL of Sec 15 - NIOBRARA B2 CHALK TOP</b>										
6,610.08	90.00	1.20	6,234.25	-1,326.25	1,198.66	-257.76	1,200.10	10.00	9.98	0.55
6,700.00	90.00	1.20	6,234.25	-1,326.25	1,288.56	-255.87	1,289.99	0.00	0.00	0.00
6,800.00	90.00	1.20	6,234.25	-1,326.25	1,388.53	-253.77	1,389.95	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 15-10-9HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4908.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4908.00usft (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 15-10-9HN	<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)
6,900.00	90.00	1.20	6,234.25	-1,326.25	1,488.51	-251.67	1,489.92	0.00	0.00	0.00
7,000.00	90.00	1.20	6,234.25	-1,326.25	1,588.49	-249.57	1,589.88	0.00	0.00	0.00
7,100.00	90.00	1.20	6,234.25	-1,326.25	1,688.47	-247.46	1,689.85	0.00	0.00	0.00
7,200.00	90.00	1.20	6,234.25	-1,326.25	1,788.45	-245.36	1,789.81	0.00	0.00	0.00
7,300.00	90.00	1.20	6,234.25	-1,326.25	1,888.42	-243.26	1,889.78	0.00	0.00	0.00
7,400.00	90.00	1.20	6,234.25	-1,326.25	1,988.40	-241.16	1,989.74	0.00	0.00	0.00
7,500.00	90.00	1.20	6,234.25	-1,326.25	2,088.38	-239.06	2,089.70	0.00	0.00	0.00
7,600.00	90.00	1.20	6,234.24	-1,326.24	2,188.36	-236.95	2,189.67	0.00	0.00	0.00
7,700.00	90.00	1.20	6,234.24	-1,326.24	2,288.34	-234.85	2,289.63	0.00	0.00	0.00
7,800.00	90.00	1.20	6,234.24	-1,326.24	2,388.31	-232.75	2,389.60	0.00	0.00	0.00
7,900.00	90.00	1.20	6,234.24	-1,326.24	2,488.29	-230.65	2,489.56	0.00	0.00	0.00
8,000.00	90.00	1.20	6,234.24	-1,326.24	2,588.27	-228.55	2,589.53	0.00	0.00	0.00
8,100.00	90.00	1.20	6,234.24	-1,326.24	2,688.25	-226.45	2,689.49	0.00	0.00	0.00
8,200.00	90.00	1.20	6,234.24	-1,326.24	2,788.23	-224.34	2,789.45	0.00	0.00	0.00
8,300.00	90.00	1.20	6,234.24	-1,326.24	2,888.20	-222.24	2,889.42	0.00	0.00	0.00
8,400.00	90.00	1.20	6,234.24	-1,326.24	2,988.18	-220.14	2,989.38	0.00	0.00	0.00
8,500.00	90.00	1.20	6,234.24	-1,326.24	3,088.16	-218.04	3,089.35	0.00	0.00	0.00
8,600.00	90.00	1.20	6,234.24	-1,326.24	3,188.14	-215.94	3,189.31	0.00	0.00	0.00
8,700.00	90.00	1.20	6,234.24	-1,326.24	3,288.12	-213.84	3,289.28	0.00	0.00	0.00
8,800.00	90.00	1.20	6,234.24	-1,326.24	3,388.09	-211.73	3,389.24	0.00	0.00	0.00
8,900.00	90.00	1.20	6,234.24	-1,326.24	3,488.07	-209.63	3,489.21	0.00	0.00	0.00
9,000.00	90.00	1.20	6,234.24	-1,326.24	3,588.05	-207.53	3,589.17	0.00	0.00	0.00
9,100.00	90.00	1.20	6,234.24	-1,326.24	3,688.03	-205.43	3,689.13	0.00	0.00	0.00
9,200.00	90.00	1.20	6,234.24	-1,326.24	3,788.00	-203.33	3,789.10	0.00	0.00	0.00
9,300.00	90.00	1.20	6,234.24	-1,326.24	3,887.98	-201.22	3,889.06	0.00	0.00	0.00
9,400.00	90.00	1.20	6,234.24	-1,326.24	3,987.96	-199.12	3,989.03	0.00	0.00	0.00
9,500.00	90.00	1.20	6,234.23	-1,326.23	4,087.94	-197.02	4,088.99	0.00	0.00	0.00
9,600.00	90.00	1.20	6,234.23	-1,326.23	4,187.92	-194.92	4,188.96	0.00	0.00	0.00
9,700.00	90.00	1.20	6,234.23	-1,326.23	4,287.89	-192.82	4,288.92	0.00	0.00	0.00
9,800.00	90.00	1.20	6,234.23	-1,326.23	4,387.87	-190.72	4,388.88	0.00	0.00	0.00
9,900.00	90.00	1.20	6,234.23	-1,326.23	4,487.85	-188.61	4,488.85	0.00	0.00	0.00
10,000.00	90.00	1.20	6,234.23	-1,326.23	4,587.83	-186.51	4,588.81	0.00	0.00	0.00
10,100.00	90.00	1.20	6,234.23	-1,326.23	4,687.81	-184.41	4,688.78	0.00	0.00	0.00
10,200.00	90.00	1.20	6,234.23	-1,326.23	4,787.78	-182.31	4,788.74	0.00	0.00	0.00
10,300.00	90.00	1.20	6,234.23	-1,326.23	4,887.76	-180.21	4,888.71	0.00	0.00	0.00
10,400.00	90.00	1.20	6,234.23	-1,326.23	4,987.74	-178.10	4,988.67	0.00	0.00	0.00
10,500.00	90.00	1.20	6,234.23	-1,326.23	5,087.72	-176.00	5,088.63	0.00	0.00	0.00
10,600.00	90.00	1.20	6,234.23	-1,326.23	5,187.70	-173.90	5,188.60	0.00	0.00	0.00
10,700.00	90.00	1.20	6,234.23	-1,326.23	5,287.67	-171.80	5,288.56	0.00	0.00	0.00
10,800.00	90.00	1.20	6,234.23	-1,326.23	5,387.65	-169.70	5,388.53	0.00	0.00	0.00
10,900.00	90.00	1.20	6,234.23	-1,326.23	5,487.63	-167.60	5,488.49	0.00	0.00	0.00
11,000.00	90.00	1.20	6,234.23	-1,326.23	5,587.61	-165.49	5,588.46	0.00	0.00	0.00
11,100.00	90.00	1.20	6,234.23	-1,326.23	5,687.58	-163.39	5,688.42	0.00	0.00	0.00
11,200.00	90.00	1.20	6,234.23	-1,326.23	5,787.56	-161.29	5,788.39	0.00	0.00	0.00
11,300.00	90.00	1.20	6,234.23	-1,326.23	5,887.54	-159.19	5,888.35	0.00	0.00	0.00
11,400.00	90.00	1.20	6,234.22	-1,326.22	5,987.52	-157.09	5,988.31	0.00	0.00	0.00
11,500.00	90.00	1.20	6,234.22	-1,326.22	6,087.50	-154.98	6,088.28	0.00	0.00	0.00
11,600.00	90.00	1.20	6,234.22	-1,326.22	6,187.47	-152.88	6,188.24	0.00	0.00	0.00
11,700.00	90.00	1.20	6,234.22	-1,326.22	6,287.45	-150.78	6,288.21	0.00	0.00	0.00
11,800.00	90.00	1.20	6,234.22	-1,326.22	6,387.43	-148.68	6,388.17	0.00	0.00	0.00
11,900.00	90.00	1.20	6,234.22	-1,326.22	6,487.41	-146.58	6,488.14	0.00	0.00	0.00
12,000.00	90.00	1.20	6,234.22	-1,326.22	6,587.39	-144.48	6,588.10	0.00	0.00	0.00
12,100.00	90.00	1.20	6,234.22	-1,326.22	6,687.36	-142.37	6,688.06	0.00	0.00	0.00
12,200.00	90.00	1.20	6,234.22	-1,326.22	6,787.34	-140.27	6,788.03	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 15-10-9HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4908.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4908.00usft (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 15-10-9HN	<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	1.20	6,234.22	-1,326.22	6,887.32	-138.17	6,887.99	0.00	0.00	0.00
12,400.00	90.00	1.20	6,234.22	-1,326.22	6,987.30	-136.07	6,987.96	0.00	0.00	0.00
12,500.00	90.00	1.20	6,234.22	-1,326.22	7,087.28	-133.97	7,087.92	0.00	0.00	0.00
12,600.00	90.00	1.20	6,234.22	-1,326.22	7,187.25	-131.87	7,187.89	0.00	0.00	0.00
12,700.00	90.00	1.20	6,234.22	-1,326.22	7,287.23	-129.76	7,287.85	0.00	0.00	0.00
12,800.00	90.00	1.20	6,234.22	-1,326.22	7,387.21	-127.66	7,387.82	0.00	0.00	0.00
12,900.00	90.00	1.20	6,234.22	-1,326.22	7,487.19	-125.56	7,487.78	0.00	0.00	0.00
13,000.00	90.00	1.20	6,234.22	-1,326.22	7,587.17	-123.46	7,587.74	0.00	0.00	0.00
13,100.00	90.00	1.20	6,234.22	-1,326.22	7,687.14	-121.36	7,687.71	0.00	0.00	0.00
13,200.00	90.00	1.20	6,234.21	-1,326.21	7,787.12	-119.25	7,787.67	0.00	0.00	0.00
13,300.00	90.00	1.20	6,234.21	-1,326.21	7,887.10	-117.15	7,887.64	0.00	0.00	0.00
13,400.00	90.00	1.20	6,234.21	-1,326.21	7,987.08	-115.05	7,987.60	0.00	0.00	0.00
13,500.00	90.00	1.20	6,234.21	-1,326.21	8,087.05	-112.95	8,087.57	0.00	0.00	0.00
13,600.00	90.00	1.20	6,234.21	-1,326.21	8,187.03	-110.85	8,187.53	0.00	0.00	0.00
13,700.00	90.00	1.20	6,234.21	-1,326.21	8,287.01	-108.75	8,287.49	0.00	0.00	0.00
13,800.00	90.00	1.20	6,234.21	-1,326.21	8,386.99	-106.64	8,387.46	0.00	0.00	0.00
13,900.00	90.00	1.20	6,234.21	-1,326.21	8,486.97	-104.54	8,487.42	0.00	0.00	0.00
14,000.00	90.00	1.20	6,234.21	-1,326.21	8,586.94	-102.44	8,587.39	0.00	0.00	0.00
14,100.00	90.00	1.20	6,234.21	-1,326.21	8,686.92	-100.34	8,687.35	0.00	0.00	0.00
14,200.00	90.00	1.20	6,234.21	-1,326.21	8,786.90	-98.24	8,787.32	0.00	0.00	0.00
14,300.00	90.00	1.20	6,234.21	-1,326.21	8,886.88	-96.13	8,887.28	0.00	0.00	0.00
14,400.00	90.00	1.20	6,234.21	-1,326.21	8,986.86	-94.03	8,987.24	0.00	0.00	0.00
14,500.00	90.00	1.20	6,234.21	-1,326.21	9,086.83	-91.93	9,087.21	0.00	0.00	0.00
14,600.00	90.00	1.20	6,234.21	-1,326.21	9,186.81	-89.83	9,187.17	0.00	0.00	0.00
14,700.00	90.00	1.20	6,234.21	-1,326.21	9,286.79	-87.73	9,287.14	0.00	0.00	0.00
14,800.00	90.00	1.20	6,234.21	-1,326.21	9,386.77	-85.63	9,387.10	0.00	0.00	0.00
14,900.00	90.00	1.20	6,234.21	-1,326.21	9,486.75	-83.52	9,487.07	0.00	0.00	0.00
15,000.00	90.00	1.20	6,234.21	-1,326.21	9,586.72	-81.42	9,587.03	0.00	0.00	0.00
15,100.00	90.00	1.20	6,234.20	-1,326.20	9,686.70	-79.32	9,687.00	0.00	0.00	0.00
15,200.00	90.00	1.20	6,234.20	-1,326.20	9,786.68	-77.22	9,786.96	0.00	0.00	0.00
15,300.00	90.00	1.20	6,234.20	-1,326.20	9,886.66	-75.12	9,886.92	0.00	0.00	0.00
15,400.00	90.00	1.20	6,234.20	-1,326.20	9,986.63	-73.02	9,986.89	0.00	0.00	0.00
15,500.00	90.00	1.20	6,234.20	-1,326.20	10,086.61	-70.91	10,086.85	0.00	0.00	0.00
15,600.00	90.00	1.20	6,234.20	-1,326.20	10,186.59	-68.81	10,186.82	0.00	0.00	0.00
15,700.00	90.00	1.20	6,234.20	-1,326.20	10,286.57	-66.71	10,286.78	0.00	0.00	0.00
15,800.00	90.00	1.20	6,234.20	-1,326.20	10,386.55	-64.61	10,386.75	0.00	0.00	0.00
15,900.00	90.00	1.20	6,234.20	-1,326.20	10,486.52	-62.51	10,486.71	0.00	0.00	0.00
16,000.00	90.00	1.20	6,234.20	-1,326.20	10,586.50	-60.40	10,586.67	0.00	0.00	0.00
<b>BHL: 600ft FNL &amp; 2445ft FEL of Sec 10</b>										
<b>16,010.39</b>	<b>90.00</b>	<b>1.20</b>	<b>6,234.20</b>	<b>-1,326.20</b>	<b>10,596.89</b>	<b>-60.19</b>	<b>10,597.06</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

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<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4908.00usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4908.00usft (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 15-10-9HN	<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 (°)
1,496.10	1,492.75	FOX HILLS BASE			
3,317.66	3,295.25	RICHARD SANDSTONE			
4,188.28	4,156.75	SUSSEX SANDSTONE			
4,681.44	4,644.75	SHANNON SANDSTONE			
6,163.72	6,069.25	SHARON SPRINGS			
6,267.06	6,134.75	NIOBRARA A CHALK			
6,301.47	6,153.25	NIOBRARA A CHALK BASE			
6,372.45	6,185.75	NIOBRARA B1 CHALK TOP			
6,447.06	6,211.25	NIOBRARA B1 CHALK BASE			
6,610.08	6,234.25	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 & 2173ft FEL of Sec 22
900.00	900.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1,314.87	1,313.42	27.99	-10.76	EOB TO 8.3° INC
1,559.00	1,555.00	60.88	-23.40	SURFACE CASING
5,786.84	5,738.58	630.38	-242.35	KOP (10°/100ft DGLG)
6,610.08	6,234.25	1,198.66	-257.76	HZ LP: 600ft FSL & 2455ft FEL of Sec 15
16,010.39	6,234.20	10,596.89	-60.19	BHL: 600ft FNL & 2445ft FEL of Sec 10