

MALLARD EXPLORATION

WELD COUNTY, COLORADO (NAD 83)

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

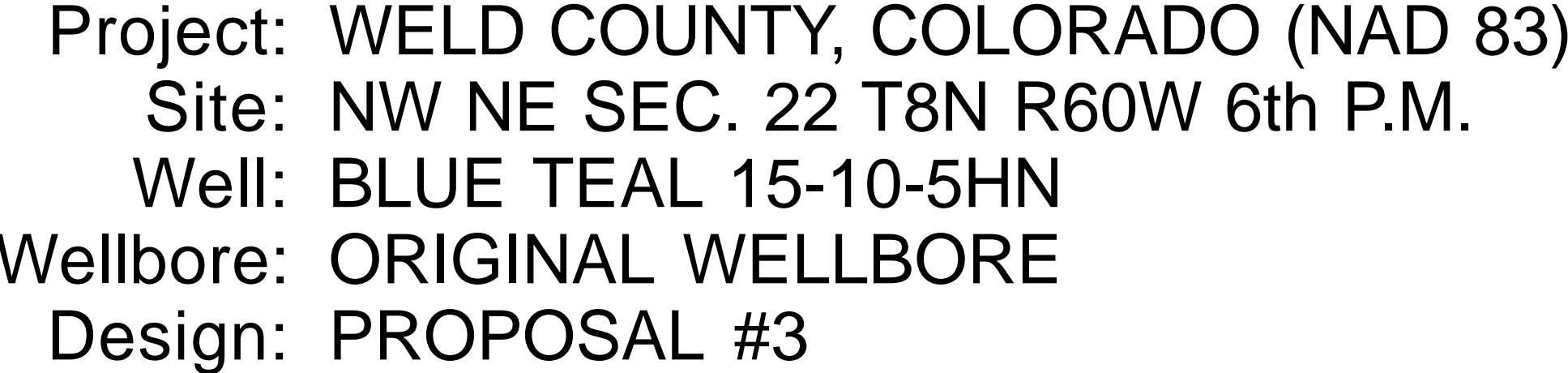
BLUE TEAL 15-10-5HN

ORIGINAL WELLBORE

19 March, 2018

Plan: 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 & 2273ft FEL of Sec 22	
500.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2"/100ft BUR)	
1256.93	1266.03	15.32	297.81	47.50	-90.05	56.63	101.81	EOB TO 15.32' INC	
1555.00	1575.08	15.32	297.81	85.59	-162.27	102.06	183.46	SURFACE CASING	
5744.87	5919.32	15.32	297.81	621.09	-1177.53	740.58	1331.29	KOP (10"/100ft DGLG)	
6235.25	6751.06	90.00	1.07	1192.14	-1286.86	1319.92	1925.76	HZ LP: 600ft FSL & 1715ft FWL of Sec 15	
6235.20	16152.00	90.00	1.07	10591.44	-1111.36	10649.58	11326.70	BHL: 600ft FNL & 1711ft FWL of Sec 10	

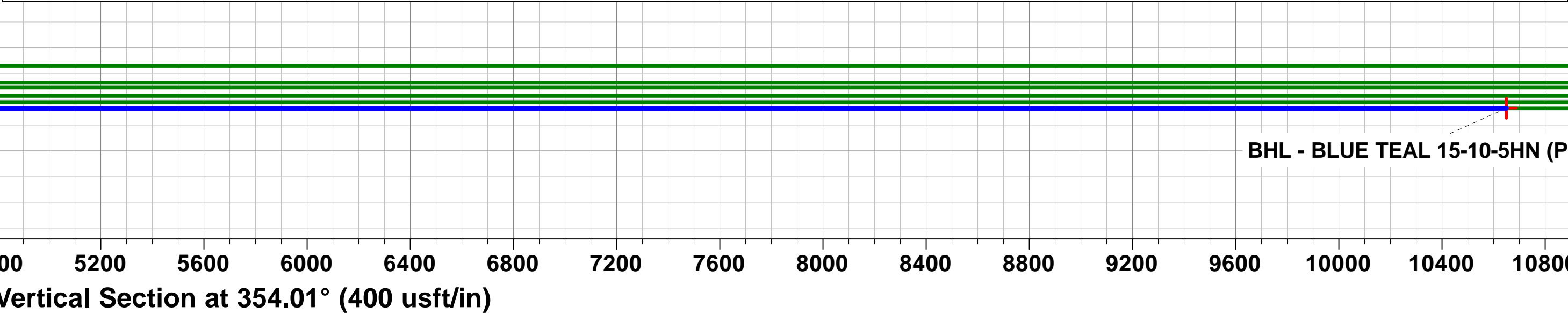
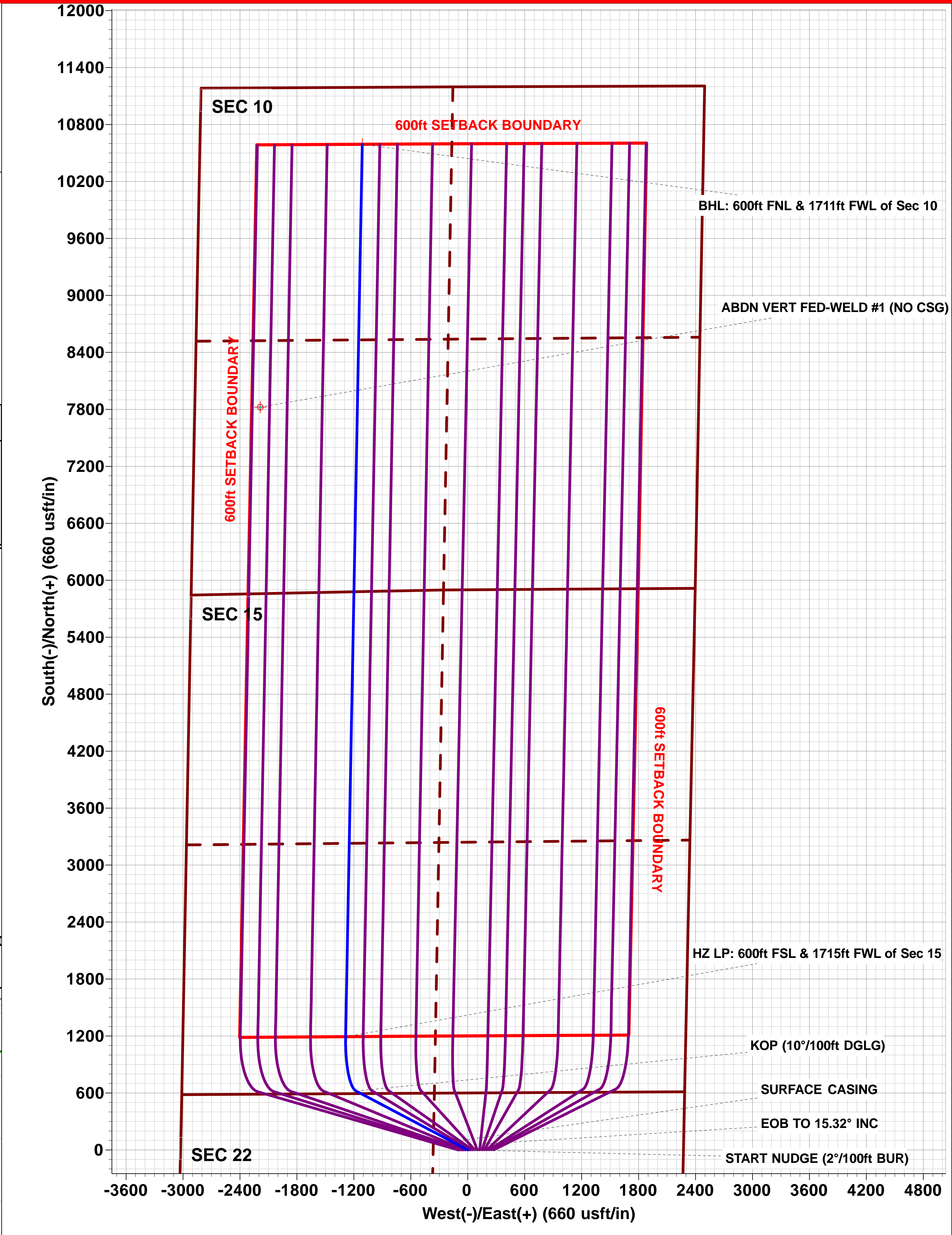
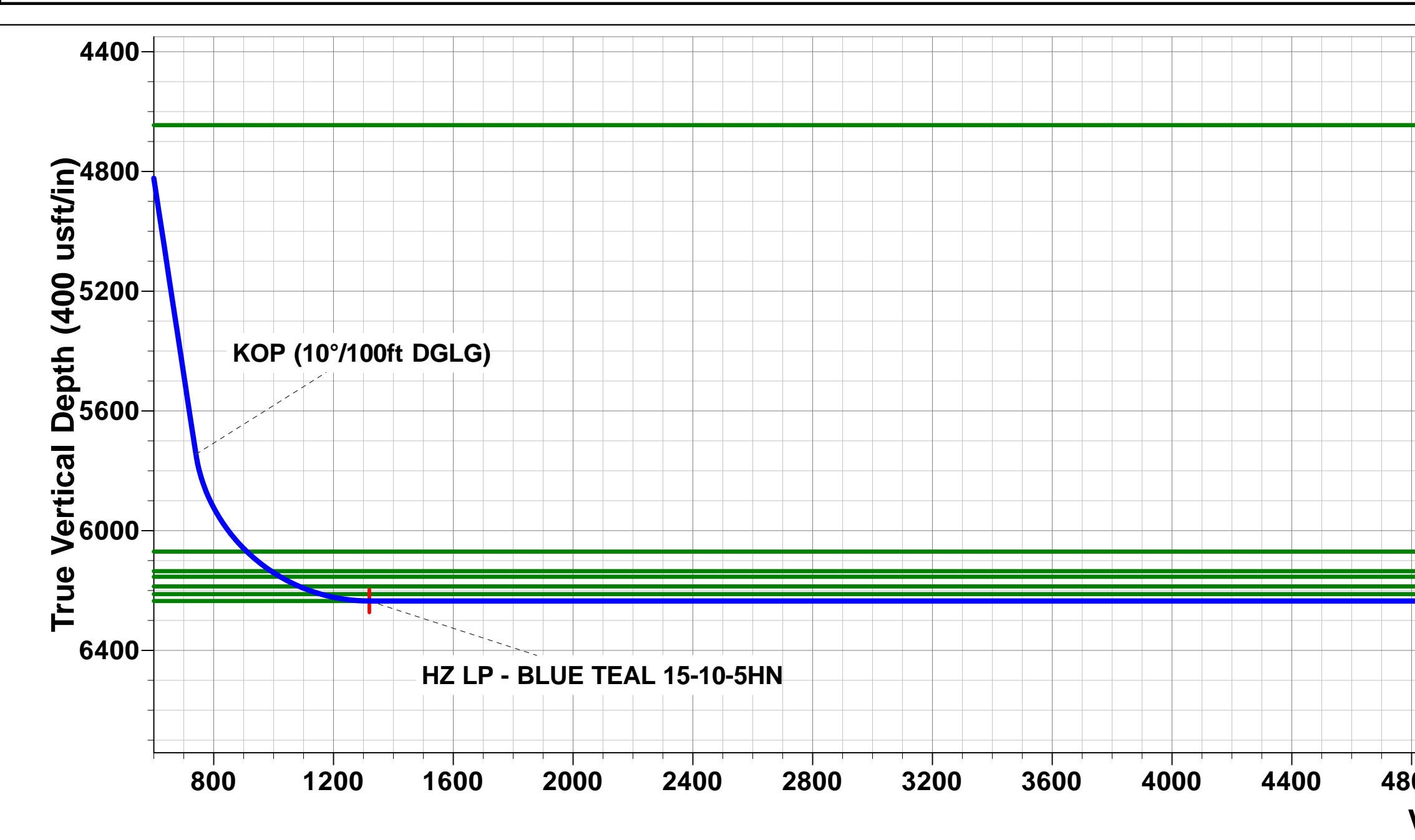
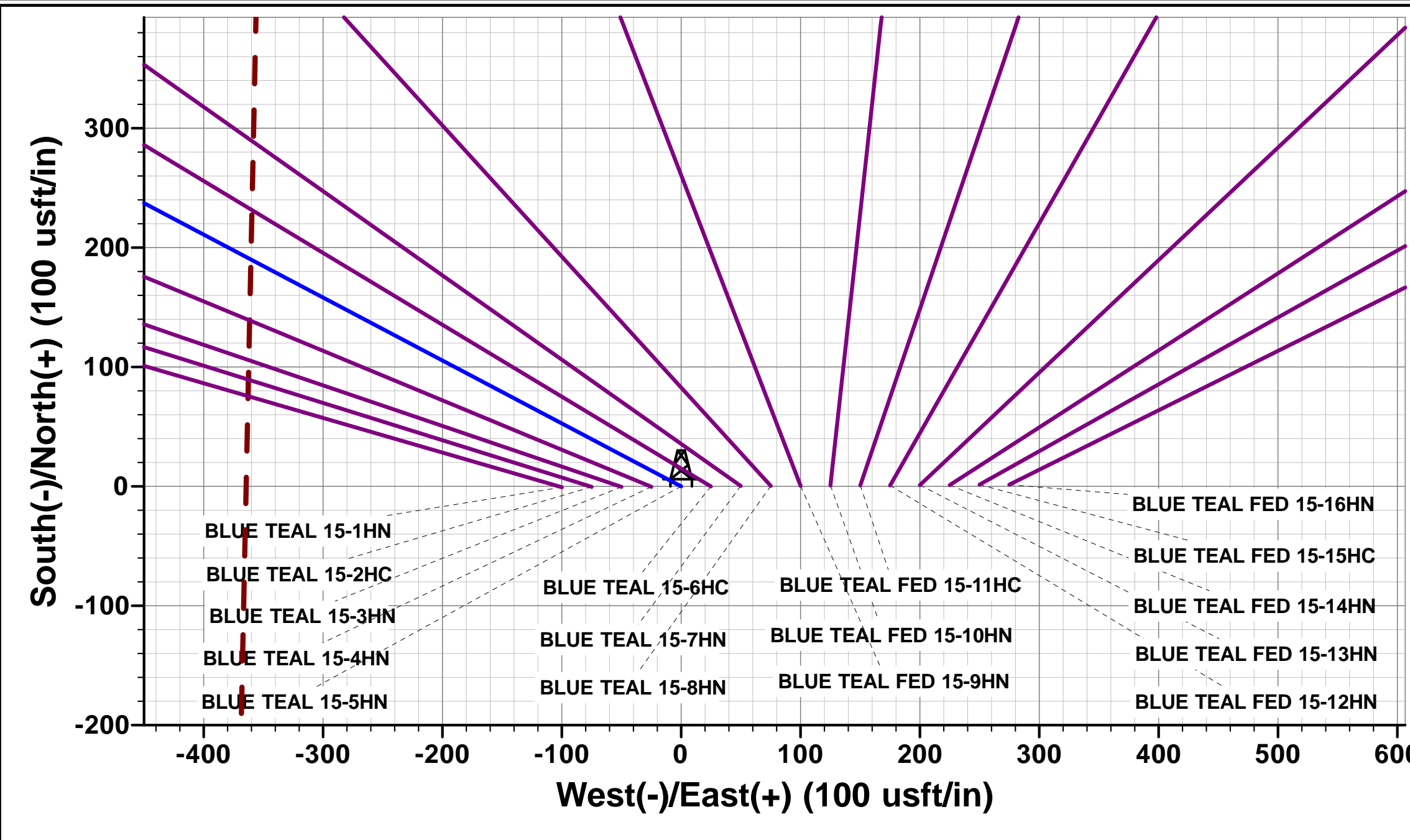
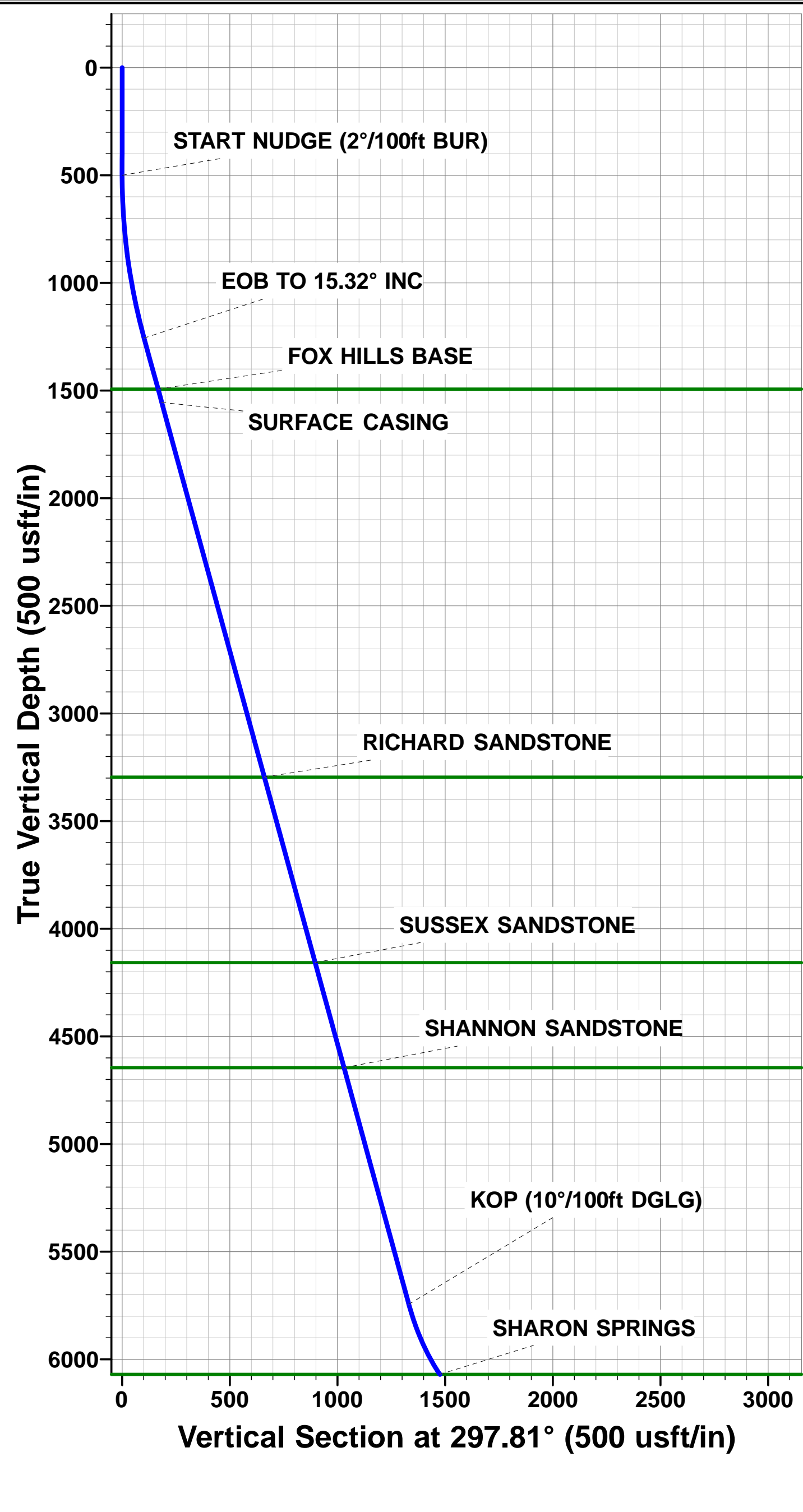
PROPOSED LOCAL COORDINATES:

SHL: 600ft FNL & 2273ft FEL Sec 22

HZ LP: 600ft FSL & 1715ft FWL Sec 15

BHL: 600ft FNL & 1711ft FWL of Sec 10

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
HZ LP - BLUE TEAL 15-10-5HN	6235.25	1192.13	-1286.86	40.656773	-104.080620
BHL - BLUE TEAL 15-10-5HN (P2)	6235.20	10591.45	-1111.36	40.682572	-104.079989



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BLUE TEAL 15-10-5HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4909.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4909.00usft (Original Well Elev)
Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL 15-10-5HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #3		

Project	WELD COUNTY, COLORADO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 15-10-5HN					
Well Position	+N/-S	0.71 usft	Northing:	1,484,085.39 usft	Latitude:	40.653501
	+E/-W	99.89 usft	Easting:	3,395,103.70 usft	Longitude:	-104.075982
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,893.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	16/03/2018	7.78	67.14	52,508

Design	PROPOSAL #3				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	354.01	

Plan Sections											
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	-4,909.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	-4,409.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,266.02	15.32	297.81	1,256.93	-3,652.07	47.50	-90.05	2.00	2.00	0.00	297.81	
5,919.33	15.32	297.81	5,744.87	835.87	621.09	-1,177.53	0.00	0.00	0.00	0.00	
6,751.06	90.00	1.07	6,235.25	1,326.25	1,192.13	-1,286.86	10.00	8.98	7.61	64.08	HZ LP - BLUE TEAL 1
16,152.01	90.00	1.07	6,235.20	1,326.20	10,591.45	-1,111.36	0.00	0.00	0.00	0.00	BHL - BLUE TEAL 15

Planning Report



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Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4909.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4909.00usft (Original Well Elev)
Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL 15-10-5HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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)
SHL: 600ft FNL & 2273ft FEL of Sec 22										
0.00	0.00	0.00	0.00	4,909.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,809.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	4,709.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	4,609.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	4,509.00	0.00	0.00	0.00	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
500.00	0.00	0.00	500.00	4,409.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	2.00	297.81	599.98	4,309.02	0.81	-1.54	0.97	2.00	2.00	0.00
700.00	4.00	297.81	699.84	4,209.16	3.26	-6.17	3.88	2.00	2.00	0.00
800.00	6.00	297.81	799.45	4,109.55	7.32	-13.88	8.73	2.00	2.00	0.00
900.00	8.00	297.81	898.70	4,010.30	13.01	-24.66	15.51	2.00	2.00	0.00
1,000.00	10.00	297.81	997.47	3,911.53	20.30	-38.50	24.21	2.00	2.00	0.00
1,100.00	12.00	297.81	1,095.62	3,813.38	29.21	-55.37	34.83	2.00	2.00	0.00
1,200.00	14.00	297.81	1,193.06	3,715.94	39.70	-75.27	47.34	2.00	2.00	0.00
1,266.02	15.32	297.81	1,256.93	3,652.07	47.50	-90.05	56.63	2.00	2.00	0.00
EOB TO 15.32° INC										
1,266.03	15.32	297.81	1,256.93	3,652.07	47.50	-90.05	56.63	0.00	0.00	0.00
1,300.00	15.32	297.81	1,289.70	3,619.30	51.68	-97.99	61.63	0.00	0.00	0.00
1,400.00	15.32	297.81	1,386.14	3,522.86	64.01	-121.36	76.33	0.00	0.00	0.00
1,500.00	15.32	297.81	1,482.59	3,426.41	76.34	-144.73	91.02	0.00	0.00	0.00
FOX HILLS BASE										
1,511.57	15.32	297.81	1,493.75	3,415.25	77.76	-147.43	92.72	0.00	0.00	0.00
SURFACE CASING										
1,575.08	15.32	297.81	1,555.00	3,354.00	85.59	-162.27	102.06	0.00	0.00	0.00
1,600.00	15.32	297.81	1,579.04	3,329.96	88.66	-168.10	105.72	0.00	0.00	0.00
1,700.00	15.32	297.81	1,675.48	3,233.52	100.99	-191.47	120.42	0.00	0.00	0.00
1,800.00	15.32	297.81	1,771.93	3,137.07	113.32	-214.84	135.12	0.00	0.00	0.00
1,900.00	15.32	297.81	1,868.37	3,040.63	125.64	-238.21	149.82	0.00	0.00	0.00
2,000.00	15.32	297.81	1,964.82	2,944.18	137.97	-261.58	164.51	0.00	0.00	0.00
2,100.00	15.32	297.81	2,061.27	2,847.73	150.30	-284.95	179.21	0.00	0.00	0.00
2,200.00	15.32	297.81	2,157.71	2,751.29	162.62	-308.32	193.91	0.00	0.00	0.00
2,300.00	15.32	297.81	2,254.16	2,654.84	174.95	-331.69	208.61	0.00	0.00	0.00
2,400.00	15.32	297.81	2,350.61	2,558.39	187.28	-355.06	223.31	0.00	0.00	0.00
2,500.00	15.32	297.81	2,447.05	2,461.95	199.60	-378.43	238.01	0.00	0.00	0.00
2,600.00	15.32	297.81	2,543.50	2,365.50	211.93	-401.80	252.70	0.00	0.00	0.00
2,700.00	15.32	297.81	2,639.95	2,269.05	224.26	-425.17	267.40	0.00	0.00	0.00
2,800.00	15.32	297.81	2,736.39	2,172.61	236.58	-448.54	282.10	0.00	0.00	0.00
2,900.00	15.32	297.81	2,832.84	2,076.16	248.91	-471.91	296.80	0.00	0.00	0.00
3,000.00	15.32	297.81	2,929.28	1,979.72	261.24	-495.28	311.50	0.00	0.00	0.00
3,100.00	15.32	297.81	3,025.73	1,883.27	273.56	-518.65	326.19	0.00	0.00	0.00
3,200.00	15.32	297.81	3,122.18	1,786.82	285.89	-542.02	340.89	0.00	0.00	0.00
3,300.00	15.32	297.81	3,218.62	1,690.38	298.22	-565.39	355.59	0.00	0.00	0.00
RICHARD SANDSTONE										
3,380.49	15.32	297.81	3,296.25	1,612.75	308.14	-584.20	367.42	0.00	0.00	0.00
3,400.00	15.32	297.81	3,315.07	1,593.93	310.54	-588.76	370.29	0.00	0.00	0.00
3,500.00	15.32	297.81	3,411.52	1,497.48	322.87	-612.13	384.99	0.00	0.00	0.00
3,600.00	15.32	297.81	3,507.96	1,401.04	335.20	-635.50	399.69	0.00	0.00	0.00
3,700.00	15.32	297.81	3,604.41	1,304.59	347.52	-658.87	414.38	0.00	0.00	0.00
3,800.00	15.32	297.81	3,700.86	1,208.14	359.85	-682.24	429.08	0.00	0.00	0.00
3,900.00	15.32	297.81	3,797.30	1,111.70	372.18	-705.61	443.78	0.00	0.00	0.00
4,000.00	15.32	297.81	3,893.75	1,015.25	384.50	-728.98	458.48	0.00	0.00	0.00
4,100.00	15.32	297.81	3,990.19	918.81	396.83	-752.35	473.18	0.00	0.00	0.00

Planning Report



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Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4909.00usft (Original Well Elev)
Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL 15-10-5HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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	15.32	297.81	4,086.64	822.36	409.16	-775.72	487.87	0.00	0.00	0.00
SUSSEX SANDSTONE										
4,273.73	15.32	297.81	4,157.75	751.25	418.24	-792.95	498.71	0.00	0.00	0.00
4,300.00	15.32	297.81	4,183.09	725.91	421.48	-799.09	502.57	0.00	0.00	0.00
4,400.00	15.32	297.81	4,279.53	629.47	433.81	-822.46	517.27	0.00	0.00	0.00
4,500.00	15.32	297.81	4,375.98	533.02	446.14	-845.83	531.97	0.00	0.00	0.00
4,600.00	15.32	297.81	4,472.43	436.57	458.46	-869.20	546.67	0.00	0.00	0.00
4,700.00	15.32	297.81	4,568.87	340.13	470.79	-892.57	561.36	0.00	0.00	0.00
SHANNON SANDSTONE										
4,779.71	15.32	297.81	4,645.75	263.25	480.61	-911.20	573.08	0.00	0.00	0.00
4,800.00	15.32	297.81	4,665.32	243.68	483.12	-915.94	576.06	0.00	0.00	0.00
4,900.00	15.32	297.81	4,761.76	147.24	495.44	-939.31	590.76	0.00	0.00	0.00
5,000.00	15.32	297.81	4,858.21	50.79	507.77	-962.68	605.46	0.00	0.00	0.00
5,100.00	15.32	297.81	4,954.66	-45.66	520.10	-986.05	620.16	0.00	0.00	0.00
5,200.00	15.32	297.81	5,051.10	-142.10	532.42	-1,009.42	634.86	0.00	0.00	0.00
5,300.00	15.32	297.81	5,147.55	-238.55	544.75	-1,032.79	649.55	0.00	0.00	0.00
5,400.00	15.32	297.81	5,244.00	-335.00	557.08	-1,056.16	664.25	0.00	0.00	0.00
5,500.00	15.32	297.81	5,340.44	-431.44	569.40	-1,079.53	678.95	0.00	0.00	0.00
5,600.00	15.32	297.81	5,436.89	-527.89	581.73	-1,102.90	693.65	0.00	0.00	0.00
5,700.00	15.32	297.81	5,533.34	-624.34	594.06	-1,126.27	708.35	0.00	0.00	0.00
5,800.00	15.32	297.81	5,629.78	-720.78	606.38	-1,149.64	723.04	0.00	0.00	0.00
5,900.00	15.32	297.81	5,726.23	-817.23	618.71	-1,173.01	737.74	0.00	0.00	0.00
KOP (10°/100ft DGLG)										
5,919.32	15.32	297.81	5,744.87	-835.87	621.09	-1,177.53	740.58	0.00	0.00	0.00
5,950.00	16.88	307.35	5,774.34	-865.34	625.68	-1,184.65	745.90	10.00	5.09	31.10
6,000.00	20.16	319.29	5,821.76	-912.76	636.63	-1,196.05	757.97	10.00	6.56	23.88
6,050.00	24.02	327.78	5,868.09	-959.09	651.78	-1,207.11	774.19	10.00	7.72	16.98
6,100.00	28.23	333.95	5,912.98	-1,003.98	671.03	-1,217.73	794.44	10.00	8.40	12.35
6,150.00	32.64	338.61	5,956.09	-1,047.09	694.22	-1,227.85	818.56	10.00	8.82	9.32
6,200.00	37.18	342.25	5,997.09	-1,088.09	721.18	-1,237.38	846.37	10.00	9.09	7.29
6,250.00	41.82	345.20	6,035.66	-1,126.66	751.70	-1,246.25	877.65	10.00	9.27	5.89
SHARON SPRINGS										
6,298.16	46.35	347.57	6,070.25	-1,161.25	784.26	-1,254.10	910.85	10.00	9.40	4.92
6,300.00	46.52	347.65	6,071.52	-1,162.52	785.56	-1,254.39	912.18	10.00	9.45	4.53
6,350.00	51.26	349.75	6,104.39	-1,195.39	822.50	-1,261.74	949.68	10.00	9.49	4.19
6,400.00	56.04	351.59	6,134.01	-1,225.01	862.22	-1,268.25	989.87	10.00	9.55	3.67
NIOBRARA A CHALK										
6,403.12	56.34	351.69	6,135.75	-1,226.75	864.79	-1,268.63	992.46	10.00	9.58	3.44
NIOBRARA A CHALK BASE										
6,438.05	59.69	352.85	6,154.25	-1,245.25	894.15	-1,272.61	1,022.07	10.00	9.60	3.31
6,450.00	60.84	353.22	6,160.18	-1,251.18	904.44	-1,273.86	1,032.44	10.00	9.62	3.15
6,500.00	65.66	354.72	6,182.67	-1,273.67	948.83	-1,278.54	1,077.08	10.00	9.64	2.98
NIOBRARA B1 CHALK TOP										
6,510.08	66.63	355.00	6,186.75	-1,277.75	958.02	-1,279.37	1,086.30	10.00	9.66	2.84
6,550.00	70.49	356.10	6,201.34	-1,292.34	995.05	-1,282.24	1,123.43	10.00	9.67	2.74
NIOBRARA B1 CHALK BASE										
6,585.76	73.96	357.04	6,212.25	-1,303.25	1,029.04	-1,284.28	1,157.44	10.00	9.68	2.62
6,600.00	75.34	357.40	6,216.02	-1,307.02	1,042.76	-1,284.95	1,171.16	10.00	9.69	2.56
6,650.00	80.19	358.64	6,226.62	-1,317.62	1,091.57	-1,286.63	1,219.88	10.00	9.70	2.49
6,700.00	85.04	359.85	6,233.04	-1,324.04	1,141.14	-1,287.27	1,269.25	10.00	9.71	2.42
NIOBRARA B2 CHALK TOP										
6,751.06	90.00	1.07	6,235.25	-1,326.25	1,192.13	-1,286.86	1,319.91	10.00	9.71	2.38

Planning Report



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Wellbore:	ORIGINAL WELLBORE		
Design:	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)
HZ LP: 600ft FSL & 1715ft FWL of Sec 15										
6,751.06	90.00	1.07	6,235.25	-1,326.25	1,192.14	-1,286.86	1,319.92	0.00	0.00	0.00
6,800.00	90.00	1.07	6,235.25	-1,326.25	1,241.07	-1,285.95	1,368.49	0.00	0.00	0.00
6,900.00	90.00	1.07	6,235.25	-1,326.25	1,341.05	-1,284.08	1,467.73	0.00	0.00	0.00
7,000.00	90.00	1.07	6,235.25	-1,326.25	1,441.03	-1,282.21	1,566.97	0.00	0.00	0.00
7,100.00	90.00	1.07	6,235.25	-1,326.25	1,541.01	-1,280.35	1,666.21	0.00	0.00	0.00
7,200.00	90.00	1.07	6,235.25	-1,326.25	1,641.00	-1,278.48	1,765.45	0.00	0.00	0.00
7,300.00	90.00	1.07	6,235.25	-1,326.25	1,740.98	-1,276.61	1,864.70	0.00	0.00	0.00
7,400.00	90.00	1.07	6,235.25	-1,326.25	1,840.96	-1,274.75	1,963.94	0.00	0.00	0.00
7,500.00	90.00	1.07	6,235.25	-1,326.25	1,940.94	-1,272.88	2,063.18	0.00	0.00	0.00
7,600.00	90.00	1.07	6,235.25	-1,326.25	2,040.93	-1,271.01	2,162.42	0.00	0.00	0.00
7,700.00	90.00	1.07	6,235.24	-1,326.24	2,140.91	-1,269.15	2,261.66	0.00	0.00	0.00
7,800.00	90.00	1.07	6,235.24	-1,326.24	2,240.89	-1,267.28	2,360.90	0.00	0.00	0.00
7,900.00	90.00	1.07	6,235.24	-1,326.24	2,340.87	-1,265.41	2,460.15	0.00	0.00	0.00
8,000.00	90.00	1.07	6,235.24	-1,326.24	2,440.86	-1,263.55	2,559.39	0.00	0.00	0.00
8,100.00	90.00	1.07	6,235.24	-1,326.24	2,540.84	-1,261.68	2,658.63	0.00	0.00	0.00
8,200.00	90.00	1.07	6,235.24	-1,326.24	2,640.82	-1,259.81	2,757.87	0.00	0.00	0.00
8,300.00	90.00	1.07	6,235.24	-1,326.24	2,740.80	-1,257.95	2,857.11	0.00	0.00	0.00
8,400.00	90.00	1.07	6,235.24	-1,326.24	2,840.79	-1,256.08	2,956.36	0.00	0.00	0.00
8,500.00	90.00	1.07	6,235.24	-1,326.24	2,940.77	-1,254.21	3,055.60	0.00	0.00	0.00
8,600.00	90.00	1.07	6,235.24	-1,326.24	3,040.75	-1,252.34	3,154.84	0.00	0.00	0.00
8,700.00	90.00	1.07	6,235.24	-1,326.24	3,140.73	-1,250.48	3,254.08	0.00	0.00	0.00
8,800.00	90.00	1.07	6,235.24	-1,326.24	3,240.72	-1,248.61	3,353.32	0.00	0.00	0.00
8,900.00	90.00	1.07	6,235.24	-1,326.24	3,340.70	-1,246.74	3,452.57	0.00	0.00	0.00
9,000.00	90.00	1.07	6,235.24	-1,326.24	3,440.68	-1,244.88	3,551.81	0.00	0.00	0.00
9,100.00	90.00	1.07	6,235.24	-1,326.24	3,540.66	-1,243.01	3,651.05	0.00	0.00	0.00
9,200.00	90.00	1.07	6,235.24	-1,326.24	3,640.65	-1,241.14	3,750.29	0.00	0.00	0.00
9,300.00	90.00	1.07	6,235.24	-1,326.24	3,740.63	-1,239.28	3,849.53	0.00	0.00	0.00
9,400.00	90.00	1.07	6,235.24	-1,326.24	3,840.61	-1,237.41	3,948.77	0.00	0.00	0.00
9,500.00	90.00	1.07	6,235.24	-1,326.24	3,940.59	-1,235.54	4,048.02	0.00	0.00	0.00
9,600.00	90.00	1.07	6,235.23	-1,326.23	4,040.58	-1,233.68	4,147.26	0.00	0.00	0.00
9,700.00	90.00	1.07	6,235.23	-1,326.23	4,140.56	-1,231.81	4,246.50	0.00	0.00	0.00
9,800.00	90.00	1.07	6,235.23	-1,326.23	4,240.54	-1,229.94	4,345.74	0.00	0.00	0.00
9,900.00	90.00	1.07	6,235.23	-1,326.23	4,340.52	-1,228.08	4,444.98	0.00	0.00	0.00
10,000.00	90.00	1.07	6,235.23	-1,326.23	4,440.51	-1,226.21	4,544.23	0.00	0.00	0.00
10,100.00	90.00	1.07	6,235.23	-1,326.23	4,540.49	-1,224.34	4,643.47	0.00	0.00	0.00
10,200.00	90.00	1.07	6,235.23	-1,326.23	4,640.47	-1,222.48	4,742.71	0.00	0.00	0.00
10,300.00	90.00	1.07	6,235.23	-1,326.23	4,740.46	-1,220.61	4,841.95	0.00	0.00	0.00
10,400.00	90.00	1.07	6,235.23	-1,326.23	4,840.44	-1,218.74	4,941.19	0.00	0.00	0.00
10,500.00	90.00	1.07	6,235.23	-1,326.23	4,940.42	-1,216.87	5,040.43	0.00	0.00	0.00
10,600.00	90.00	1.07	6,235.23	-1,326.23	5,040.40	-1,215.01	5,139.68	0.00	0.00	0.00
10,700.00	90.00	1.07	6,235.23	-1,326.23	5,140.39	-1,213.14	5,238.92	0.00	0.00	0.00
10,800.00	90.00	1.07	6,235.23	-1,326.23	5,240.37	-1,211.27	5,338.16	0.00	0.00	0.00
10,900.00	90.00	1.07	6,235.23	-1,326.23	5,340.35	-1,209.41	5,437.40	0.00	0.00	0.00
11,000.00	90.00	1.07	6,235.23	-1,326.23	5,440.33	-1,207.54	5,536.64	0.00	0.00	0.00
11,100.00	90.00	1.07	6,235.23	-1,326.23	5,540.32	-1,205.67	5,635.89	0.00	0.00	0.00
11,200.00	90.00	1.07	6,235.23	-1,326.23	5,640.30	-1,203.81	5,735.13	0.00	0.00	0.00
11,300.00	90.00	1.07	6,235.23	-1,326.23	5,740.28	-1,201.94	5,834.37	0.00	0.00	0.00
11,400.00	90.00	1.07	6,235.23	-1,326.23	5,840.26	-1,200.07	5,933.61	0.00	0.00	0.00
11,500.00	90.00	1.07	6,235.22	-1,326.22	5,940.25	-1,198.21	6,032.85	0.00	0.00	0.00
11,600.00	90.00	1.07	6,235.22	-1,326.22	6,040.23	-1,196.34	6,132.09	0.00	0.00	0.00
11,700.00	90.00	1.07	6,235.22	-1,326.22	6,140.21	-1,194.47	6,231.34	0.00	0.00	0.00
11,800.00	90.00	1.07	6,235.22	-1,326.22	6,240.19	-1,192.61	6,330.58	0.00	0.00	0.00
11,900.00	90.00	1.07	6,235.22	-1,326.22	6,340.18	-1,190.74	6,429.82	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BLUE TEAL 15-10-5HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4909.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4909.00usft (Original Well Elev)
Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL 15-10-5HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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)
12,000.00	90.00	1.07	6,235.22	-1,326.22	6,440.16	-1,188.87	6,529.06	0.00	0.00	0.00
12,100.00	90.00	1.07	6,235.22	-1,326.22	6,540.14	-1,187.01	6,628.30	0.00	0.00	0.00
12,200.00	90.00	1.07	6,235.22	-1,326.22	6,640.12	-1,185.14	6,727.55	0.00	0.00	0.00
12,300.00	90.00	1.07	6,235.22	-1,326.22	6,740.11	-1,183.27	6,826.79	0.00	0.00	0.00
12,400.00	90.00	1.07	6,235.22	-1,326.22	6,840.09	-1,181.40	6,926.03	0.00	0.00	0.00
12,500.00	90.00	1.07	6,235.22	-1,326.22	6,940.07	-1,179.54	7,025.27	0.00	0.00	0.00
12,600.00	90.00	1.07	6,235.22	-1,326.22	7,040.05	-1,177.67	7,124.51	0.00	0.00	0.00
12,700.00	90.00	1.07	6,235.22	-1,326.22	7,140.04	-1,175.80	7,223.76	0.00	0.00	0.00
12,800.00	90.00	1.07	6,235.22	-1,326.22	7,240.02	-1,173.94	7,323.00	0.00	0.00	0.00
12,900.00	90.00	1.07	6,235.22	-1,326.22	7,340.00	-1,172.07	7,422.24	0.00	0.00	0.00
13,000.00	90.00	1.07	6,235.22	-1,326.22	7,439.98	-1,170.20	7,521.48	0.00	0.00	0.00
13,100.00	90.00	1.07	6,235.22	-1,326.22	7,539.97	-1,168.34	7,620.72	0.00	0.00	0.00
13,200.00	90.00	1.07	6,235.22	-1,326.22	7,639.95	-1,166.47	7,719.96	0.00	0.00	0.00
13,300.00	90.00	1.07	6,235.22	-1,326.22	7,739.93	-1,164.60	7,819.21	0.00	0.00	0.00
13,400.00	90.00	1.07	6,235.21	-1,326.21	7,839.92	-1,162.74	7,918.45	0.00	0.00	0.00
13,500.00	90.00	1.07	6,235.21	-1,326.21	7,939.90	-1,160.87	8,017.69	0.00	0.00	0.00
13,600.00	90.00	1.07	6,235.21	-1,326.21	8,039.88	-1,159.00	8,116.93	0.00	0.00	0.00
13,700.00	90.00	1.07	6,235.21	-1,326.21	8,139.86	-1,157.14	8,216.17	0.00	0.00	0.00
13,800.00	90.00	1.07	6,235.21	-1,326.21	8,239.85	-1,155.27	8,315.42	0.00	0.00	0.00
13,900.00	90.00	1.07	6,235.21	-1,326.21	8,339.83	-1,153.40	8,414.66	0.00	0.00	0.00
14,000.00	90.00	1.07	6,235.21	-1,326.21	8,439.81	-1,151.53	8,513.90	0.00	0.00	0.00
14,100.00	90.00	1.07	6,235.21	-1,326.21	8,539.79	-1,149.67	8,613.14	0.00	0.00	0.00
14,200.00	90.00	1.07	6,235.21	-1,326.21	8,639.78	-1,147.80	8,712.38	0.00	0.00	0.00
14,300.00	90.00	1.07	6,235.21	-1,326.21	8,739.76	-1,145.93	8,811.62	0.00	0.00	0.00
14,400.00	90.00	1.07	6,235.21	-1,326.21	8,839.74	-1,144.07	8,910.87	0.00	0.00	0.00
14,500.00	90.00	1.07	6,235.21	-1,326.21	8,939.72	-1,142.20	9,010.11	0.00	0.00	0.00
14,600.00	90.00	1.07	6,235.21	-1,326.21	9,039.71	-1,140.33	9,109.35	0.00	0.00	0.00
14,700.00	90.00	1.07	6,235.21	-1,326.21	9,139.69	-1,138.47	9,208.59	0.00	0.00	0.00
14,800.00	90.00	1.07	6,235.21	-1,326.21	9,239.67	-1,136.60	9,307.83	0.00	0.00	0.00
14,900.00	90.00	1.07	6,235.21	-1,326.21	9,339.65	-1,134.73	9,407.08	0.00	0.00	0.00
15,000.00	90.00	1.07	6,235.21	-1,326.21	9,439.64	-1,132.87	9,506.32	0.00	0.00	0.00
15,100.00	90.00	1.07	6,235.21	-1,326.21	9,539.62	-1,131.00	9,605.56	0.00	0.00	0.00
15,200.00	90.00	1.07	6,235.21	-1,326.21	9,639.60	-1,129.13	9,704.80	0.00	0.00	0.00
15,300.00	90.00	1.07	6,235.20	-1,326.20	9,739.58	-1,127.27	9,804.04	0.00	0.00	0.00
15,400.00	90.00	1.07	6,235.20	-1,326.20	9,839.57	-1,125.40	9,903.28	0.00	0.00	0.00
15,500.00	90.00	1.07	6,235.20	-1,326.20	9,939.55	-1,123.53	10,002.53	0.00	0.00	0.00
15,600.00	90.00	1.07	6,235.20	-1,326.20	10,039.53	-1,121.67	10,101.77	0.00	0.00	0.00
15,700.00	90.00	1.07	6,235.20	-1,326.20	10,139.51	-1,119.80	10,201.01	0.00	0.00	0.00
15,800.00	90.00	1.07	6,235.20	-1,326.20	10,239.50	-1,117.93	10,300.25	0.00	0.00	0.00
15,900.00	90.00	1.07	6,235.20	-1,326.20	10,339.48	-1,116.06	10,399.49	0.00	0.00	0.00
16,000.00	90.00	1.07	6,235.20	-1,326.20	10,439.46	-1,114.20	10,498.74	0.00	0.00	0.00
16,100.00	90.00	1.07	6,235.20	-1,326.20	10,539.44	-1,112.33	10,597.98	0.00	0.00	0.00
BHL: 600ft FNL & 1711ft FWL of Sec 10										
16,152.00	90.00	1.07	6,235.20	-1,326.20	10,591.44	-1,111.36	10,649.58	0.00	0.00	0.00
16,152.01	90.00	1.07	6,235.20	-1,326.20	10,591.45	-1,111.36	10,649.60	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BLUE TEAL 15-10-5HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4909.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4909.00usft (Original Well Elev)
Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL 15-10-5HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #3		

Formations					
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,511.57	1,493.75	FOX HILLS BASE			
3,380.49	3,296.25	RICHARD SANDSTONE			
4,273.73	4,157.75	SUSSEX SANDSTONE			
4,779.71	4,645.75	SHANNON SANDSTONE			
6,298.16	6,070.25	SHARON SPRINGS			
6,403.12	6,135.75	NIOBRARA A CHALK			
6,438.05	6,154.25	NIOBRARA A CHALK BASE			
6,510.08	6,186.75	NIOBRARA B1 CHALK TOP			
6,585.76	6,212.25	NIOBRARA B1 CHALK BASE			
6,751.06	6,235.25	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 & 2273ft FEL of Sec 22
500.00	500.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1,266.03	1,256.93	47.50	-90.05	EOB TO 15.32° INC
1,575.08	1,555.00	85.59	-162.27	SURFACE CASING
5,919.32	5,744.87	621.09	-1,177.53	KOP (10°/100ft DGLG)
6,751.06	6,235.25	1,192.14	-1,286.86	HZ LP: 600ft FSL & 1715ft FWL of Sec 15
16,152.00	6,235.20	10,591.44	-1,111.36	BHL: 600ft FNL & 1711ft FWL of Sec 10