

MALLARD EXPLORATION

WELD COUNTY, COLORADO (NAD 83)

SE SW SEC. 34 T8N R60W 6th P.M.

GREEN TEAL FED 34-27-13HN

ORIGINAL WELLBORE

06 September, 2017

Plan: PROPOSAL 1





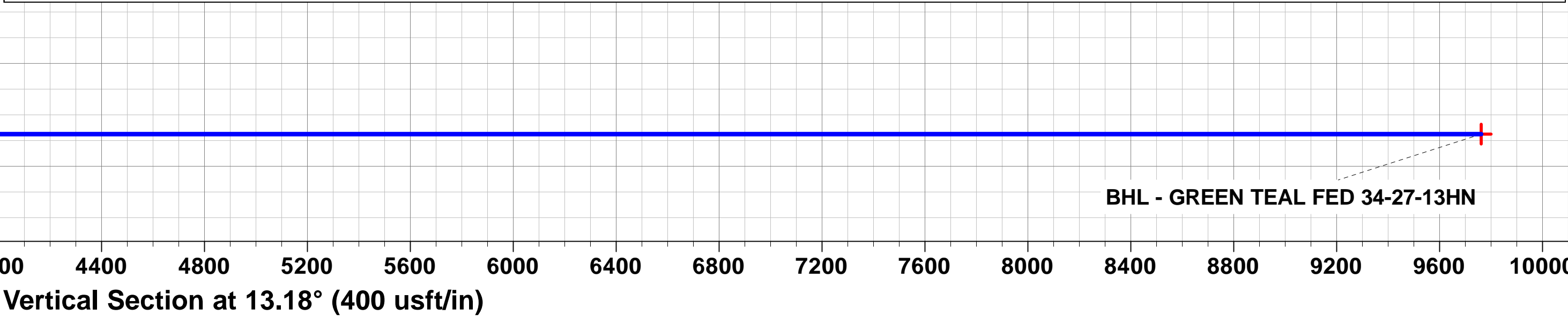
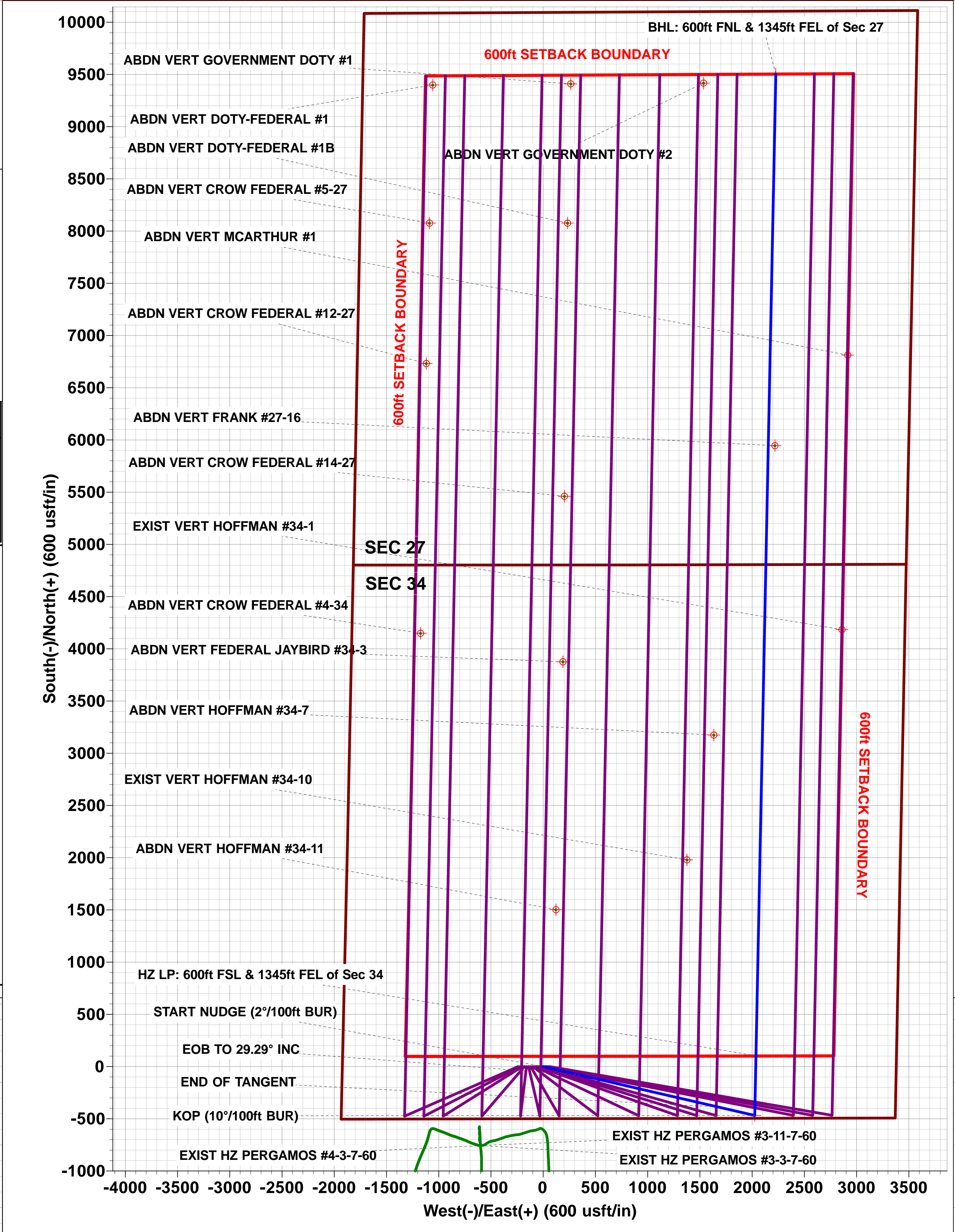
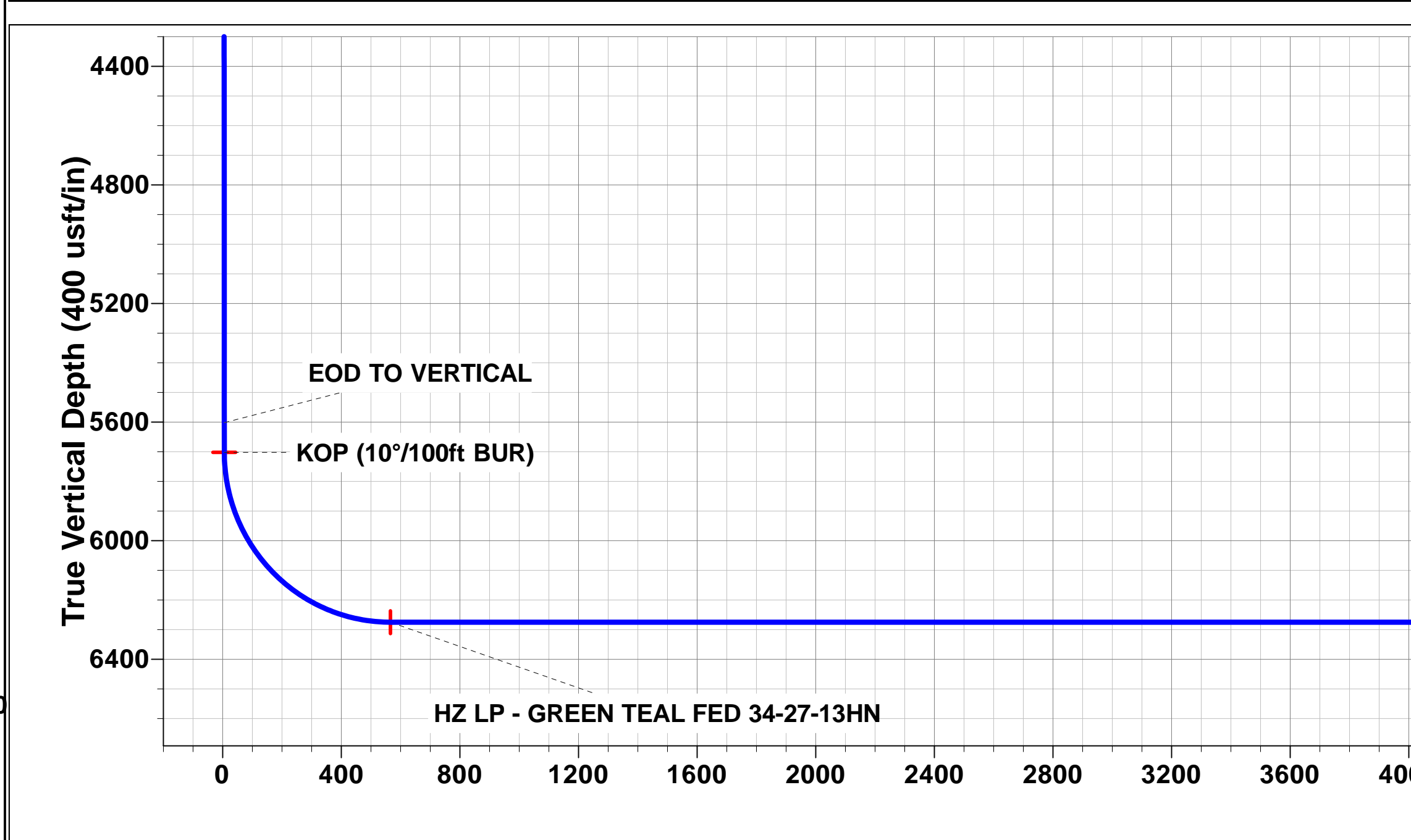
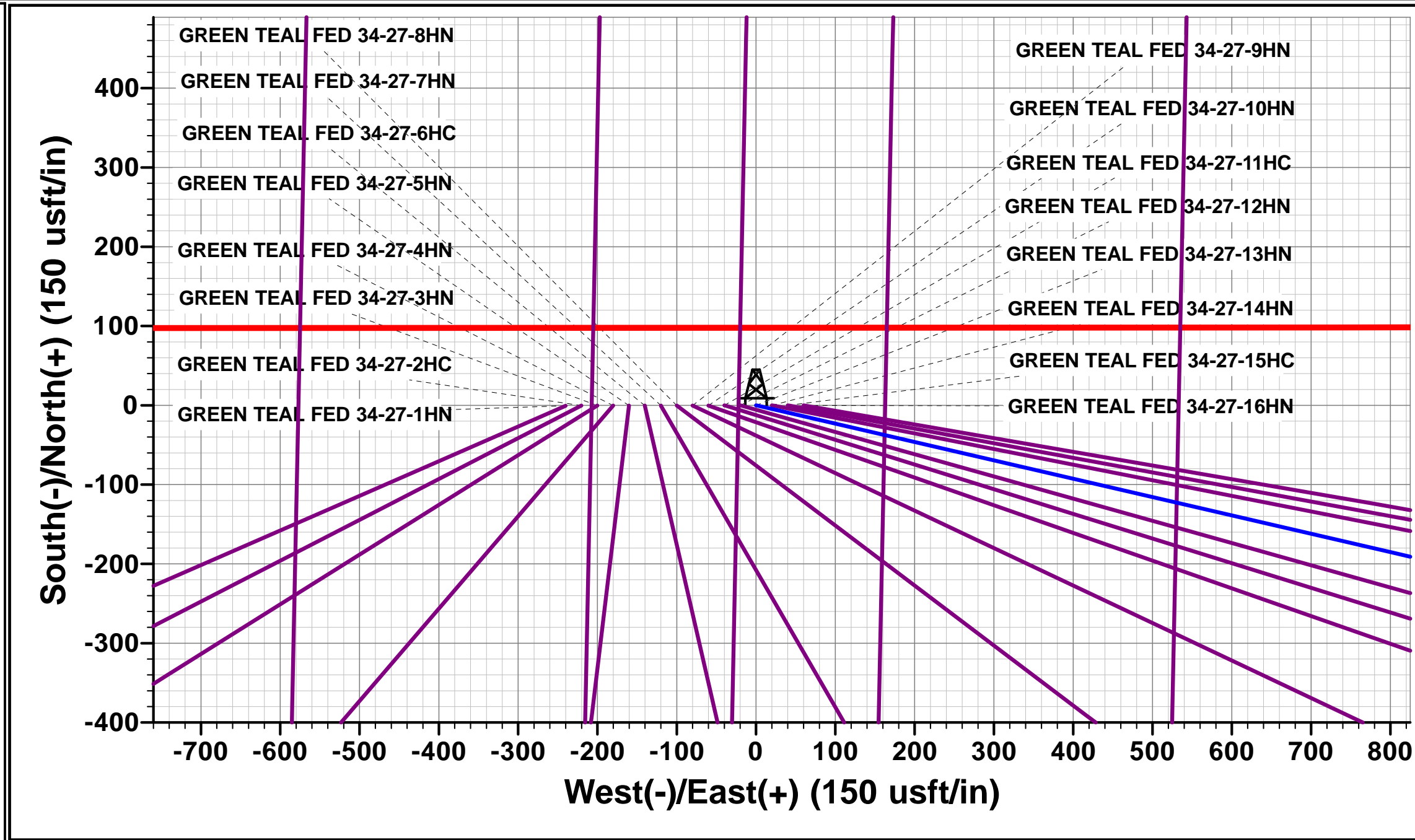
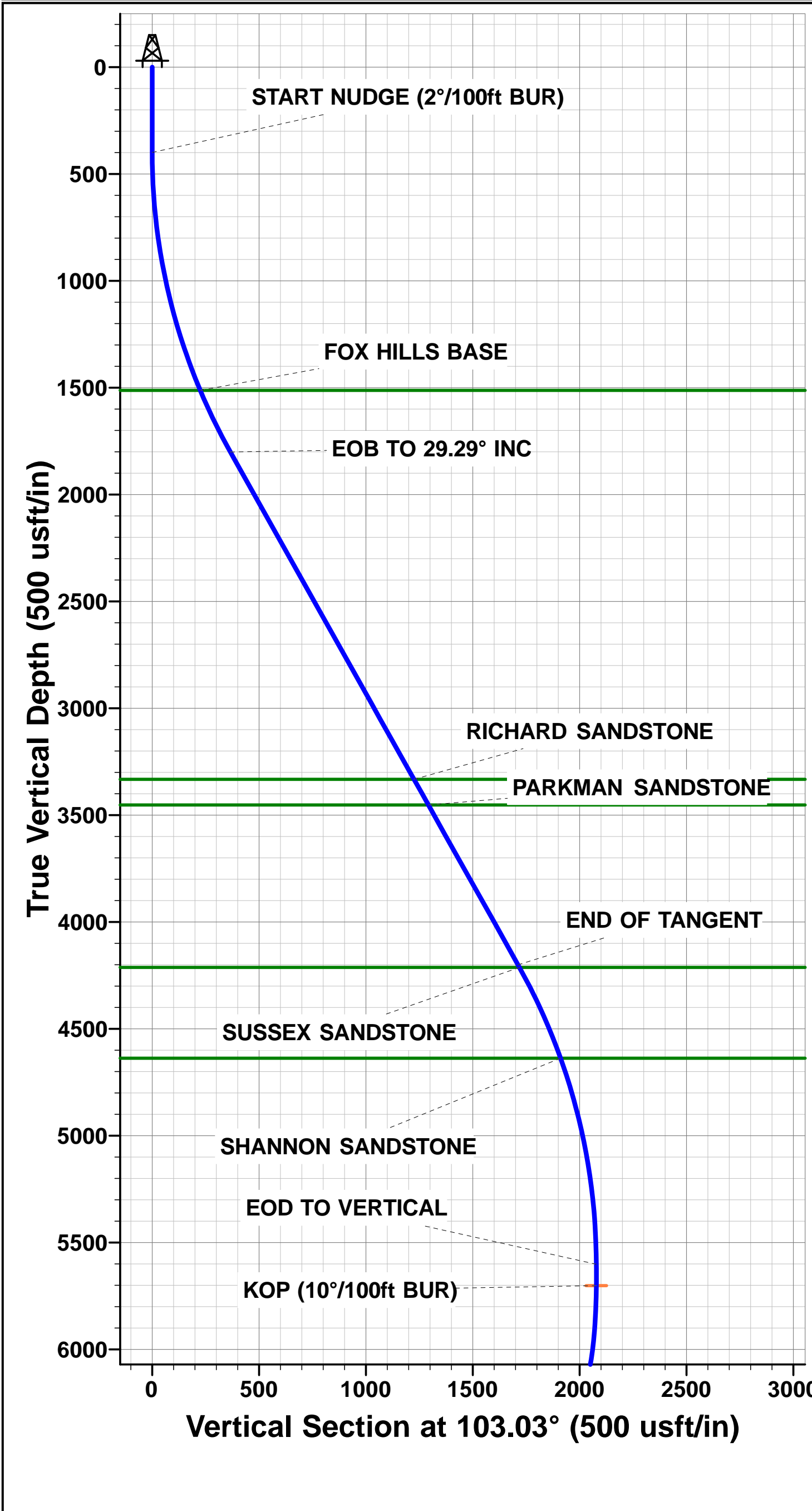
Project: WELD COUNTY, COLORADO (NAD 83)
Site: SE SW SEC. 34 T8N R60W 6th P.M.
Well: GREEN TEAL FED 34-27-13HN
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL 1

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation	
0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	SHL: 500ft FSL & 1922ft FWL of Sec 34	
400.0	400.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)	
1801.4	1864.4	29.29	103.03	-82.6	356.8	1.0	366.2	EOB TO 29.29° INC	
4200.7	4615.2	29.29	103.03	-385.9	1667.8	4.6	1711.9	END OF TANGENT	
5602.1	6079.6	0.00	0.00	-468.5	2024.6	5.5	2078.1	EOD TO VERTICAL	
5702.1	6179.6	0.00	0.00	-468.5	2024.6	5.5	2078.1	KOP (10°/100ft BUR)	
6275.0	7079.6	90.00	1.16	104.3	2036.2	565.9	2651.0	HZ LP: 600ft FSL & 1345ft FEL of Sec 34	
6275.0	16481.9	90.00	1.15	9504.7	2226.1	9761.9	12053.3	BHL: 600ft FNL & 1345ft FEL of Sec 27	

PROPOSED LOCAL COORDINATES:

SHL: 500ft FSL & 1922ft FWL Sec 34
HZ LP: 600ft FSL & 1345ft FEL Sec 34
BHL: 600ft FNL & 1345ft FEL of Sec 27

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - GREEN TEAL FED 34-27-13HN	5702.1	-468.5	2024.6	40.611591	-104.073750
HZ LP - GREEN TEAL FED 34-27-13HN	6275.0	104.3	2036.2	40.613163	-104.073708
BHL - GREEN TEAL FED 34-27-13HN	6275.0	9504.7	2226.1	40.638965	-104.073021



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GREEN TEAL FED 34-27-13HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4939.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4939.0usft (Original Well Elev)
Site:	SE SW SEC. 34 T8N R60W 6th P.M.	North Reference:	True
Well:	GREEN TEAL FED 34-27-13HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

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	SE SW SEC. 34 T8N R60W 6th P.M.		
Site Position:		Northing:	1,469,260.15 usft
From:	Lat/Long	Easting:	3,393,696.59 usft
Position Uncertainty:	0.0 usft	Slot Radius:	1.10000ft
		Latitude:	40.612875
		Longitude:	-104.081907
		Grid Convergence:	0.92 °

Well	GREEN TEAL FED 34-27-13HN		
Well Position	+N-S	0.7 usft	Northing:
	+E-W	240.2 usft	Easting:
Position Uncertainty		0.0 usft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	06/09/2017	7.83	67.12	52,546

Design	PROPOSAL 1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)
	6,275.0	0.0	0.0	13.18

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
0.0	0.00	0.00	0.0	-4,939.0	0.0	0.0	0.00	0.00	0.00	0.00	
400.0	0.00	0.00	400.0	-4,539.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,864.4	29.29	103.03	1,801.4	-3,137.6	-82.6	356.8	2.00	2.00	0.00	103.03	
4,615.2	29.29	103.03	4,200.7	-738.3	-385.9	1,667.8	0.00	0.00	0.00	0.00	
6,079.6	0.00	0.00	5,602.1	663.1	-468.5	2,024.6	2.00	-2.00	0.00	180.00	
6,179.6	0.00	0.00	5,702.1	763.1	-468.5	2,024.6	0.00	0.00	0.00	0.00	KOP - GREEN TEA
7,079.6	90.00	1.16	6,275.0	1,336.0	104.3	2,036.2	10.00	10.00	0.13	1.16	HZ LP - GREEN TE
16,481.9	90.00	1.15	6,275.0	1,336.0	9,504.7	2,226.1	0.00	0.00	0.00	-131.73	BHL - GREEN TEA

Planning Report



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Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4939.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4939.0usft (Original Well Elev)
Site:	SE SW SEC. 34 T8N R60W 6th P.M.	North Reference:	True
Well:	GREEN TEAL FED 34-27-13HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

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: 500ft FSL & 1922ft FWL of Sec 34										
0.0	0.00	0.00	0.0	4,939.00	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	4,839.00	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	4,739.00	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	4,639.00	0.0	0.0	0.0	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
400.0	0.00	0.00	400.0	4,539.00	0.0	0.0	0.0	0.00	0.00	0.00
500.0	2.00	103.03	500.0	4,439.02	-0.4	1.7	0.0	2.00	2.00	0.00
600.0	4.00	103.03	599.8	4,339.16	-1.6	6.8	0.0	2.00	2.00	0.00
700.0	6.00	103.03	699.5	4,239.55	-3.5	15.3	0.0	2.00	2.00	0.00
800.0	8.00	103.03	798.7	4,140.30	-6.3	27.2	0.1	2.00	2.00	0.00
900.0	10.00	103.03	897.5	4,041.53	-9.8	42.4	0.1	2.00	2.00	0.00
1,000.0	12.00	103.03	995.6	3,943.38	-14.1	61.0	0.2	2.00	2.00	0.00
1,100.0	14.00	103.03	1,093.1	3,845.94	-19.2	82.9	0.2	2.00	2.00	0.00
1,200.0	16.00	103.03	1,189.6	3,749.36	-25.0	108.1	0.3	2.00	2.00	0.00
1,300.0	18.00	103.03	1,285.3	3,653.73	-31.6	136.6	0.4	2.00	2.00	0.00
1,400.0	20.00	103.03	1,379.8	3,559.18	-38.9	168.3	0.5	2.00	2.00	0.00
1,500.0	22.00	103.03	1,473.2	3,465.83	-47.0	203.2	0.6	2.00	2.00	0.00
FOX HILLS BASE										
1,543.1	22.86	103.03	1,513.0	3,426.00	-50.7	219.3	0.6	2.00	2.00	0.00
1,600.0	24.00	103.03	1,565.2	3,373.79	-55.8	241.3	0.7	2.00	2.00	0.00
1,700.0	26.00	103.03	1,655.8	3,283.16	-65.4	282.5	0.8	2.00	2.00	0.00
1,800.0	28.00	103.03	1,744.9	3,194.06	-75.6	326.7	0.9	2.00	2.00	0.00
EOB TO 29.29° INC										
1,864.4	29.29	103.03	1,801.4	3,137.55	-82.6	356.8	1.0	2.00	2.00	0.00
1,900.0	29.29	103.03	1,832.5	3,106.50	-86.5	373.7	1.0	0.00	0.00	0.00
2,000.0	29.29	103.03	1,919.7	3,019.28	-97.5	421.4	1.2	0.00	0.00	0.00
2,100.0	29.29	103.03	2,006.9	2,932.06	-108.5	469.1	1.3	0.00	0.00	0.00
2,200.0	29.29	103.03	2,094.2	2,844.84	-119.6	516.7	1.4	0.00	0.00	0.00
2,300.0	29.29	103.03	2,181.4	2,757.63	-130.6	564.4	1.5	0.00	0.00	0.00
2,400.0	29.29	103.03	2,268.6	2,670.41	-141.6	612.0	1.7	0.00	0.00	0.00
2,500.0	29.29	103.03	2,355.8	2,583.19	-152.7	659.7	1.8	0.00	0.00	0.00
2,600.0	29.29	103.03	2,443.0	2,495.98	-163.7	707.4	1.9	0.00	0.00	0.00
2,700.0	29.29	103.03	2,530.2	2,408.76	-174.7	755.0	2.1	0.00	0.00	0.00
2,800.0	29.29	103.03	2,617.5	2,321.54	-185.7	802.7	2.2	0.00	0.00	0.00
2,900.0	29.29	103.03	2,704.7	2,234.32	-196.8	850.3	2.3	0.00	0.00	0.00
3,000.0	29.29	103.03	2,791.9	2,147.11	-207.8	898.0	2.5	0.00	0.00	0.00
3,100.0	29.29	103.03	2,879.1	2,059.89	-218.8	945.7	2.6	0.00	0.00	0.00
3,200.0	29.29	103.03	2,966.3	1,972.67	-229.9	993.3	2.7	0.00	0.00	0.00
3,300.0	29.29	103.03	3,053.5	1,885.45	-240.9	1,041.0	2.8	0.00	0.00	0.00
3,400.0	29.29	103.03	3,140.8	1,798.24	-251.9	1,088.6	3.0	0.00	0.00	0.00
3,500.0	29.29	103.03	3,228.0	1,711.02	-262.9	1,136.3	3.1	0.00	0.00	0.00
3,600.0	29.29	103.03	3,315.2	1,623.80	-274.0	1,184.0	3.2	0.00	0.00	0.00
RICHARD SANDSTONE										
3,620.4	29.29	103.03	3,333.0	1,606.00	-276.2	1,193.7	3.3	0.00	0.00	0.00
3,700.0	29.29	103.03	3,402.4	1,536.59	-285.0	1,231.6	3.4	0.00	0.00	0.00
PARKMAN SANDSTONE										
3,758.0	29.29	103.03	3,453.0	1,486.00	-291.4	1,259.3	3.4	0.00	0.00	0.00
3,800.0	29.29	103.03	3,489.6	1,449.37	-296.0	1,279.3	3.5	0.00	0.00	0.00
3,900.0	29.29	103.03	3,576.8	1,362.15	-307.1	1,326.9	3.6	0.00	0.00	0.00
4,000.0	29.29	103.03	3,664.1	1,274.93	-318.1	1,374.6	3.8	0.00	0.00	0.00
4,100.0	29.29	103.03	3,751.3	1,187.72	-329.1	1,422.3	3.9	0.00	0.00	0.00
4,200.0	29.29	103.03	3,838.5	1,100.50	-340.1	1,469.9	4.0	0.00	0.00	0.00

Planning Report



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Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4939.0usft (Original Well Elev)
Site:	SE SW SEC. 34 T8N R60W 6th P.M.	North Reference:	True
Well:	GREEN TEAL FED 34-27-13HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

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)
4,300.0	29.29	103.03	3,925.7	1,013.28	-351.2	1,517.6	4.1	0.00	0.00	0.00
4,400.0	29.29	103.03	4,012.9	926.07	-362.2	1,565.3	4.3	0.00	0.00	0.00
4,500.0	29.29	103.03	4,100.2	838.85	-373.2	1,612.9	4.4	0.00	0.00	0.00
4,600.0	29.29	103.03	4,187.4	751.63	-384.3	1,660.6	4.5	0.00	0.00	0.00
END OF TANGENT										
4,615.2	29.29	103.03	4,200.7	738.35	-385.9	1,667.8	4.6	0.00	0.00	0.00
SUSSEX SANDSTONE										
4,629.4	29.01	103.03	4,213.0	726.00	-387.5	1,674.5	4.6	2.00	-2.00	0.00
4,700.0	27.59	103.03	4,275.2	663.81	-395.0	1,707.2	4.7	2.00	-2.00	0.00
4,800.0	25.59	103.03	4,364.6	574.39	-405.1	1,750.8	4.8	2.00	-2.00	0.00
4,900.0	23.59	103.03	4,455.5	483.47	-414.5	1,791.3	4.9	2.00	-2.00	0.00
5,000.0	21.59	103.03	4,547.9	391.15	-423.2	1,828.7	5.0	2.00	-2.00	0.00
SHANNON SANDSTONE										
5,096.3	19.67	103.03	4,638.0	301.00	-430.8	1,861.8	5.1	2.00	-2.00	0.00
5,100.0	19.59	103.03	4,641.5	297.54	-431.1	1,863.0	5.1	2.00	-2.00	0.00
5,200.0	17.59	103.03	4,736.2	202.77	-438.3	1,894.1	5.2	2.00	-2.00	0.00
5,300.0	15.59	103.03	4,832.1	106.93	-444.7	1,921.9	5.3	2.00	-2.00	0.00
5,400.0	13.59	103.03	4,928.8	10.17	-450.4	1,946.4	5.3	2.00	-2.00	0.00
5,500.0	11.59	103.03	5,026.4	-87.42	-455.3	1,967.7	5.4	2.00	-2.00	0.00
5,600.0	9.59	103.03	5,124.7	-185.72	-459.5	1,985.6	5.4	2.00	-2.00	0.00
5,700.0	7.59	103.03	5,223.6	-284.59	-462.8	2,000.1	5.5	2.00	-2.00	0.00
5,800.0	5.59	103.03	5,322.9	-383.92	-465.4	2,011.3	5.5	2.00	-2.00	0.00
5,900.0	3.59	103.03	5,422.6	-483.60	-467.2	2,019.1	5.5	2.00	-2.00	0.00
6,000.0	1.59	103.03	5,522.5	-583.49	-468.3	2,023.5	5.5	2.00	-2.00	0.00
EOD TO VERTICAL										
6,079.6	0.00	0.00	5,602.1	-663.10	-468.5	2,024.6	5.5	2.00	-2.00	0.00
6,100.0	0.00	0.00	5,622.5	-683.48	-468.5	2,024.6	5.5	0.00	0.00	0.00
KOP (10°/100ft BUR)										
6,179.6	0.00	0.00	5,702.1	-763.10	-468.5	2,024.6	5.5	0.00	0.00	0.00
6,200.0	2.04	1.16	5,722.5	-783.47	-468.1	2,024.6	5.9	10.00	10.00	0.00
6,300.0	12.04	1.16	5,821.6	-882.59	-455.9	2,024.9	17.9	10.00	10.00	0.00
6,400.0	22.04	1.16	5,917.1	-978.08	-426.6	2,025.4	46.5	10.00	10.00	0.00
6,500.0	32.04	1.16	6,006.0	-1,067.04	-381.2	2,026.4	90.9	10.00	10.00	0.00
6,600.0	42.04	1.16	6,085.8	-1,146.76	-321.1	2,027.6	149.7	10.00	10.00	0.00
SHARON SPRINGS										
6,620.9	44.13	1.16	6,101.0	-1,162.00	-306.8	2,027.9	163.7	10.00	10.00	0.00
6,700.0	52.04	1.16	6,153.8	-1,214.82	-248.0	2,029.1	221.2	10.00	10.00	0.00
NIOBRARA A CHALK										
6,728.9	54.93	1.16	6,171.0	-1,232.00	-224.8	2,029.5	243.9	10.00	10.00	0.00
NIOBRARA A CHALK BASE										
6,781.1	60.15	1.16	6,199.0	-1,260.00	-180.8	2,030.4	287.0	10.00	10.00	0.00
6,800.0	62.04	1.16	6,208.1	-1,269.15	-164.2	2,030.8	303.2	10.00	10.00	0.00
NIOBRARA B1 CHALK TOP										
6,840.9	66.13	1.16	6,226.0	-1,287.00	-127.5	2,031.5	339.1	10.00	10.00	0.00
6,900.0	72.05	1.16	6,247.1	-1,308.10	-72.3	2,032.6	393.1	10.00	10.00	0.00
NIOBRARA B1 CHALK BASE										
6,920.2	74.07	1.16	6,253.0	-1,314.00	-52.9	2,033.0	412.1	10.00	10.00	0.00
7,000.0	82.05	1.16	6,269.5	-1,330.49	25.0	2,034.6	488.3	10.00	10.00	0.00
NIOBRARA B2 CHALK TOP										
7,079.5	90.00	1.16	6,275.0	-1,336.00	104.2	2,036.2	565.8	10.00	10.00	0.00
HZ LP: 600ft FSL & 1345ft FEL of Sec 34										
7,079.6	90.00	1.16	6,275.0	-1,336.00	104.3	2,036.2	565.9	10.00	10.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GREEN TEAL FED 34-27-13HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4939.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4939.0usft (Original Well Elev)
Site:	SE SW SEC. 34 T8N R60W 6th P.M.	North Reference:	True
Well:	GREEN TEAL FED 34-27-13HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

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)
7,100.0	90.00	1.16	6,275.0	-1,336.00	124.7	2,036.6	585.9	0.00	0.00	0.00
7,200.0	90.00	1.16	6,275.0	-1,335.99	224.7	2,038.7	683.7	0.00	0.00	0.00
7,300.0	90.00	1.16	6,275.0	-1,335.98	324.7	2,040.7	781.5	0.00	0.00	0.00
7,400.0	90.00	1.16	6,275.0	-1,335.98	424.7	2,042.7	879.3	0.00	0.00	0.00
7,500.0	90.00	1.16	6,275.0	-1,335.97	524.7	2,044.7	977.1	0.00	0.00	0.00
7,600.0	90.00	1.16	6,275.0	-1,335.96	624.6	2,046.8	1,074.9	0.00	0.00	0.00
7,700.0	90.00	1.16	6,275.0	-1,335.96	724.6	2,048.8	1,172.7	0.00	0.00	0.00
7,800.0	90.00	1.16	6,274.9	-1,335.95	824.6	2,050.8	1,270.5	0.00	0.00	0.00
7,900.0	90.00	1.16	6,274.9	-1,335.94	924.6	2,052.9	1,368.4	0.00	0.00	0.00
8,000.0	90.00	1.16	6,274.9	-1,335.94	1,024.6	2,054.9	1,466.2	0.00	0.00	0.00
8,100.0	90.00	1.16	6,274.9	-1,335.93	1,124.5	2,056.9	1,564.0	0.00	0.00	0.00
8,200.0	90.00	1.16	6,274.9	-1,335.93	1,224.5	2,058.9	1,661.8	0.00	0.00	0.00
8,300.0	90.00	1.16	6,274.9	-1,335.92	1,324.5	2,061.0	1,759.6	0.00	0.00	0.00
8,400.0	90.00	1.16	6,274.9	-1,335.91	1,424.5	2,063.0	1,857.4	0.00	0.00	0.00
8,500.0	90.00	1.16	6,274.9	-1,335.91	1,524.5	2,065.0	1,955.2	0.00	0.00	0.00
8,600.0	90.00	1.16	6,274.9	-1,335.90	1,624.4	2,067.0	2,053.0	0.00	0.00	0.00
8,700.0	90.00	1.16	6,274.9	-1,335.90	1,724.4	2,069.1	2,150.8	0.00	0.00	0.00
8,800.0	90.00	1.16	6,274.9	-1,335.89	1,824.4	2,071.1	2,248.6	0.00	0.00	0.00
8,900.0	90.00	1.16	6,274.9	-1,335.89	1,924.4	2,073.1	2,346.4	0.00	0.00	0.00
9,000.0	90.00	1.16	6,274.9	-1,335.89	2,024.4	2,075.1	2,444.2	0.00	0.00	0.00
9,100.0	90.00	1.16	6,274.9	-1,335.88	2,124.3	2,077.2	2,542.0	0.00	0.00	0.00
9,200.0	90.00	1.16	6,274.9	-1,335.88	2,224.3	2,079.2	2,639.8	0.00	0.00	0.00
9,300.0	90.00	1.16	6,274.9	-1,335.87	2,324.3	2,081.2	2,737.7	0.00	0.00	0.00
9,400.0	90.00	1.16	6,274.9	-1,335.87	2,424.3	2,083.2	2,835.5	0.00	0.00	0.00
9,500.0	90.00	1.16	6,274.9	-1,335.86	2,524.3	2,085.3	2,933.3	0.00	0.00	0.00
9,600.0	90.00	1.16	6,274.9	-1,335.86	2,624.2	2,087.3	3,031.1	0.00	0.00	0.00
9,700.0	90.00	1.16	6,274.9	-1,335.86	2,724.2	2,089.3	3,128.9	0.00	0.00	0.00
9,800.0	90.00	1.16	6,274.9	-1,335.85	2,824.2	2,091.3	3,226.7	0.00	0.00	0.00
9,900.0	90.00	1.16	6,274.9	-1,335.85	2,924.2	2,093.3	3,324.5	0.00	0.00	0.00
10,000.0	90.00	1.16	6,274.8	-1,335.85	3,024.2	2,095.4	3,422.3	0.00	0.00	0.00
10,100.0	90.00	1.16	6,274.8	-1,335.85	3,124.1	2,097.4	3,520.1	0.00	0.00	0.00
10,200.0	90.00	1.16	6,274.8	-1,335.84	3,224.1	2,099.4	3,617.9	0.00	0.00	0.00
10,300.0	90.00	1.16	6,274.8	-1,335.84	3,324.1	2,101.4	3,715.7	0.00	0.00	0.00
10,400.0	90.00	1.16	6,274.8	-1,335.84	3,424.1	2,103.5	3,813.5	0.00	0.00	0.00
10,500.0	90.00	1.16	6,274.8	-1,335.84	3,524.0	2,105.5	3,911.3	0.00	0.00	0.00
10,600.0	90.00	1.16	6,274.8	-1,335.83	3,624.0	2,107.5	4,009.1	0.00	0.00	0.00
10,700.0	90.00	1.16	6,274.8	-1,335.83	3,724.0	2,109.5	4,106.9	0.00	0.00	0.00
10,800.0	90.00	1.16	6,274.8	-1,335.83	3,824.0	2,111.5	4,204.8	0.00	0.00	0.00
10,900.0	90.00	1.16	6,274.8	-1,335.83	3,924.0	2,113.6	4,302.6	0.00	0.00	0.00
11,000.0	90.00	1.16	6,274.8	-1,335.83	4,023.9	2,115.6	4,400.4	0.00	0.00	0.00
11,100.0	90.00	1.16	6,274.8	-1,335.83	4,123.9	2,117.6	4,498.2	0.00	0.00	0.00
11,200.0	90.00	1.16	6,274.8	-1,335.83	4,223.9	2,119.6	4,596.0	0.00	0.00	0.00
11,300.0	90.00	1.16	6,274.8	-1,335.83	4,323.9	2,121.7	4,693.8	0.00	0.00	0.00
11,400.0	90.00	1.16	6,274.8	-1,335.82	4,423.9	2,123.7	4,791.6	0.00	0.00	0.00
11,500.0	90.00	1.16	6,274.8	-1,335.82	4,523.8	2,125.7	4,889.4	0.00	0.00	0.00
11,600.0	90.00	1.16	6,274.8	-1,335.82	4,623.8	2,127.7	4,987.2	0.00	0.00	0.00
11,700.0	90.00	1.16	6,274.8	-1,335.82	4,723.8	2,129.7	5,085.0	0.00	0.00	0.00
11,800.0	90.00	1.16	6,274.8	-1,335.82	4,823.8	2,131.8	5,182.8	0.00	0.00	0.00
11,900.0	90.00	1.16	6,274.8	-1,335.82	4,923.8	2,133.8	5,280.6	0.00	0.00	0.00
12,000.0	90.00	1.16	6,274.8	-1,335.82	5,023.7	2,135.8	5,378.4	0.00	0.00	0.00
12,100.0	90.00	1.16	6,274.8	-1,335.82	5,123.7	2,137.8	5,476.2	0.00	0.00	0.00
12,200.0	90.00	1.16	6,274.8	-1,335.82	5,223.7	2,139.8	5,574.0	0.00	0.00	0.00
12,300.0	90.00	1.16	6,274.8	-1,335.83	5,323.7	2,141.8	5,671.8	0.00	0.00	0.00
12,400.0	90.00	1.16	6,274.8	-1,335.83	5,423.7	2,143.9	5,769.6	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GREEN TEAL FED 34-27-13HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4939.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4939.0usft (Original Well Elev)
Site:	SE SW SEC. 34 T8N R60W 6th P.M.	North Reference:	True
Well:	GREEN TEAL FED 34-27-13HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

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)
12,500.0	90.00	1.16	6,274.8	-1,335.83	5,523.6	2,145.9	5,867.5	0.00	0.00	0.00
12,600.0	90.00	1.16	6,274.8	-1,335.83	5,623.6	2,147.9	5,965.3	0.00	0.00	0.00
12,700.0	90.00	1.16	6,274.8	-1,335.83	5,723.6	2,149.9	6,063.1	0.00	0.00	0.00
12,800.0	90.00	1.16	6,274.8	-1,335.83	5,823.6	2,151.9	6,160.9	0.00	0.00	0.00
12,900.0	90.00	1.16	6,274.8	-1,335.83	5,923.6	2,154.0	6,258.7	0.00	0.00	0.00
13,000.0	90.00	1.16	6,274.8	-1,335.84	6,023.5	2,156.0	6,356.5	0.00	0.00	0.00
13,100.0	90.00	1.16	6,274.8	-1,335.84	6,123.5	2,158.0	6,454.3	0.00	0.00	0.00
13,200.0	90.00	1.16	6,274.8	-1,335.84	6,223.5	2,160.0	6,552.1	0.00	0.00	0.00
13,300.0	90.00	1.16	6,274.8	-1,335.84	6,323.5	2,162.0	6,649.9	0.00	0.00	0.00
13,400.0	90.00	1.16	6,274.8	-1,335.84	6,423.5	2,164.0	6,747.7	0.00	0.00	0.00
13,500.0	90.00	1.16	6,274.8	-1,335.85	6,523.4	2,166.1	6,845.5	0.00	0.00	0.00
13,600.0	90.00	1.16	6,274.8	-1,335.85	6,623.4	2,168.1	6,943.3	0.00	0.00	0.00
13,700.0	90.00	1.16	6,274.9	-1,335.85	6,723.4	2,170.1	7,041.1	0.00	0.00	0.00
13,800.0	90.00	1.16	6,274.9	-1,335.86	6,823.4	2,172.1	7,138.9	0.00	0.00	0.00
13,900.0	90.00	1.16	6,274.9	-1,335.86	6,923.4	2,174.1	7,236.7	0.00	0.00	0.00
14,000.0	90.00	1.15	6,274.9	-1,335.86	7,023.3	2,176.1	7,334.5	0.00	0.00	0.00
14,100.0	90.00	1.15	6,274.9	-1,335.87	7,123.3	2,178.2	7,432.3	0.00	0.00	0.00
14,200.0	90.00	1.15	6,274.9	-1,335.87	7,223.3	2,180.2	7,530.1	0.00	0.00	0.00
14,300.0	90.00	1.15	6,274.9	-1,335.87	7,323.3	2,182.2	7,627.9	0.00	0.00	0.00
14,400.0	90.00	1.15	6,274.9	-1,335.88	7,423.3	2,184.2	7,725.8	0.00	0.00	0.00
14,500.0	90.00	1.15	6,274.9	-1,335.88	7,523.2	2,186.2	7,823.6	0.00	0.00	0.00
14,600.0	90.00	1.15	6,274.9	-1,335.89	7,623.2	2,188.2	7,921.4	0.00	0.00	0.00
14,700.0	90.00	1.15	6,274.9	-1,335.89	7,723.2	2,190.2	8,019.2	0.00	0.00	0.00
14,800.0	90.00	1.15	6,274.9	-1,335.90	7,823.2	2,192.3	8,117.0	0.00	0.00	0.00
14,900.0	90.00	1.15	6,274.9	-1,335.90	7,923.2	2,194.3	8,214.8	0.00	0.00	0.00
15,000.0	90.00	1.15	6,274.9	-1,335.91	8,023.1	2,196.3	8,312.6	0.00	0.00	0.00
15,100.0	90.00	1.15	6,274.9	-1,335.91	8,123.1	2,198.3	8,410.4	0.00	0.00	0.00
15,200.0	90.00	1.15	6,274.9	-1,335.92	8,223.1	2,200.3	8,508.2	0.00	0.00	0.00
15,300.0	90.00	1.15	6,274.9	-1,335.92	8,323.1	2,202.3	8,606.0	0.00	0.00	0.00
15,400.0	90.00	1.15	6,274.9	-1,335.93	8,423.1	2,204.3	8,703.8	0.00	0.00	0.00
15,500.0	90.00	1.15	6,274.9	-1,335.93	8,523.0	2,206.4	8,801.6	0.00	0.00	0.00
15,600.0	90.00	1.15	6,274.9	-1,335.94	8,623.0	2,208.4	8,899.4	0.00	0.00	0.00
15,700.0	90.00	1.15	6,274.9	-1,335.95	8,723.0	2,210.4	8,997.2	0.00	0.00	0.00
15,800.0	90.00	1.15	6,275.0	-1,335.95	8,823.0	2,212.4	9,095.0	0.00	0.00	0.00
15,900.0	90.00	1.15	6,275.0	-1,335.96	8,923.0	2,214.4	9,192.8	0.00	0.00	0.00
16,000.0	90.00	1.15	6,275.0	-1,335.97	9,022.9	2,216.4	9,290.6	0.00	0.00	0.00
16,100.0	90.00	1.15	6,275.0	-1,335.97	9,122.9	2,218.4	9,388.4	0.00	0.00	0.00
16,200.0	90.00	1.15	6,275.0	-1,335.98	9,222.9	2,220.4	9,486.2	0.00	0.00	0.00
16,300.0	90.00	1.15	6,275.0	-1,335.99	9,322.9	2,222.5	9,584.0	0.00	0.00	0.00
16,400.0	90.00	1.15	6,275.0	-1,335.99	9,422.8	2,224.5	9,681.8	0.00	0.00	0.00
BHL: 600ft FNL & 1345ft FEL of Sec 27										
16,481.9	90.00	1.15	6,275.0	-1,336.00	9,504.7	2,226.1	9,761.9	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GREEN TEAL FED 34-27-13HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4939.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4939.0usft (Original Well Elev)
Site:	SE SW SEC. 34 T8N R60W 6th P.M.	North Reference:	True
Well:	GREEN TEAL FED 34-27-13HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,543.1	1,513.0	FOX HILLS BASE				
3,620.4	3,333.0	RICHARD SANDSTONE				
3,758.0	3,453.0	PARKMAN SANDSTONE				
4,629.4	4,213.0	SUSSEX SANDSTONE				
5,096.3	4,638.0	SHANNON SANDSTONE				
6,620.9	6,101.0	SHARON SPRINGS				
6,728.9	6,171.0	NIOBRARA A CHALK				
6,781.1	6,199.0	NIOBRARA A CHALK BASE				
6,840.9	6,226.0	NIOBRARA B1 CHALK TOP				
6,920.2	6,253.0	NIOBRARA B1 CHALK BASE				
7,079.5	6,275.0	NIOBRARA B2 CHALK TOP				

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.0	0.0	0.0	0.0	SHL: 500ft FSL & 1922ft FWL of Sec 34
400.0	400.0	0.0	0.0	START NUDGE (2°/100ft BUR)
1,864.4	1,801.4	-82.6	356.8	EOB TO 29.29° INC
4,615.2	4,200.7	-385.9	1,667.8	END OF TANGENT
6,079.6	5,602.1	-468.5	2,024.6	EOD TO VERTICAL
6,179.6	5,702.1	-468.5	2,024.6	KOP (10°/100ft BUR)
7,079.6	6,275.0	104.3	2,036.2	HZ LP: 600ft FSL & 1345ft FEL of Sec 34
16,481.9	6,275.0	9,504.7	2,226.1	BHL: 600ft FNL & 1345ft FEL of Sec 27