

MALLARD EXPLORATION

WELD COUNTY, COLORADO (NAD 83)

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

BLUE TEAL FED 15-10-15HC

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 15-10-15HC
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 & 2023ft FEL of Sec 22		
200.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)		
875.66	882.08	13.64	60.75	39.49	70.51	48.72	80.82	EOB TO 13.64° INC		
1555.00	1581.15	13.64	60.75	120.07	214.35	148.10	245.69	SURFACE CASING		
5936.98	6090.34	13.64	60.75	639.79	1142.20	789.17	1309.18	KOP (10°/100ft DGLG)		
6430.75	6921.68	90.00	1.21	1206.34	1257.45	1366.14	1897.55	HZ LP: 600ft FSL & 790ft FEL of Sec 15		
6430.70	16319.09	90.00	1.21	10601.67	1455.28	10701.08	11294.97	BHL: 600ft FNL & 779ft FEL of Sec 10		

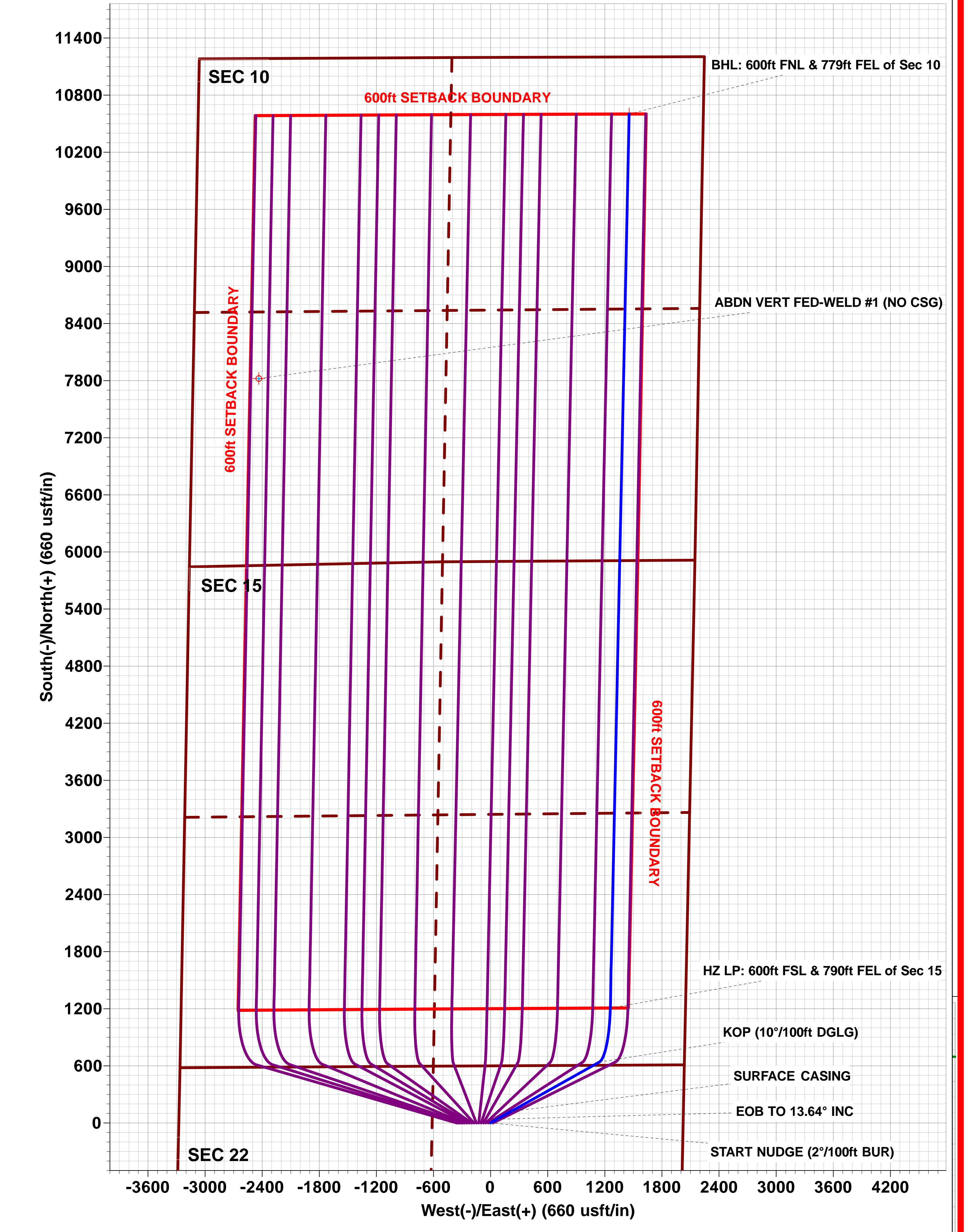
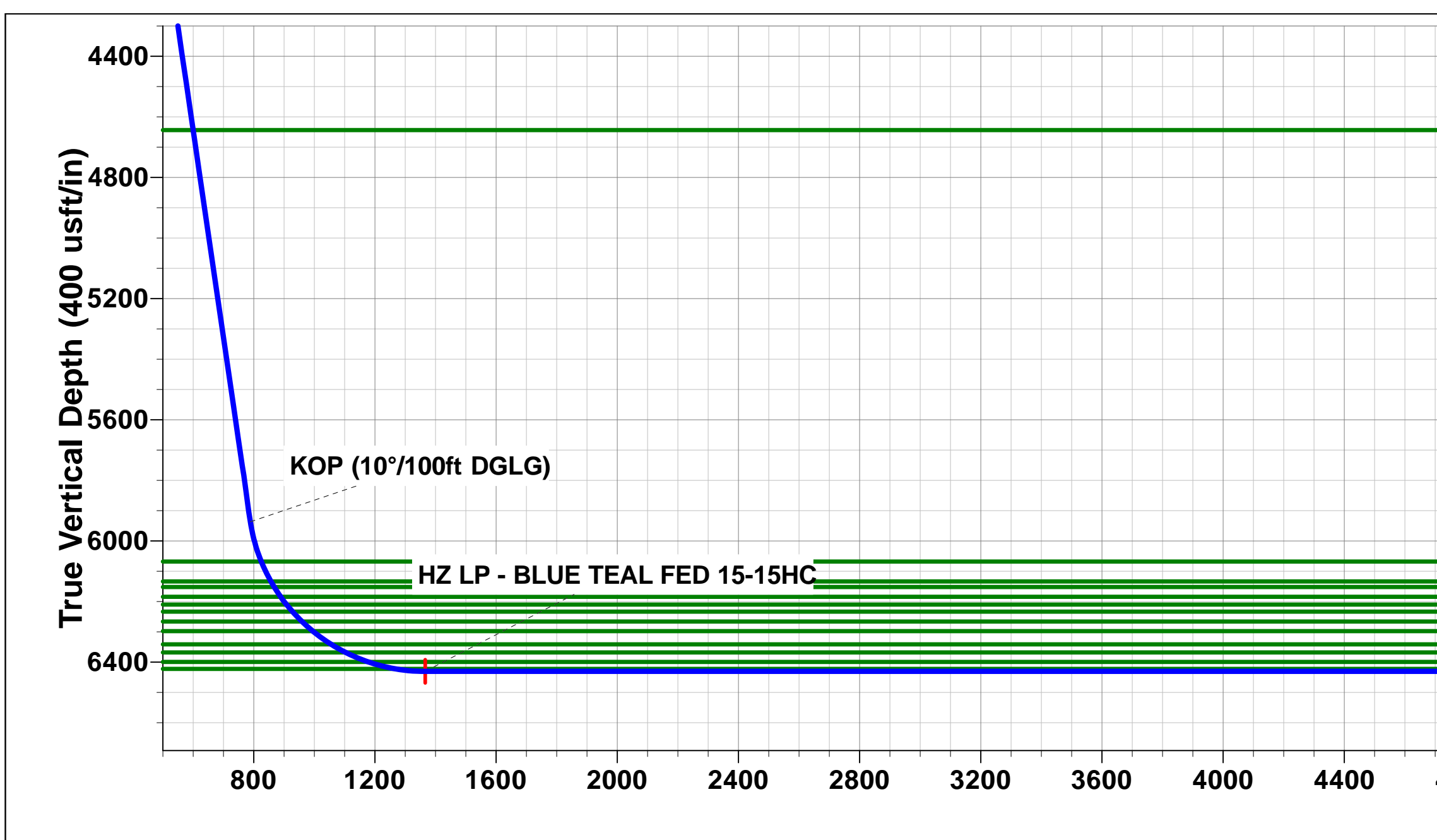
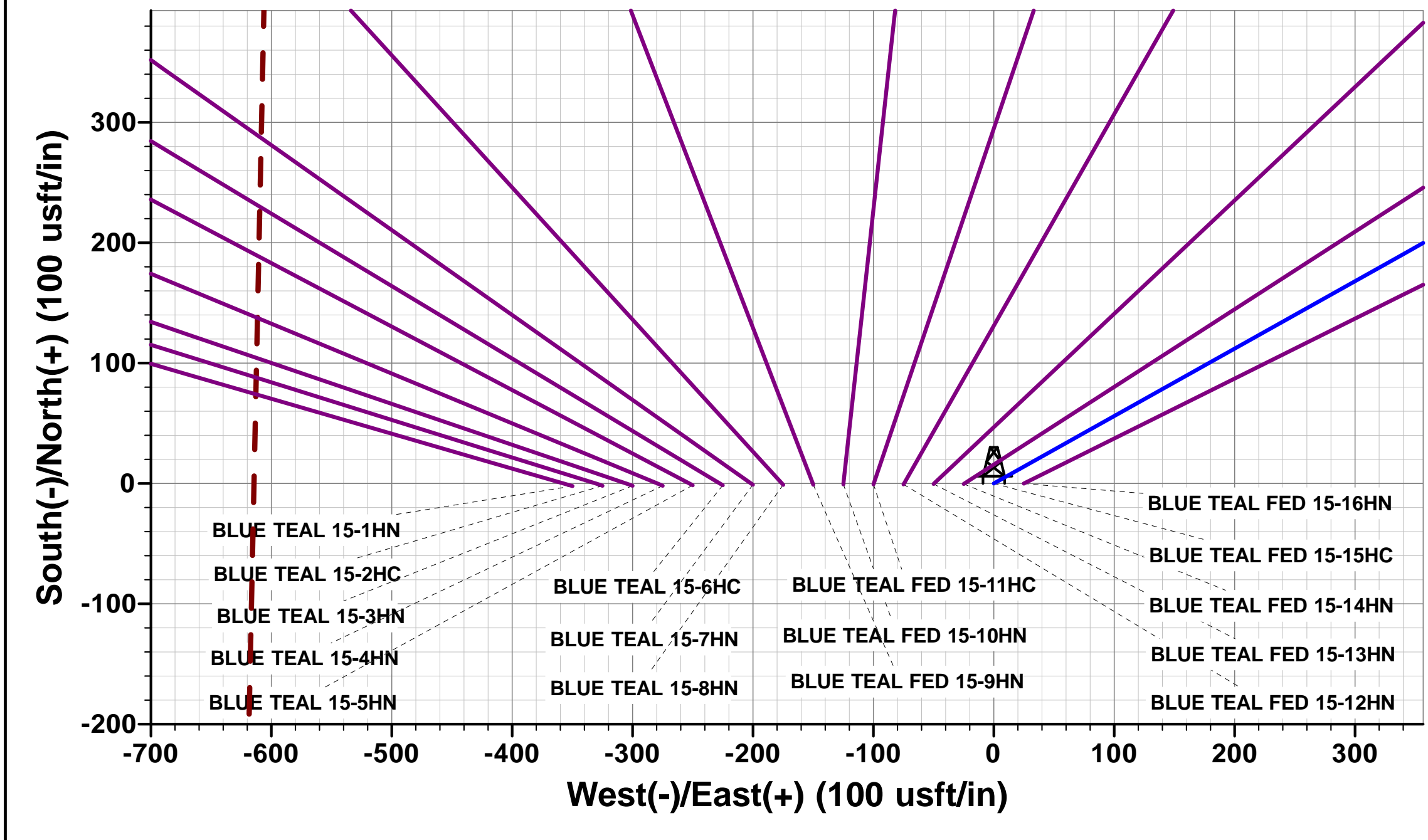
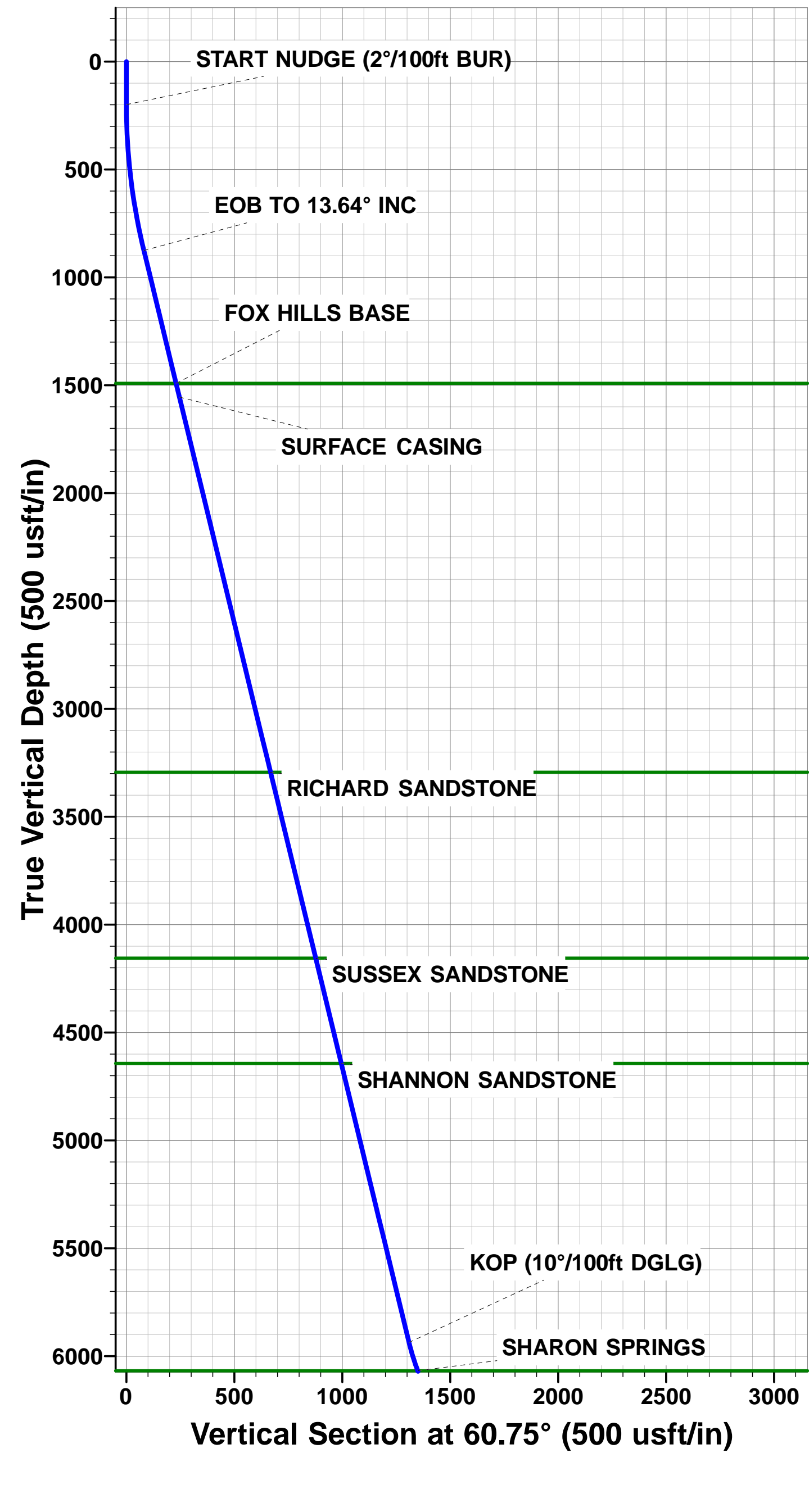
PROPOSED LOCAL COORDINATES:

SHL: 600ft FNL & 2023ft FEL Sec 22

HZ LP: 600ft FSL & 790ft FEL Sec 15

BHL: 600ft FNL & 779ft FEL of Sec 10

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
HZ LP - BLUE TEAL FED 15-15HC	6430.75	1206.34	1257.45	40.656816	-104.070549
BHL - BLUE TEAL FED 15-15HC (P2)	6430.70	10601.67	1455.28	40.682604	-104.069834



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BLUE TEAL FED 15-10-15HC
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4907.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4907.00usft (Original Well Elev)
Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL FED 15-10-15HC	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 FED 15-10-15HC					
Well Position	+N/-S	2.17 usft	Northing:	1,484,090.87 usft	Latitude:	40.653505
	+E/-W	349.89 usft	Easting:	3,395,353.65 usft	Longitude:	-104.075081
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,891.00 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	7.82

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	-4,907.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	-4,707.00	0.00	0.00	0.00	0.00	0.00	0.00	
882.09	13.64	60.75	875.66	-4,031.34	39.49	70.51	2.00	2.00	0.00	60.75	
6,090.34	13.64	60.75	5,936.99	1,029.99	639.79	1,142.20	0.00	0.00	0.00	0.00	
6,921.67	90.00	1.21	6,430.75	1,523.75	1,206.34	1,257.45	10.00	9.19	-7.16	-60.25	HZ LP - BLUE TEAL F
16,319.09	90.00	1.21	6,430.70	1,523.70	10,601.67	1,455.28	0.00	0.00	0.00	0.00	BHL - BLUE TEAL FE

Planning Report



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Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4907.00usft (Original Well Elev)
Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL FED 15-10-15HC	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 & 2023ft FEL of Sec 22										
0.00	0.00	0.00	0.00	4,907.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,807.00	0.00	0.00	0.00	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
200.00	0.00	0.00	200.00	4,707.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	2.00	60.75	299.98	4,607.02	0.85	1.52	1.05	2.00	2.00	0.00
400.00	4.00	60.75	399.84	4,507.16	3.41	6.09	4.21	2.00	2.00	0.00
500.00	6.00	60.75	499.45	4,407.55	7.67	13.69	9.46	2.00	2.00	0.00
600.00	8.00	60.75	598.70	4,308.30	13.62	24.32	16.81	2.00	2.00	0.00
700.00	10.00	60.75	697.47	4,209.53	21.27	37.97	26.24	2.00	2.00	0.00
800.00	12.00	60.75	795.62	4,111.38	30.59	54.62	37.74	2.00	2.00	0.00
EOB TO 13.64° INC										
882.08	13.64	60.75	875.66	4,031.34	39.49	70.51	48.72	2.00	2.00	0.00
900.00	13.64	60.75	893.07	4,013.93	41.56	74.20	51.26	0.00	0.00	0.00
1,000.00	13.64	60.75	990.25	3,916.75	53.09	94.77	65.48	0.00	0.00	0.00
1,100.00	13.64	60.75	1,087.43	3,819.57	64.61	115.35	79.70	0.00	0.00	0.00
1,200.00	13.64	60.75	1,184.61	3,722.39	76.14	135.93	93.91	0.00	0.00	0.00
1,300.00	13.64	60.75	1,281.78	3,625.22	87.66	156.50	108.13	0.00	0.00	0.00
1,400.00	13.64	60.75	1,378.96	3,528.04	99.19	177.08	122.35	0.00	0.00	0.00
1,500.00	13.64	60.75	1,476.14	3,430.86	110.71	197.66	136.57	0.00	0.00	0.00
FOX HILLS BASE										
1,516.06	13.64	60.75	1,491.75	3,415.25	112.57	200.96	138.85	0.00	0.00	0.00
SURFACE CASING										
1,581.15	13.64	60.75	1,555.00	3,352.00	120.07	214.35	148.10	0.00	0.00	0.00
1,600.00	13.64	60.75	1,573.32	3,333.68	122.24	218.23	150.78	0.00	0.00	0.00
1,700.00	13.64	60.75	1,670.50	3,236.50	133.77	238.81	165.00	0.00	0.00	0.00
1,800.00	13.64	60.75	1,767.68	3,139.32	145.29	259.39	179.22	0.00	0.00	0.00
1,900.00	13.64	60.75	1,864.86	3,042.14	156.82	279.96	193.43	0.00	0.00	0.00
2,000.00	13.64	60.75	1,962.04	2,944.96	168.34	300.54	207.65	0.00	0.00	0.00
2,100.00	13.64	60.75	2,059.22	2,847.78	179.87	321.12	221.87	0.00	0.00	0.00
2,200.00	13.64	60.75	2,156.39	2,750.61	191.39	341.69	236.08	0.00	0.00	0.00
2,300.00	13.64	60.75	2,253.57	2,653.43	202.92	362.27	250.30	0.00	0.00	0.00
2,400.00	13.64	60.75	2,350.75	2,556.25	214.45	382.85	264.52	0.00	0.00	0.00
2,500.00	13.64	60.75	2,447.93	2,459.07	225.97	403.42	278.74	0.00	0.00	0.00
2,600.00	13.64	60.75	2,545.11	2,361.89	237.50	424.00	292.95	0.00	0.00	0.00
2,700.00	13.64	60.75	2,642.29	2,264.71	249.02	444.58	307.17	0.00	0.00	0.00
2,800.00	13.64	60.75	2,739.47	2,167.53	260.55	465.16	321.39	0.00	0.00	0.00
2,900.00	13.64	60.75	2,836.65	2,070.35	272.08	485.73	335.60	0.00	0.00	0.00
3,000.00	13.64	60.75	2,933.83	1,973.17	283.60	506.31	349.82	0.00	0.00	0.00
3,100.00	13.64	60.75	3,031.01	1,875.99	295.13	526.89	364.04	0.00	0.00	0.00
3,200.00	13.64	60.75	3,128.18	1,778.82	306.65	547.46	378.25	0.00	0.00	0.00
3,300.00	13.64	60.75	3,225.36	1,681.64	318.18	568.04	392.47	0.00	0.00	0.00
RICHARD SANDSTONE										
3,370.89	13.64	60.75	3,294.25	1,612.75	326.35	582.63	402.55	0.00	0.00	0.00
3,400.00	13.64	60.75	3,322.54	1,584.46	329.70	588.62	406.69	0.00	0.00	0.00
3,500.00	13.64	60.75	3,419.72	1,487.28	341.23	609.19	420.91	0.00	0.00	0.00
3,600.00	13.64	60.75	3,516.90	1,390.10	352.76	629.77	435.12	0.00	0.00	0.00
3,700.00	13.64	60.75	3,614.08	1,292.92	364.28	650.35	449.34	0.00	0.00	0.00
3,800.00	13.64	60.75	3,711.26	1,195.74	375.81	670.92	463.56	0.00	0.00	0.00
3,900.00	13.64	60.75	3,808.44	1,098.56	387.33	691.50	477.77	0.00	0.00	0.00
4,000.00	13.64	60.75	3,905.62	1,001.38	398.86	712.08	491.99	0.00	0.00	0.00
4,100.00	13.64	60.75	4,002.80	904.20	410.38	732.65	506.21	0.00	0.00	0.00
4,200.00	13.64	60.75	4,099.97	807.03	421.91	753.23	520.43	0.00	0.00	0.00

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Well:	BLUE TEAL FED 15-10-15HC	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)
SUSSEX SANDSTONE										
4,257.40	13.64	60.75	4,155.75	751.25	428.53	765.04	528.59	0.00	0.00	0.00
4,300.00	13.64	60.75	4,197.15	709.85	433.44	773.81	534.64	0.00	0.00	0.00
4,400.00	13.64	60.75	4,294.33	612.67	444.96	794.38	548.86	0.00	0.00	0.00
4,500.00	13.64	60.75	4,391.51	515.49	456.49	814.96	563.08	0.00	0.00	0.00
4,600.00	13.64	60.75	4,488.69	418.31	468.01	835.54	577.29	0.00	0.00	0.00
4,700.00	13.64	60.75	4,585.87	321.13	479.54	856.12	591.51	0.00	0.00	0.00
SHANNON SANDSTONE										
4,759.56	13.64	60.75	4,643.75	263.25	486.40	868.37	599.98	0.00	0.00	0.00
4,800.00	13.64	60.75	4,683.05	223.95	491.06	876.69	605.73	0.00	0.00	0.00
4,900.00	13.64	60.75	4,780.23	126.77	502.59	897.27	619.94	0.00	0.00	0.00
5,000.00	13.64	60.75	4,877.41	29.59	514.12	917.85	634.16	0.00	0.00	0.00
5,100.00	13.64	60.75	4,974.58	-67.58	525.64	938.42	648.38	0.00	0.00	0.00
5,200.00	13.64	60.75	5,071.76	-164.76	537.17	959.00	662.60	0.00	0.00	0.00
5,300.00	13.64	60.75	5,168.94	-261.94	548.69	979.58	676.81	0.00	0.00	0.00
5,400.00	13.64	60.75	5,266.12	-359.12	560.22	1,000.15	691.03	0.00	0.00	0.00
5,500.00	13.64	60.75	5,363.30	-456.30	571.75	1,020.73	705.25	0.00	0.00	0.00
5,600.00	13.64	60.75	5,460.48	-553.48	583.27	1,041.31	719.46	0.00	0.00	0.00
5,700.00	13.64	60.75	5,557.66	-650.66	594.80	1,061.88	733.68	0.00	0.00	0.00
5,800.00	13.64	60.75	5,654.84	-747.84	606.32	1,082.46	747.90	0.00	0.00	0.00
5,900.00	13.64	60.75	5,752.02	-845.02	617.85	1,103.04	762.11	0.00	0.00	0.00
6,000.00	13.64	60.75	5,849.20	-942.20	629.37	1,123.61	776.33	0.00	0.00	0.00
KOP (10°/100ft DGLG)										
6,090.34	13.64	60.75	5,936.98	-1,029.98	639.79	1,142.20	789.17	0.00	0.00	0.00
6,100.00	14.15	57.31	5,946.36	-1,039.36	640.98	1,144.19	790.63	10.00	5.21	-35.54
6,150.00	17.38	43.16	5,994.50	-1,087.50	649.73	1,154.45	800.69	10.00	6.46	-28.31
6,200.00	21.29	33.68	6,041.68	-1,134.68	662.74	1,164.59	814.96	10.00	7.82	-18.95
SHARON SPRINGS										
6,228.76	23.71	29.65	6,068.25	-1,161.25	672.11	1,170.35	825.03	10.00	8.44	-14.03
6,250.00	25.56	27.14	6,087.56	-1,180.56	679.90	1,174.55	833.32	10.00	8.71	-11.80
6,300.00	30.05	22.40	6,131.78	-1,224.78	701.09	1,184.25	855.63	10.00	8.98	-9.47
NIOBRARA A CHALK										
6,302.28	30.26	22.22	6,133.75	-1,226.75	702.15	1,184.69	856.74	10.00	9.13	-8.11
NIOBRARA A CHALK BASE										
6,323.92	32.25	20.57	6,152.25	-1,245.25	712.60	1,188.78	867.65	10.00	9.19	-7.61
6,350.00	34.67	18.81	6,174.00	-1,267.00	726.14	1,193.62	881.72	10.00	9.28	-6.74
NIOBRARA B1 CHALK TOP										
6,363.17	35.90	18.00	6,184.75	-1,277.75	733.36	1,196.02	889.19	10.00	9.35	-6.14
NIOBRARA B1 CHALK BASE										
6,395.27	38.92	16.22	6,210.25	-1,303.25	752.00	1,201.75	908.44	10.00	9.41	-5.56
6,400.00	39.37	15.98	6,213.92	-1,306.92	754.87	1,202.57	911.40	10.00	9.46	-5.14
NIOBRARA B2 CHALK TOP										
6,425.46	41.79	14.74	6,233.25	-1,326.25	770.83	1,206.95	927.81	10.00	9.49	-4.84
6,450.00	44.13	13.66	6,251.21	-1,344.21	787.05	1,211.05	944.43	10.00	9.54	-4.41
NIOBRARA B2 CHALK BASE										
6,471.32	46.17	12.79	6,266.25	-1,359.25	801.76	1,214.51	959.48	10.00	9.57	-4.08
6,500.00	48.92	11.71	6,285.61	-1,378.61	822.44	1,219.00	980.57	10.00	9.61	-3.76
NIOBRARA C CHALK TOP										
6,518.83	50.74	11.05	6,297.75	-1,390.75	836.54	1,221.83	994.93	10.00	9.63	-3.51
6,550.00	53.75	10.03	6,316.84	-1,409.84	860.77	1,226.34	1,019.54	10.00	9.66	-3.28
NIOBRARA C CHALK BASE										
6,593.51	57.96	8.73	6,341.25	-1,434.25	896.28	1,232.19	1,055.53	10.00	9.69	-2.99

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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)
6,600.00	58.59	8.54	6,344.66	-1,437.66	901.74	1,233.02	1,061.05	10.00	9.71	-2.83
NIORARA D CHALK TOP										
6,648.59	63.32	7.24	6,368.25	-1,461.25	943.81	1,238.84	1,103.52	10.00	9.72	-2.68
6,650.00	63.45	7.21	6,368.88	-1,461.88	945.06	1,239.00	1,104.78	10.00	9.73	-2.56
6,700.00	68.33	5.98	6,389.30	-1,482.30	990.38	1,244.23	1,150.39	10.00	9.74	-2.46
FT. HAYS										
6,728.72	71.13	5.31	6,399.25	-1,492.25	1,017.19	1,246.88	1,177.31	10.00	9.76	-2.33
6,750.00	73.21	4.83	6,405.76	-1,498.76	1,037.37	1,248.66	1,197.54	10.00	9.77	-2.26
6,800.00	78.09	3.73	6,418.15	-1,511.15	1,085.66	1,252.27	1,245.87	10.00	9.77	-2.18
CODELL										
6,824.78	80.52	3.21	6,422.75	-1,515.75	1,109.96	1,253.75	1,270.15	10.00	9.78	-2.12
6,850.00	82.99	2.68	6,426.37	-1,519.37	1,134.89	1,255.03	1,295.02	10.00	9.78	-2.09
6,900.00	87.88	1.65	6,430.35	-1,523.35	1,184.68	1,256.91	1,344.60	10.00	9.79	-2.06
HZ LP: 600ft FSL & 790ft FEL of Sec 15										
6,921.68	90.00	1.21	6,430.75	-1,523.75	1,206.34	1,257.45	1,366.14	10.00	9.79	-2.05
7,000.00	90.00	1.21	6,430.75	-1,523.75	1,284.65	1,259.10	1,443.94	0.00	0.00	0.00
7,100.00	90.00	1.21	6,430.75	-1,523.75	1,384.62	1,261.20	1,543.28	0.00	0.00	0.00
7,200.00	90.00	1.21	6,430.75	-1,523.75	1,484.60	1,263.31	1,642.61	0.00	0.00	0.00
7,300.00	90.00	1.21	6,430.75	-1,523.75	1,584.58	1,265.41	1,741.95	0.00	0.00	0.00
7,400.00	90.00	1.21	6,430.75	-1,523.75	1,684.56	1,267.52	1,841.28	0.00	0.00	0.00
7,500.00	90.00	1.21	6,430.75	-1,523.75	1,784.54	1,269.63	1,940.62	0.00	0.00	0.00
7,600.00	90.00	1.21	6,430.75	-1,523.75	1,884.51	1,271.73	2,039.95	0.00	0.00	0.00
7,700.00	90.00	1.21	6,430.75	-1,523.75	1,984.49	1,273.84	2,139.29	0.00	0.00	0.00
7,800.00	90.00	1.21	6,430.75	-1,523.75	2,084.47	1,275.94	2,238.62	0.00	0.00	0.00
7,900.00	90.00	1.21	6,430.74	-1,523.74	2,184.45	1,278.05	2,337.96	0.00	0.00	0.00
8,000.00	90.00	1.21	6,430.74	-1,523.74	2,284.42	1,280.15	2,437.29	0.00	0.00	0.00
8,100.00	90.00	1.21	6,430.74	-1,523.74	2,384.40	1,282.26	2,536.63	0.00	0.00	0.00
8,200.00	90.00	1.21	6,430.74	-1,523.74	2,484.38	1,284.36	2,635.96	0.00	0.00	0.00
8,300.00	90.00	1.21	6,430.74	-1,523.74	2,584.36	1,286.47	2,735.30	0.00	0.00	0.00
8,400.00	90.00	1.21	6,430.74	-1,523.74	2,684.34	1,288.57	2,834.64	0.00	0.00	0.00
8,500.00	90.00	1.21	6,430.74	-1,523.74	2,784.31	1,290.68	2,933.97	0.00	0.00	0.00
8,600.00	90.00	1.21	6,430.74	-1,523.74	2,884.29	1,292.78	3,033.31	0.00	0.00	0.00
8,700.00	90.00	1.21	6,430.74	-1,523.74	2,984.27	1,294.89	3,132.64	0.00	0.00	0.00
8,800.00	90.00	1.21	6,430.74	-1,523.74	3,084.25	1,296.99	3,231.98	0.00	0.00	0.00
8,900.00	90.00	1.21	6,430.74	-1,523.74	3,184.23	1,299.10	3,331.31	0.00	0.00	0.00
9,000.00	90.00	1.21	6,430.74	-1,523.74	3,284.20	1,301.20	3,430.65	0.00	0.00	0.00
9,100.00	90.00	1.21	6,430.74	-1,523.74	3,384.18	1,303.31	3,529.98	0.00	0.00	0.00
9,200.00	90.00	1.21	6,430.74	-1,523.74	3,484.16	1,305.41	3,629.32	0.00	0.00	0.00
9,300.00	90.00	1.21	6,430.74	-1,523.74	3,584.14	1,307.52	3,728.65	0.00	0.00	0.00
9,400.00	90.00	1.21	6,430.74	-1,523.74	3,684.11	1,309.62	3,827.99	0.00	0.00	0.00
9,500.00	90.00	1.21	6,430.74	-1,523.74	3,784.09	1,311.73	3,927.32	0.00	0.00	0.00
9,600.00	90.00	1.21	6,430.74	-1,523.74	3,884.07	1,313.83	4,026.66	0.00	0.00	0.00
9,700.00	90.00	1.21	6,430.74	-1,523.74	3,984.05	1,315.94	4,125.99	0.00	0.00	0.00
9,800.00	90.00	1.21	6,430.73	-1,523.73	4,084.03	1,318.04	4,225.33	0.00	0.00	0.00
9,900.00	90.00	1.21	6,430.73	-1,523.73	4,184.00	1,320.15	4,324.67	0.00	0.00	0.00
10,000.00	90.00	1.21	6,430.73	-1,523.73	4,283.98	1,322.25	4,424.00	0.00	0.00	0.00
10,100.00	90.00	1.21	6,430.73	-1,523.73	4,383.96	1,324.36	4,523.34	0.00	0.00	0.00
10,200.00	90.00	1.21	6,430.73	-1,523.73	4,483.94	1,326.46	4,622.67	0.00	0.00	0.00
10,300.00	90.00	1.21	6,430.73	-1,523.73	4,583.92	1,328.57	4,722.01	0.00	0.00	0.00
10,400.00	90.00	1.21	6,430.73	-1,523.73	4,683.89	1,330.67	4,821.34	0.00	0.00	0.00
10,500.00	90.00	1.21	6,430.73	-1,523.73	4,783.87	1,332.78	4,920.68	0.00	0.00	0.00
10,600.00	90.00	1.21	6,430.73	-1,523.73	4,883.85	1,334.88	5,020.01	0.00	0.00	0.00
10,700.00	90.00	1.21	6,430.73	-1,523.73	4,983.83	1,336.99	5,119.35	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BLUE TEAL FED 15-10-15HC
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4907.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4907.00usft (Original Well Elev)
Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL FED 15-10-15HC	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)
10,800.00	90.00	1.21	6,430.73	-1,523.73	5,083.80	1,339.09	5,218.68	0.00	0.00	0.00
10,900.00	90.00	1.21	6,430.73	-1,523.73	5,183.78	1,341.20	5,318.02	0.00	0.00	0.00
11,000.00	90.00	1.21	6,430.73	-1,523.73	5,283.76	1,343.30	5,417.35	0.00	0.00	0.00
11,100.00	90.00	1.21	6,430.73	-1,523.73	5,383.74	1,345.41	5,516.69	0.00	0.00	0.00
11,200.00	90.00	1.21	6,430.73	-1,523.73	5,483.72	1,347.52	5,616.02	0.00	0.00	0.00
11,300.00	90.00	1.21	6,430.73	-1,523.73	5,583.69	1,349.62	5,715.36	0.00	0.00	0.00
11,400.00	90.00	1.21	6,430.73	-1,523.73	5,683.67	1,351.73	5,814.69	0.00	0.00	0.00
11,500.00	90.00	1.21	6,430.73	-1,523.73	5,783.65	1,353.83	5,914.03	0.00	0.00	0.00
11,600.00	90.00	1.21	6,430.73	-1,523.73	5,883.63	1,355.94	6,013.37	0.00	0.00	0.00
11,700.00	90.00	1.21	6,430.72	-1,523.72	5,983.61	1,358.04	6,112.70	0.00	0.00	0.00
11,800.00	90.00	1.21	6,430.72	-1,523.72	6,083.58	1,360.15	6,212.04	0.00	0.00	0.00
11,900.00	90.00	1.21	6,430.72	-1,523.72	6,183.56	1,362.25	6,311.37	0.00	0.00	0.00
12,000.00	90.00	1.21	6,430.72	-1,523.72	6,283.54	1,364.36	6,410.71	0.00	0.00	0.00
12,100.00	90.00	1.21	6,430.72	-1,523.72	6,383.52	1,366.46	6,510.04	0.00	0.00	0.00
12,200.00	90.00	1.21	6,430.72	-1,523.72	6,483.49	1,368.57	6,609.38	0.00	0.00	0.00
12,300.00	90.00	1.21	6,430.72	-1,523.72	6,583.47	1,370.67	6,708.71	0.00	0.00	0.00
12,400.00	90.00	1.21	6,430.72	-1,523.72	6,683.45	1,372.78	6,808.05	0.00	0.00	0.00
12,500.00	90.00	1.21	6,430.72	-1,523.72	6,783.43	1,374.88	6,907.38	0.00	0.00	0.00
12,600.00	90.00	1.21	6,430.72	-1,523.72	6,883.41	1,376.99	7,006.72	0.00	0.00	0.00
12,700.00	90.00	1.21	6,430.72	-1,523.72	6,983.38	1,379.09	7,106.05	0.00	0.00	0.00
12,800.00	90.00	1.21	6,430.72	-1,523.72	7,083.36	1,381.20	7,205.39	0.00	0.00	0.00
12,900.00	90.00	1.21	6,430.72	-1,523.72	7,183.34	1,383.30	7,304.72	0.00	0.00	0.00
13,000.00	90.00	1.21	6,430.72	-1,523.72	7,283.32	1,385.41	7,404.06	0.00	0.00	0.00
13,100.00	90.00	1.21	6,430.72	-1,523.72	7,383.29	1,387.51	7,503.39	0.00	0.00	0.00
13,200.00	90.00	1.21	6,430.72	-1,523.72	7,483.27	1,389.62	7,602.73	0.00	0.00	0.00
13,300.00	90.00	1.21	6,430.72	-1,523.72	7,583.25	1,391.72	7,702.07	0.00	0.00	0.00
13,400.00	90.00	1.21	6,430.72	-1,523.72	7,683.23	1,393.83	7,801.40	0.00	0.00	0.00
13,500.00	90.00	1.21	6,430.71	-1,523.71	7,783.21	1,395.93	7,900.74	0.00	0.00	0.00
13,600.00	90.00	1.21	6,430.71	-1,523.71	7,883.18	1,398.04	8,000.07	0.00	0.00	0.00
13,700.00	90.00	1.21	6,430.71	-1,523.71	7,983.16	1,400.14	8,099.41	0.00	0.00	0.00
13,800.00	90.00	1.21	6,430.71	-1,523.71	8,083.14	1,402.25	8,198.74	0.00	0.00	0.00
13,900.00	90.00	1.21	6,430.71	-1,523.71	8,183.12	1,404.35	8,298.08	0.00	0.00	0.00
14,000.00	90.00	1.21	6,430.71	-1,523.71	8,283.10	1,406.46	8,397.41	0.00	0.00	0.00
14,100.00	90.00	1.21	6,430.71	-1,523.71	8,383.07	1,408.56	8,496.75	0.00	0.00	0.00
14,200.00	90.00	1.21	6,430.71	-1,523.71	8,483.05	1,410.67	8,596.08	0.00	0.00	0.00
14,300.00	90.00	1.21	6,430.71	-1,523.71	8,583.03	1,412.77	8,695.42	0.00	0.00	0.00
14,400.00	90.00	1.21	6,430.71	-1,523.71	8,683.01	1,414.88	8,794.75	0.00	0.00	0.00
14,500.00	90.00	1.21	6,430.71	-1,523.71	8,782.98	1,416.98	8,894.09	0.00	0.00	0.00
14,600.00	90.00	1.21	6,430.71	-1,523.71	8,882.96	1,419.09	8,993.42	0.00	0.00	0.00
14,700.00	90.00	1.21	6,430.71	-1,523.71	8,982.94	1,421.19	9,092.76	0.00	0.00	0.00
14,800.00	90.00	1.21	6,430.71	-1,523.71	9,082.92	1,423.30	9,192.09	0.00	0.00	0.00
14,900.00	90.00	1.21	6,430.71	-1,523.71	9,182.90	1,425.41	9,291.43	0.00	0.00	0.00
15,000.00	90.00	1.21	6,430.71	-1,523.71	9,282.87	1,427.51	9,390.77	0.00	0.00	0.00
15,100.00	90.00	1.21	6,430.71	-1,523.71	9,382.85	1,429.62	9,490.10	0.00	0.00	0.00
15,200.00	90.00	1.21	6,430.71	-1,523.71	9,482.83	1,431.72	9,589.44	0.00	0.00	0.00
15,300.00	90.00	1.21	6,430.71	-1,523.71	9,582.81	1,433.83	9,688.77	0.00	0.00	0.00
15,400.00	90.00	1.21	6,430.70	-1,523.70	9,682.79	1,435.93	9,788.11	0.00	0.00	0.00
15,500.00	90.00	1.21	6,430.70	-1,523.70	9,782.76	1,438.04	9,887.44	0.00	0.00	0.00
15,600.00	90.00	1.21	6,430.70	-1,523.70	9,882.74	1,440.14	9,986.78	0.00	0.00	0.00
15,700.00	90.00	1.21	6,430.70	-1,523.70	9,982.72	1,442.25	10,086.11	0.00	0.00	0.00
15,800.00	90.00	1.21	6,430.70	-1,523.70	10,082.70	1,444.35	10,185.45	0.00	0.00	0.00
15,900.00	90.00	1.21	6,430.70	-1,523.70	10,182.67	1,446.46	10,284.78	0.00	0.00	0.00
16,000.00	90.00	1.21	6,430.70	-1,523.70	10,282.65	1,448.56	10,384.12	0.00	0.00	0.00
16,100.00	90.00	1.21	6,430.70	-1,523.70	10,382.63	1,450.67	10,483.45	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BLUE TEAL FED 15-10-15HC
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4907.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4907.00usft (Original Well Elev)
Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL FED 15-10-15HC	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)
16,200.00	90.00	1.21	6,430.70	-1,523.70	10,482.61	1,452.77	10,582.79	0.00	0.00	0.00
16,300.00	90.00	1.21	6,430.70	-1,523.70	10,582.59	1,454.88	10,682.12	0.00	0.00	0.00
BHL: 600ft FNL & 779ft FEL of Sec 10										
16,319.09	90.00	1.21	6,430.70	-1,523.70	10,601.67	1,455.28	10,701.08	0.00	0.00	0.00

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,516.06	1,491.75	FOX HILLS BASE				
3,370.89	3,294.25	RICHARD SANDSTONE				
4,257.40	4,155.75	SUSSEX SANDSTONE				
4,759.56	4,643.75	SHANNON SANDSTONE				
6,228.76	6,068.25	SHARON SPRINGS				
6,302.28	6,133.75	NIOBRARA A CHALK				
6,323.92	6,152.25	NIOBRARA A CHALK BASE				
6,363.17	6,184.75	NIOBRARA B1 CHALK TOP				
6,395.27	6,210.25	NIOBRARA B1 CHALK BASE				
6,425.46	6,233.25	NIOBRARA B2 CHALK TOP				
6,471.32	6,266.25	NIOBRARA B2 CHALK BASE				
6,518.83	6,297.75	NIOBRARA C CHALK TOP				
6,593.51	6,341.25	NIOBRARA C CHALK BASE				
6,648.59	6,368.25	NIOBRARA D CHALK TOP				
6,728.72	6,399.25	FT. HAYS				
6,824.78	6,422.75	CODELL				

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 & 2023ft FEL of Sec 22
200.00	200.00	0.00	0.00	START NUDGE (2"/100ft BUR)
882.08	875.66	39.49	70.51	EOB TO 13.64° INC
1,581.15	1,555.00	120.07	214.35	SURFACE CASING
6,090.34	5,936.98	639.79	1,142.20	KOP (10"/100ft DGLG)
6,921.68	6,430.75	1,206.34	1,257.45	HZ LP: 600ft FSL & 790ft FEL of Sec 15
16,319.09	6,430.70	10,601.67	1,455.28	BHL: 600ft FNL & 779ft FEL of Sec 10