

MALLARD EXPLORATION

WELD COUNTY, COLORADO (NAD 83)

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

BLUE TEAL 15-10-2HC

ORIGINAL WELLBORE

16 March, 2018

Plan: PROPOSAL #3





Project: WELD COUNTY, COLORADO (NAD 83)
Site: NW NE SEC. 22 T8N R60W 6th P.M.
Well: BLUE TEAL 15-10-2HC
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 & 2348ft 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)	
1253.11	1278.40	21.57	287.34	59.77	-191.47	93.65	200.59	EOB TO 21.57° INC	
1555.00	1603.02	21.57	287.34	95.33	-305.39	149.37	319.92	SURFACE CASING	
5954.26	6333.50	21.57	287.34	613.51	-1965.35	961.27	2058.88	KOP (10°/100ft DGLG)	
6434.75	7174.40	90.00	1.07	1186.77	-2137.00	1556.20	2682.61	HZ LP: 600ft FSL & 790ft FWL of Sec 15	
6434.75	16576.40	90.00	1.07	10587.13	-1961.45	10767.29	12084.61	BHL: 600ft FNL & 786ft FWL of Sec 10	

PROPOSED LOCAL COORDINATES:

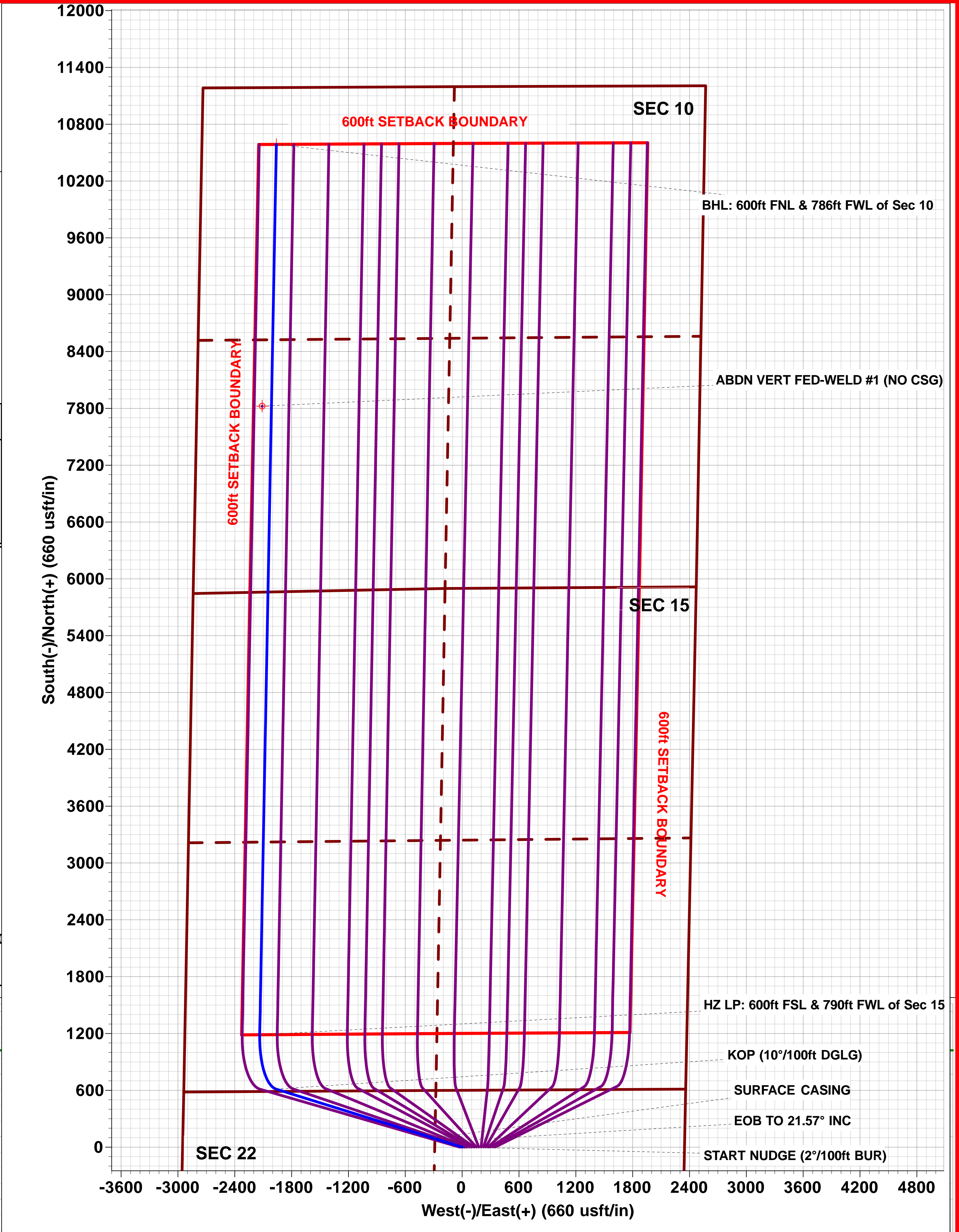
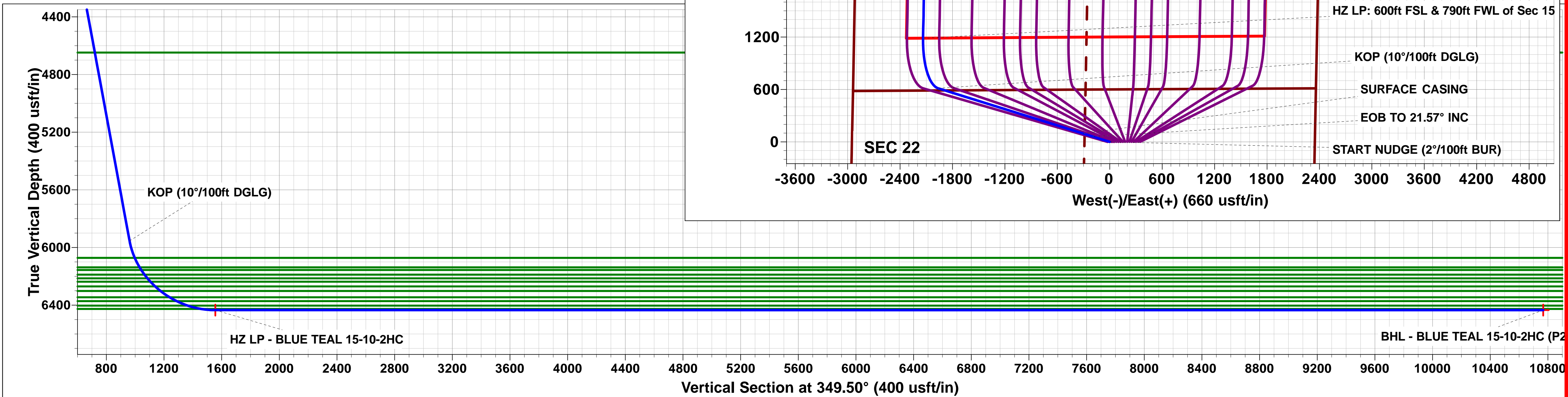
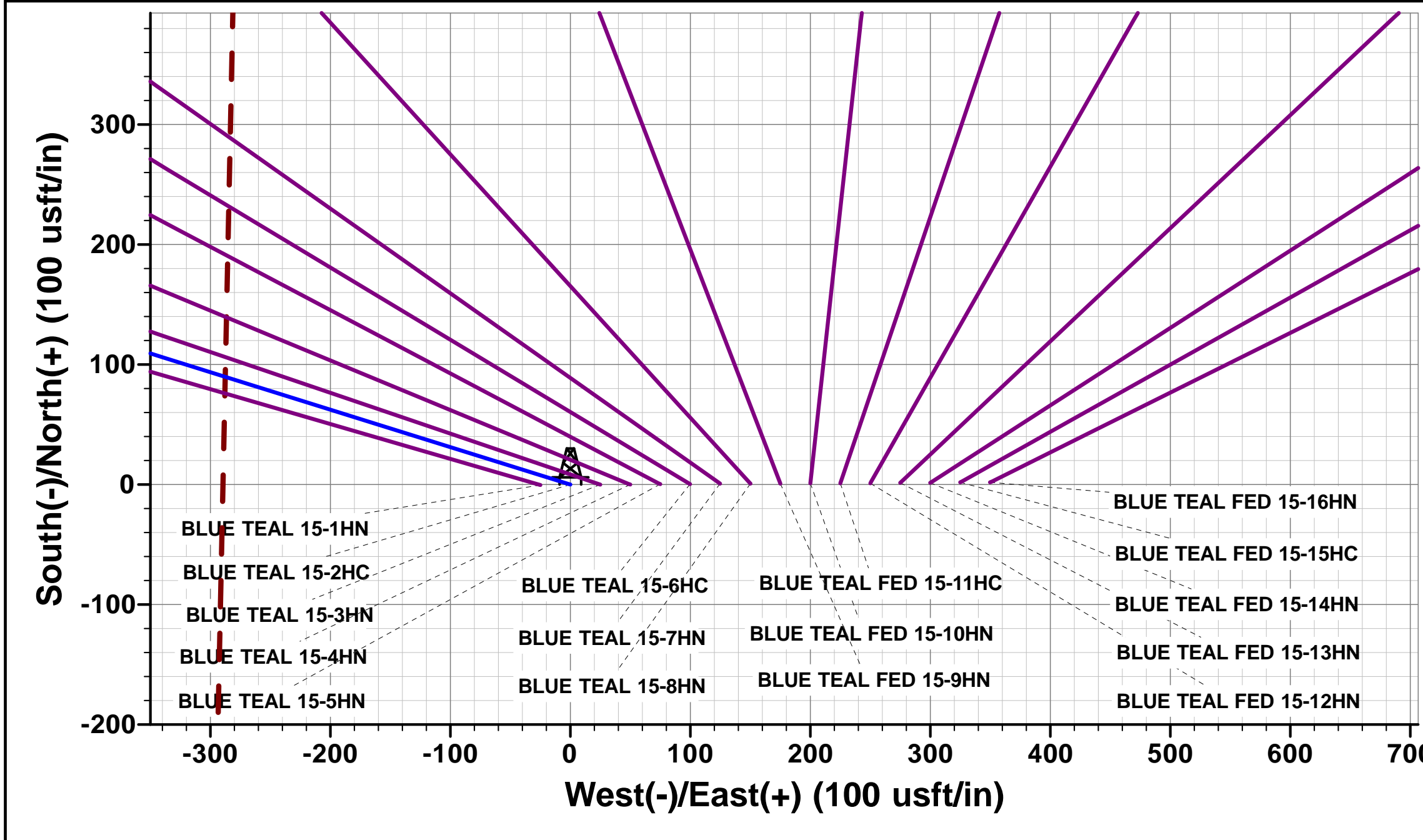
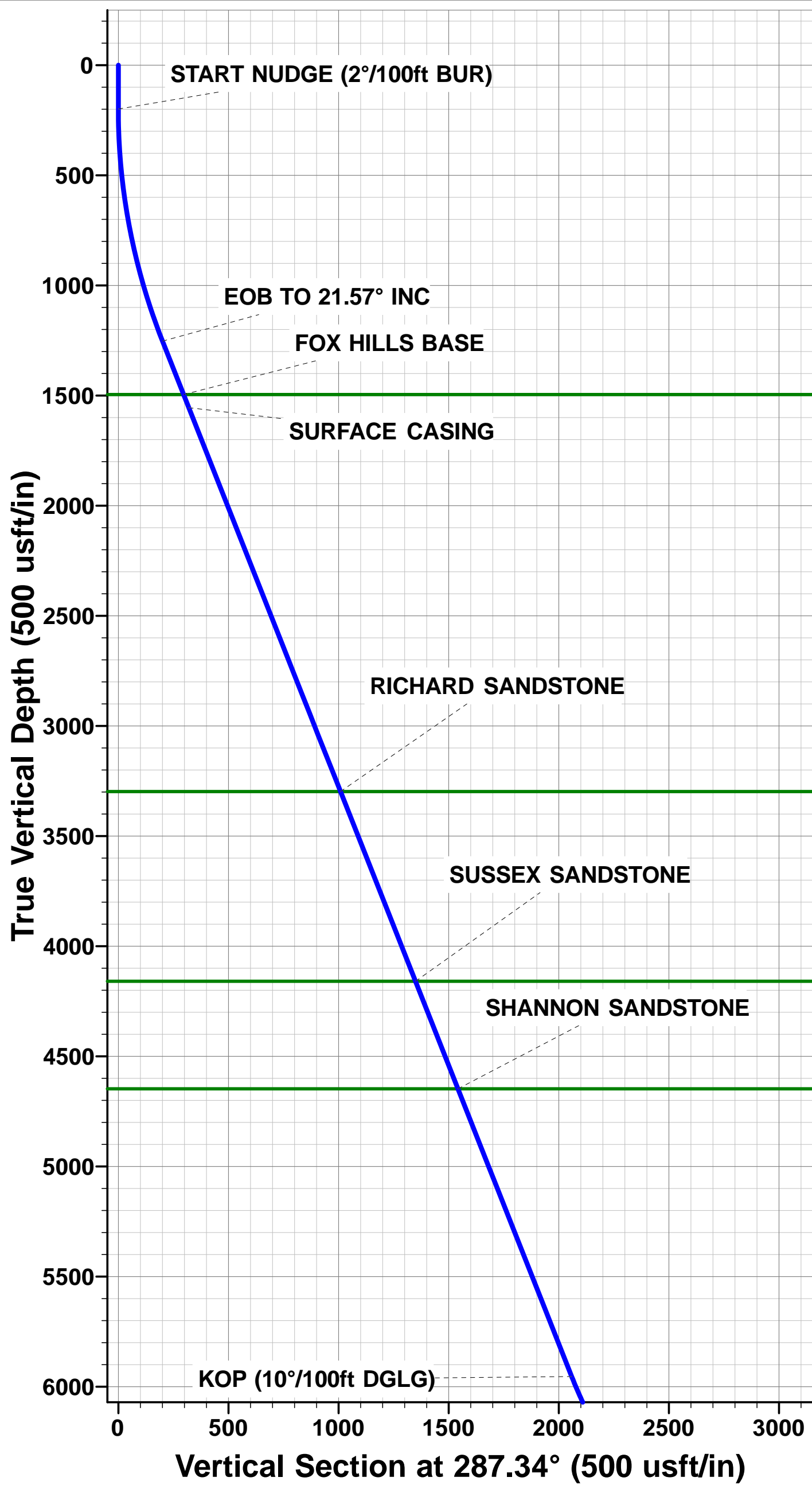
SHL: 600ft FNL & 2348ft FEL Sec 22

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

BHL: 600ft FNL & 786ft FWL of Sec 10

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
HZ LP - BLUE TEAL 15-10-2HC	6434.75	1186.72	-2137.00	40.656757	-104.083954
BHL - BLUE TEAL 15-10-2HC (P2)	6434.75	10587.13	-1961.45	40.682559	-104.083324



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BLUE TEAL 15-10-2HC
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4911.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4911.00usft (Original Well Elev)
Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL 15-10-2HC	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
From:	Lat/Long	Easting:	3,395,003.84 usft
Position Uncertainty:	0.00 usft	Slot Radius:	1.10000 ft
		Latitude:	40.653499
		Longitude:	-104.076342
		Grid Convergence:	0.92 °

Well	BLUE TEAL 15-10-2HC		
Well Position	+N/-S	0.35 usft	Northing:
	+E/-W	24.97 usft	Easting:
Position Uncertainty	0.00 usft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

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	349.50	

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	-4,911.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	-4,711.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,278.41	21.57	287.34	1,253.12	-3,657.88	59.77	-191.48	2.00	2.00	0.00	287.34	
6,333.46	21.57	287.34	5,954.22	1,043.22	613.51	-1,965.33	0.00	0.00	0.00	0.00	
7,174.36	90.00	1.07	6,434.75	1,523.75	1,186.72	-2,137.00	10.00	8.14	8.77	74.82	HZ LP - BLUE TEAL 1
16,576.40	90.00	1.07	6,434.75	1,523.75	10,587.13	-1,961.45	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 @ 4911.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4911.00usft (Original Well Elev)
Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL 15-10-2HC	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 & 2348ft FEL of Sec 22										
0.00	0.00	0.00	0.00	4,911.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,811.00	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	4,711.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	2.00	287.34	299.98	4,611.02	0.52	-1.67	0.81	2.00	2.00	0.00
400.00	4.00	287.34	399.84	4,511.16	2.08	-6.66	3.26	2.00	2.00	0.00
500.00	6.00	287.34	499.45	4,411.55	4.68	-14.98	7.33	2.00	2.00	0.00
600.00	8.00	287.34	598.70	4,312.30	8.31	-26.61	13.02	2.00	2.00	0.00
700.00	10.00	287.34	697.47	4,213.53	12.97	-41.55	20.32	2.00	2.00	0.00
800.00	12.00	287.34	795.62	4,115.38	18.65	-59.76	29.23	2.00	2.00	0.00
900.00	14.00	287.34	893.06	4,017.94	25.36	-81.23	39.73	2.00	2.00	0.00
1,000.00	16.00	287.34	989.64	3,921.36	33.07	-105.94	51.81	2.00	2.00	0.00
1,100.00	18.00	287.34	1,085.27	3,825.73	41.78	-133.84	65.46	2.00	2.00	0.00
1,200.00	20.00	287.34	1,179.82	3,731.18	51.48	-164.92	80.66	2.00	2.00	0.00
EOB TO 21.57° INC										
1,278.40	21.57	287.34	1,253.11	3,657.89	59.77	-191.47	93.65	2.00	2.00	0.00
1,278.41	21.57	287.34	1,253.12	3,657.88	59.77	-191.48	93.65	2.00	2.00	0.00
1,300.00	21.57	287.34	1,273.20	3,637.80	62.14	-199.05	97.36	0.00	0.00	0.00
1,400.00	21.57	287.34	1,366.20	3,544.80	73.09	-234.14	114.52	0.00	0.00	0.00
1,500.00	21.57	287.34	1,459.20	3,451.80	84.05	-269.24	131.69	0.00	0.00	0.00
FOX HILLS BASE										
1,539.31	21.57	287.34	1,495.75	3,415.25	88.35	-283.03	138.43	0.00	0.00	0.00
1,600.00	21.57	287.34	1,552.19	3,358.81	95.00	-304.33	148.85	0.00	0.00	0.00
SURFACE CASING										
1,603.02	21.57	287.34	1,555.00	3,356.00	95.33	-305.39	149.37	0.00	0.00	0.00
1,700.00	21.57	287.34	1,645.19	3,265.81	105.95	-339.42	166.01	0.00	0.00	0.00
1,800.00	21.57	287.34	1,738.19	3,172.81	116.91	-374.51	183.17	0.00	0.00	0.00
1,900.00	21.57	287.34	1,831.19	3,079.81	127.86	-409.60	200.34	0.00	0.00	0.00
2,000.00	21.57	287.34	1,924.19	2,986.81	138.82	-444.69	217.50	0.00	0.00	0.00
2,100.00	21.57	287.34	2,017.18	2,893.82	149.77	-479.78	234.66	0.00	0.00	0.00
2,200.00	21.57	287.34	2,110.18	2,800.82	160.72	-514.87	251.83	0.00	0.00	0.00
2,300.00	21.57	287.34	2,203.18	2,707.82	171.68	-549.96	268.99	0.00	0.00	0.00
2,400.00	21.57	287.34	2,296.18	2,614.82	182.63	-585.05	286.15	0.00	0.00	0.00
2,500.00	21.57	287.34	2,389.18	2,521.82	193.59	-620.14	303.32	0.00	0.00	0.00
2,600.00	21.57	287.34	2,482.17	2,428.83	204.54	-655.23	320.48	0.00	0.00	0.00
2,700.00	21.57	287.34	2,575.17	2,335.83	215.49	-690.32	337.64	0.00	0.00	0.00
2,800.00	21.57	287.34	2,668.17	2,242.83	226.45	-725.42	354.81	0.00	0.00	0.00
2,900.00	21.57	287.34	2,761.17	2,149.83	237.40	-760.51	371.97	0.00	0.00	0.00
3,000.00	21.57	287.34	2,854.17	2,056.83	248.36	-795.60	389.13	0.00	0.00	0.00
3,100.00	21.57	287.34	2,947.16	1,963.84	259.31	-830.69	406.30	0.00	0.00	0.00
3,200.00	21.57	287.34	3,040.16	1,870.84	270.26	-865.78	423.46	0.00	0.00	0.00
3,300.00	21.57	287.34	3,133.16	1,777.84	281.22	-900.87	440.62	0.00	0.00	0.00
3,400.00	21.57	287.34	3,226.16	1,684.84	292.17	-935.96	457.79	0.00	0.00	0.00
RICHARD SANDSTONE										
3,477.52	21.57	287.34	3,298.25	1,612.75	300.66	-963.16	471.09	0.00	0.00	0.00
3,500.00	21.57	287.34	3,319.16	1,591.84	303.13	-971.05	474.95	0.00	0.00	0.00
3,600.00	21.57	287.34	3,412.16	1,498.84	314.08	-1,006.14	492.11	0.00	0.00	0.00
3,700.00	21.57	287.34	3,505.15	1,405.85	325.04	-1,041.23	509.28	0.00	0.00	0.00
3,800.00	21.57	287.34	3,598.15	1,312.85	335.99	-1,076.32	526.44	0.00	0.00	0.00
3,900.00	21.57	287.34	3,691.15	1,219.85	346.94	-1,111.41	543.60	0.00	0.00	0.00
4,000.00	21.57	287.34	3,784.15	1,126.85	357.90	-1,146.50	560.76	0.00	0.00	0.00
4,100.00	21.57	287.34	3,877.15	1,033.85	368.85	-1,181.60	577.93	0.00	0.00	0.00

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Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL 15-10-2HC	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	21.57	287.34	3,970.14	940.86	379.81	-1,216.69	595.09	0.00	0.00	0.00
4,300.00	21.57	287.34	4,063.14	847.86	390.76	-1,251.78	612.25	0.00	0.00	0.00
4,400.00	21.57	287.34	4,156.14	754.86	401.71	-1,286.87	629.42	0.00	0.00	0.00
SUSSEX SANDSTONE										
4,403.88	21.57	287.34	4,159.75	751.25	402.14	-1,288.23	630.08	0.00	0.00	0.00
4,500.00	21.57	287.34	4,249.14	661.86	412.67	-1,321.96	646.58	0.00	0.00	0.00
4,600.00	21.57	287.34	4,342.14	568.86	423.62	-1,357.05	663.74	0.00	0.00	0.00
4,700.00	21.57	287.34	4,435.13	475.87	434.58	-1,392.14	680.91	0.00	0.00	0.00
4,800.00	21.57	287.34	4,528.13	382.87	445.53	-1,427.23	698.07	0.00	0.00	0.00
4,900.00	21.57	287.34	4,621.13	289.87	456.48	-1,462.32	715.23	0.00	0.00	0.00
SHANNON SANDSTONE										
4,928.62	21.57	287.34	4,647.75	263.25	459.62	-1,472.37	720.15	0.00	0.00	0.00
5,000.00	21.57	287.34	4,714.13	196.87	467.44	-1,497.41	732.40	0.00	0.00	0.00
5,100.00	21.57	287.34	4,807.13	103.87	478.39	-1,532.50	749.56	0.00	0.00	0.00
5,200.00	21.57	287.34	4,900.13	10.87	489.35	-1,567.59	766.72	0.00	0.00	0.00
5,300.00	21.57	287.34	4,993.12	-82.12	500.30	-1,602.68	783.89	0.00	0.00	0.00
5,400.00	21.57	287.34	5,086.12	-175.12	511.25	-1,637.77	801.05	0.00	0.00	0.00
5,500.00	21.57	287.34	5,179.12	-268.12	522.21	-1,672.87	818.21	0.00	0.00	0.00
5,600.00	21.57	287.34	5,272.12	-361.12	533.16	-1,707.96	835.38	0.00	0.00	0.00
5,700.00	21.57	287.34	5,365.12	-454.12	544.12	-1,743.05	852.54	0.00	0.00	0.00
5,800.00	21.57	287.34	5,458.11	-547.11	555.07	-1,778.14	869.70	0.00	0.00	0.00
5,900.00	21.57	287.34	5,551.11	-640.11	566.02	-1,813.23	886.87	0.00	0.00	0.00
6,000.00	21.57	287.34	5,644.11	-733.11	576.98	-1,848.32	904.03	0.00	0.00	0.00
6,100.00	21.57	287.34	5,737.11	-826.11	587.93	-1,883.41	921.19	0.00	0.00	0.00
6,200.00	21.57	287.34	5,830.11	-919.11	598.89	-1,918.50	938.35	0.00	0.00	0.00
6,300.00	21.57	287.34	5,923.10	-1,012.10	609.84	-1,953.59	955.52	0.00	0.00	0.00
6,333.46	21.57	287.34	5,954.22	-1,043.22	613.51	-1,965.33	961.26	0.00	0.00	0.00
KOP (10°/100ft DGLG)										
6,333.50	21.57	287.34	5,954.26	-1,043.26	613.51	-1,965.35	961.27	0.00	0.00	0.00
6,350.00	22.06	291.59	5,969.58	-1,058.58	615.55	-1,971.12	964.33	10.02	2.96	25.78
6,400.00	24.14	303.21	6,015.59	-1,104.59	624.61	-1,988.42	976.39	10.00	4.16	23.23
6,450.00	26.95	312.81	6,060.72	-1,149.72	637.92	-2,005.30	992.55	10.00	5.63	19.20
SHARON SPRINGS										
6,462.98	27.78	314.99	6,072.25	-1,161.25	642.06	-2,009.59	997.40	10.00	6.36	16.80
6,500.00	30.30	320.58	6,104.62	-1,193.62	655.38	-2,021.63	1,012.69	10.00	6.81	15.10
NIORARA A CHALK										
6,538.96	33.17	325.59	6,137.75	-1,226.75	671.77	-2,033.90	1,031.04	10.00	7.37	12.86
6,550.00	34.02	326.87	6,146.95	-1,235.95	676.85	-2,037.29	1,036.65	10.00	7.67	11.59
NIORARA A CHALK BASE										
6,561.28	34.90	328.12	6,156.25	-1,245.25	682.23	-2,040.72	1,042.57	10.00	7.79	11.08
6,600.00	38.00	332.02	6,187.39	-1,276.39	702.17	-2,052.17	1,064.26	10.00	8.02	10.07
NIORARA B1 CHALK TOP										
6,601.72	38.15	332.18	6,188.75	-1,277.75	703.11	-2,052.67	1,065.28	10.00	8.18	9.33
NIORARA B1 CHALK BASE										
6,634.78	40.89	335.08	6,214.25	-1,303.25	721.96	-2,062.00	1,085.51	10.00	8.30	8.77
6,650.00	42.17	336.31	6,225.64	-1,314.64	731.15	-2,066.15	1,095.31	10.00	8.45	8.07
NIORARA B2 CHALK TOP										
6,665.83	43.52	337.52	6,237.25	-1,326.25	741.06	-2,070.37	1,105.81	10.00	8.53	7.67
6,700.00	46.48	339.95	6,261.41	-1,350.41	763.57	-2,079.12	1,129.55	10.00	8.65	7.10
NIORARA B2 CHALK BASE										
6,712.97	47.61	340.81	6,270.25	-1,359.25	772.52	-2,082.30	1,138.92	10.00	8.75	6.62
6,750.00	50.89	343.10	6,294.42	-1,383.42	799.19	-2,090.98	1,166.72	10.00	8.83	6.19
NIORARA C CHALK TOP										

Planning Report



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Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL 15-10-2HC	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)
6,761.76	51.93	343.78	6,301.75	-1,390.75	807.99	-2,093.60	1,175.86	10.00	8.91	5.81
6,800.00	55.37	345.87	6,324.42	-1,413.42	837.72	-2,101.64	1,206.55	10.00	8.98	5.47
NIOBRARA C CHALK BASE										
6,838.36	58.84	347.81	6,345.25	-1,434.25	869.08	-2,108.97	1,238.72	10.00	9.06	5.04
6,850.00	59.90	348.36	6,351.18	-1,440.18	878.88	-2,111.03	1,248.73	10.00	9.11	4.79
NIOBRARA D CHALK TOP										
6,894.82	64.01	350.41	6,372.25	-1,461.25	917.75	-2,118.30	1,288.28	10.00	9.16	4.56
6,900.00	64.48	350.63	6,374.50	-1,463.50	922.35	-2,119.07	1,292.94	10.00	9.19	4.37
6,950.00	69.09	352.74	6,394.20	-1,483.20	967.81	-2,125.70	1,338.85	10.00	9.22	4.20
FT. HAYS										
6,976.89	71.59	353.81	6,403.25	-1,492.25	992.96	-2,128.67	1,364.12	10.00	9.26	4.00
7,000.00	73.73	354.71	6,410.14	-1,499.14	1,014.90	-2,130.87	1,386.09	10.00	9.28	3.89
7,050.00	78.38	356.60	6,422.18	-1,511.18	1,063.27	-2,134.54	1,434.32	10.00	9.31	3.77
CODELL										
7,075.21	80.74	357.52	6,426.75	-1,515.75	1,088.03	-2,135.81	1,458.90	10.00	9.33	3.67
7,100.00	83.05	358.42	6,430.25	-1,519.25	1,112.55	-2,136.68	1,483.17	10.00	9.34	3.62
7,150.00	87.72	0.21	6,434.27	-1,523.27	1,162.37	-2,137.27	1,532.27	10.00	9.34	3.57
7,174.36	90.00	1.07	6,434.75	-1,523.75	1,186.72	-2,137.00	1,556.16	10.00	9.35	3.55
HZ LP: 600ft FSL & 790ft FWL of Sec 15										
7,174.40	90.00	1.07	6,434.75	-1,523.75	1,186.77	-2,137.00	1,556.20	0.00	0.00	0.00
7,200.00	90.00	1.07	6,434.75	-1,523.75	1,212.36	-2,136.52	1,581.28	0.00	0.00	0.00
7,300.00	90.00	1.07	6,434.75	-1,523.75	1,312.34	-2,134.66	1,679.25	0.00	0.00	0.00
7,400.00	90.00	1.07	6,434.75	-1,523.75	1,412.33	-2,132.79	1,777.22	0.00	0.00	0.00
7,500.00	90.00	1.07	6,434.75	-1,523.75	1,512.31	-2,130.92	1,875.19	0.00	0.00	0.00
7,600.00	90.00	1.07	6,434.75	-1,523.75	1,612.29	-2,129.05	1,973.16	0.00	0.00	0.00
7,700.00	90.00	1.07	6,434.75	-1,523.75	1,712.27	-2,127.19	2,071.13	0.00	0.00	0.00
7,800.00	90.00	1.07	6,434.75	-1,523.75	1,812.26	-2,125.32	2,169.10	0.00	0.00	0.00
7,900.00	90.00	1.07	6,434.75	-1,523.75	1,912.24	-2,123.45	2,267.07	0.00	0.00	0.00
8,000.00	90.00	1.07	6,434.75	-1,523.75	2,012.22	-2,121.59	2,365.04	0.00	0.00	0.00
8,100.00	90.00	1.07	6,434.75	-1,523.75	2,112.20	-2,119.72	2,463.01	0.00	0.00	0.00
8,200.00	90.00	1.07	6,434.75	-1,523.75	2,212.19	-2,117.85	2,560.97	0.00	0.00	0.00
8,300.00	90.00	1.07	6,434.75	-1,523.75	2,312.17	-2,115.98	2,658.94	0.00	0.00	0.00
8,400.00	90.00	1.07	6,434.75	-1,523.75	2,412.15	-2,114.12	2,756.91	0.00	0.00	0.00
8,500.00	90.00	1.07	6,434.75	-1,523.75	2,512.13	-2,112.25	2,854.88	0.00	0.00	0.00
8,600.00	90.00	1.07	6,434.75	-1,523.75	2,612.12	-2,110.38	2,952.85	0.00	0.00	0.00
8,700.00	90.00	1.07	6,434.75	-1,523.75	2,712.10	-2,108.52	3,050.82	0.00	0.00	0.00
8,800.00	90.00	1.07	6,434.75	-1,523.75	2,812.08	-2,106.65	3,148.79	0.00	0.00	0.00
8,900.00	90.00	1.07	6,434.75	-1,523.75	2,912.06	-2,104.78	3,246.76	0.00	0.00	0.00
9,000.00	90.00	1.07	6,434.75	-1,523.75	3,012.05	-2,102.91	3,344.73	0.00	0.00	0.00
9,100.00	90.00	1.07	6,434.75	-1,523.75	3,112.03	-2,101.05	3,442.70	0.00	0.00	0.00
9,200.00	90.00	1.07	6,434.75	-1,523.75	3,212.01	-2,099.18	3,540.67	0.00	0.00	0.00
9,300.00	90.00	1.07	6,434.75	-1,523.75	3,311.99	-2,097.31	3,638.64	0.00	0.00	0.00
9,400.00	90.00	1.07	6,434.75	-1,523.75	3,411.98	-2,095.45	3,736.61	0.00	0.00	0.00
9,500.00	90.00	1.07	6,434.75	-1,523.75	3,511.96	-2,093.58	3,834.58	0.00	0.00	0.00
9,600.00	90.00	1.07	6,434.75	-1,523.75	3,611.94	-2,091.71	3,932.55	0.00	0.00	0.00
9,700.00	90.00	1.07	6,434.75	-1,523.75	3,711.92	-2,089.84	4,030.52	0.00	0.00	0.00
9,800.00	90.00	1.07	6,434.75	-1,523.75	3,811.91	-2,087.98	4,128.49	0.00	0.00	0.00
9,900.00	90.00	1.07	6,434.75	-1,523.75	3,911.89	-2,086.11	4,226.46	0.00	0.00	0.00
10,000.00	90.00	1.07	6,434.75	-1,523.75	4,011.87	-2,084.24	4,324.43	0.00	0.00	0.00
10,100.00	90.00	1.07	6,434.75	-1,523.75	4,111.86	-2,082.38	4,422.39	0.00	0.00	0.00
10,200.00	90.00	1.07	6,434.75	-1,523.75	4,211.84	-2,080.51	4,520.36	0.00	0.00	0.00
10,300.00	90.00	1.07	6,434.75	-1,523.75	4,311.82	-2,078.64	4,618.33	0.00	0.00	0.00
10,400.00	90.00	1.07	6,434.75	-1,523.75	4,411.80	-2,076.77	4,716.30	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BLUE TEAL 15-10-2HC
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4911.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4911.00usft (Original Well Elev)
Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL 15-10-2HC	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)
10,500.00	90.00	1.07	6,434.75	-1,523.75	4,511.79	-2,074.91	4,814.27	0.00	0.00	0.00
10,600.00	90.00	1.07	6,434.75	-1,523.75	4,611.77	-2,073.04	4,912.24	0.00	0.00	0.00
10,700.00	90.00	1.07	6,434.75	-1,523.75	4,711.75	-2,071.17	5,010.21	0.00	0.00	0.00
10,800.00	90.00	1.07	6,434.75	-1,523.75	4,811.73	-2,069.31	5,108.18	0.00	0.00	0.00
10,900.00	90.00	1.07	6,434.75	-1,523.75	4,911.72	-2,067.44	5,206.15	0.00	0.00	0.00
11,000.00	90.00	1.07	6,434.75	-1,523.75	5,011.70	-2,065.57	5,304.12	0.00	0.00	0.00
11,100.00	90.00	1.07	6,434.75	-1,523.75	5,111.68	-2,063.70	5,402.09	0.00	0.00	0.00
11,200.00	90.00	1.07	6,434.75	-1,523.75	5,211.66	-2,061.84	5,500.06	0.00	0.00	0.00
11,300.00	90.00	1.07	6,434.75	-1,523.75	5,311.65	-2,059.97	5,598.03	0.00	0.00	0.00
11,400.00	90.00	1.07	6,434.75	-1,523.75	5,411.63	-2,058.10	5,696.00	0.00	0.00	0.00
11,500.00	90.00	1.07	6,434.75	-1,523.75	5,511.61	-2,056.24	5,793.97	0.00	0.00	0.00
11,600.00	90.00	1.07	6,434.75	-1,523.75	5,611.59	-2,054.37	5,891.94	0.00	0.00	0.00
11,700.00	90.00	1.07	6,434.75	-1,523.75	5,711.58	-2,052.50	5,989.91	0.00	0.00	0.00
11,800.00	90.00	1.07	6,434.75	-1,523.75	5,811.56	-2,050.63	6,087.88	0.00	0.00	0.00
11,900.00	90.00	1.07	6,434.75	-1,523.75	5,911.54	-2,048.77	6,185.85	0.00	0.00	0.00
12,000.00	90.00	1.07	6,434.75	-1,523.75	6,011.52	-2,046.90	6,283.81	0.00	0.00	0.00
12,100.00	90.00	1.07	6,434.75	-1,523.75	6,111.51	-2,045.03	6,381.78	0.00	0.00	0.00
12,200.00	90.00	1.07	6,434.75	-1,523.75	6,211.49	-2,043.17	6,479.75	0.00	0.00	0.00
12,300.00	90.00	1.07	6,434.75	-1,523.75	6,311.47	-2,041.30	6,577.72	0.00	0.00	0.00
12,400.00	90.00	1.07	6,434.75	-1,523.75	6,411.45	-2,039.43	6,675.69	0.00	0.00	0.00
12,500.00	90.00	1.07	6,434.75	-1,523.75	6,511.44	-2,037.56	6,773.66	0.00	0.00	0.00
12,600.00	90.00	1.07	6,434.75	-1,523.75	6,611.42	-2,035.70	6,871.63	0.00	0.00	0.00
12,700.00	90.00	1.07	6,434.75	-1,523.75	6,711.40	-2,033.83	6,969.60	0.00	0.00	0.00
12,800.00	90.00	1.07	6,434.75	-1,523.75	6,811.38	-2,031.96	7,067.57	0.00	0.00	0.00
12,900.00	90.00	1.07	6,434.75	-1,523.75	6,911.37	-2,030.10	7,165.54	0.00	0.00	0.00
13,000.00	90.00	1.07	6,434.75	-1,523.75	7,011.35	-2,028.23	7,263.51	0.00	0.00	0.00
13,100.00	90.00	1.07	6,434.75	-1,523.75	7,111.33	-2,026.36	7,361.48	0.00	0.00	0.00
13,200.00	90.00	1.07	6,434.75	-1,523.75	7,211.31	-2,024.49	7,459.45	0.00	0.00	0.00
13,300.00	90.00	1.07	6,434.75	-1,523.75	7,311.30	-2,022.63	7,557.42	0.00	0.00	0.00
13,400.00	90.00	1.07	6,434.75	-1,523.75	7,411.28	-2,020.76	7,655.39	0.00	0.00	0.00
13,500.00	90.00	1.07	6,434.75	-1,523.75	7,511.26	-2,018.89	7,753.36	0.00	0.00	0.00
13,600.00	90.00	1.07	6,434.75	-1,523.75	7,611.24	-2,017.03	7,851.33	0.00	0.00	0.00
13,700.00	90.00	1.07	6,434.75	-1,523.75	7,711.23	-2,015.16	7,949.30	0.00	0.00	0.00
13,800.00	90.00	1.07	6,434.75	-1,523.75	7,811.21	-2,013.29	8,047.27	0.00	0.00	0.00
13,900.00	90.00	1.07	6,434.75	-1,523.75	7,911.19	-2,011.42	8,145.23	0.00	0.00	0.00
14,000.00	90.00	1.07	6,434.75	-1,523.75	8,011.18	-2,009.56	8,243.20	0.00	0.00	0.00
14,100.00	90.00	1.07	6,434.75	-1,523.75	8,111.16	-2,007.69	8,341.17	0.00	0.00	0.00
14,200.00	90.00	1.07	6,434.75	-1,523.75	8,211.14	-2,005.82	8,439.14	0.00	0.00	0.00
14,300.00	90.00	1.07	6,434.75	-1,523.75	8,311.12	-2,003.96	8,537.11	0.00	0.00	0.00
14,400.00	90.00	1.07	6,434.75	-1,523.75	8,411.11	-2,002.09	8,635.08	0.00	0.00	0.00
14,500.00	90.00	1.07	6,434.75	-1,523.75	8,511.09	-2,000.22	8,733.05	0.00	0.00	0.00
14,600.00	90.00	1.07	6,434.75	-1,523.75	8,611.07	-1,998.35	8,831.02	0.00	0.00	0.00
14,700.00	90.00	1.07	6,434.75	-1,523.75	8,711.05	-1,996.49	8,928.99	0.00	0.00	0.00
14,800.00	90.00	1.07	6,434.75	-1,523.75	8,811.04	-1,994.62	9,026.96	0.00	0.00	0.00
14,900.00	90.00	1.07	6,434.75	-1,523.75	8,911.02	-1,992.75	9,124.93	0.00	0.00	0.00
15,000.00	90.00	1.07	6,434.75	-1,523.75	9,011.00	-1,990.89	9,222.90	0.00	0.00	0.00
15,100.00	90.00	1.07	6,434.75	-1,523.75	9,110.98	-1,989.02	9,320.87	0.00	0.00	0.00
15,200.00	90.00	1.07	6,434.75	-1,523.75	9,210.97	-1,987.15	9,418.84	0.00	0.00	0.00
15,300.00	90.00	1.07	6,434.75	-1,523.75	9,310.95	-1,985.28	9,516.81	0.00	0.00	0.00
15,400.00	90.00	1.07	6,434.75	-1,523.75	9,410.93	-1,983.42	9,614.78	0.00	0.00	0.00
15,500.00	90.00	1.07	6,434.75	-1,523.75	9,510.91	-1,981.55	9,712.75	0.00	0.00	0.00
15,600.00	90.00	1.07	6,434.75	-1,523.75	9,610.90	-1,979.68	9,810.72	0.00	0.00	0.00
15,700.00	90.00	1.07	6,434.75	-1,523.75	9,710.88	-1,977.82	9,908.69	0.00	0.00	0.00
15,800.00	90.00	1.07	6,434.75	-1,523.75	9,810.86	-1,975.95	10,006.65	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well BLUE TEAL 15-10-2HC
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4911.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4911.00usft (Original Well Elev)
Site:	NW NE SEC. 22 T8N R60W 6th P.M.	North Reference:	True
Well:	BLUE TEAL 15-10-2HC	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)
15,900.00	90.00	1.07	6,434.75	-1,523.75	9,910.84	-1,974.08	10,104.62	0.00	0.00	0.00
16,000.00	90.00	1.07	6,434.75	-1,523.75	10,010.83	-1,972.21	10,202.59	0.00	0.00	0.00
16,100.00	90.00	1.07	6,434.75	-1,523.75	10,110.81	-1,970.35	10,300.56	0.00	0.00	0.00
16,200.00	90.00	1.07	6,434.75	-1,523.75	10,210.79	-1,968.48	10,398.53	0.00	0.00	0.00
16,300.00	90.00	1.07	6,434.75	-1,523.75	10,310.77	-1,966.61	10,496.50	0.00	0.00	0.00
16,400.00	90.00	1.07	6,434.75	-1,523.75	10,410.76	-1,964.75	10,594.47	0.00	0.00	0.00
16,500.00	90.00	1.07	6,434.75	-1,523.75	10,510.74	-1,962.88	10,692.44	0.00	0.00	0.00
BHL: 600ft FNL & 786ft FWL of Sec 10										
16,576.40	90.00	1.07	6,434.75	-1,523.75	10,587.13	-1,961.45	10,767.29	0.00	0.00	0.00

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,539.31	1,495.75	FOX HILLS BASE				
3,477.52	3,298.25	RICHARD SANDSTONE				
4,403.88	4,159.75	SUSSEX SANDSTONE				
4,928.62	4,647.75	SHANNON SANDSTONE				
6,462.98	6,072.25	SHARON SPRINGS				
6,538.96	6,137.75	NIOBRARA A CHALK				
6,561.28	6,156.25	NIOBRARA A CHALK BASE				
6,601.72	6,188.75	NIOBRARA B1 CHALK TOP				
6,634.78	6,214.25	NIOBRARA B1 CHALK BASE				
6,665.83	6,237.25	NIOBRARA B2 CHALK TOP				
6,712.97	6,270.25	NIOBRARA B2 CHALK BASE				
6,761.76	6,301.75	NIOBRARA C CHALK TOP				
6,838.36	6,345.25	NIOBRARA C CHALK BASE				
6,894.82	6,372.25	NIOBRARA D CHALK TOP				
6,976.89	6,403.25	FT. HAYS				
7,075.21	6,426.75	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 & 2348ft FEL of Sec 22	
200.00	200.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
1,278.40	1,253.11	59.77	-191.47	EOB TO 21.57° INC	
1,603.02	1,555.00	95.33	-305.39	SURFACE CASING	
6,333.50	5,954.26	613.51	-1,965.35	KOP (10°/100ft DGLG)	
7,174.40	6,434.75	1,186.77	-2,137.00	HZ LP: 600ft FSL & 790ft FWL of Sec 15	
16,576.40	6,434.75	10,587.13	-1,961.45	BHL: 600ft FNL & 786ft FWL of Sec 10	