

MALLARD EXPLORATION

WELD COUNTY, COLORADO (NAD 83)

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

GREEN TEAL FED 34-27-2HC

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 34-27-2HC
 Wellbore: ORIGINAL WELLBORE
 Design: PROPOSAL 1

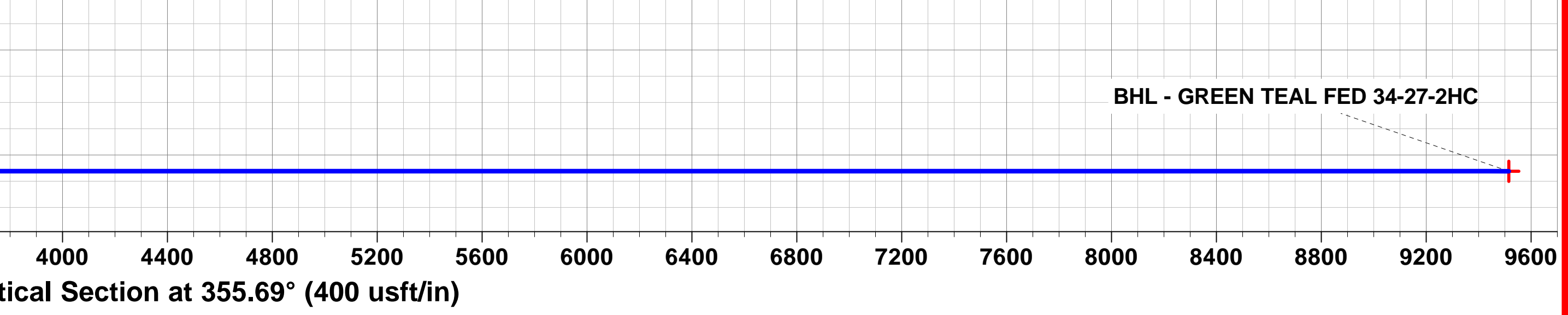
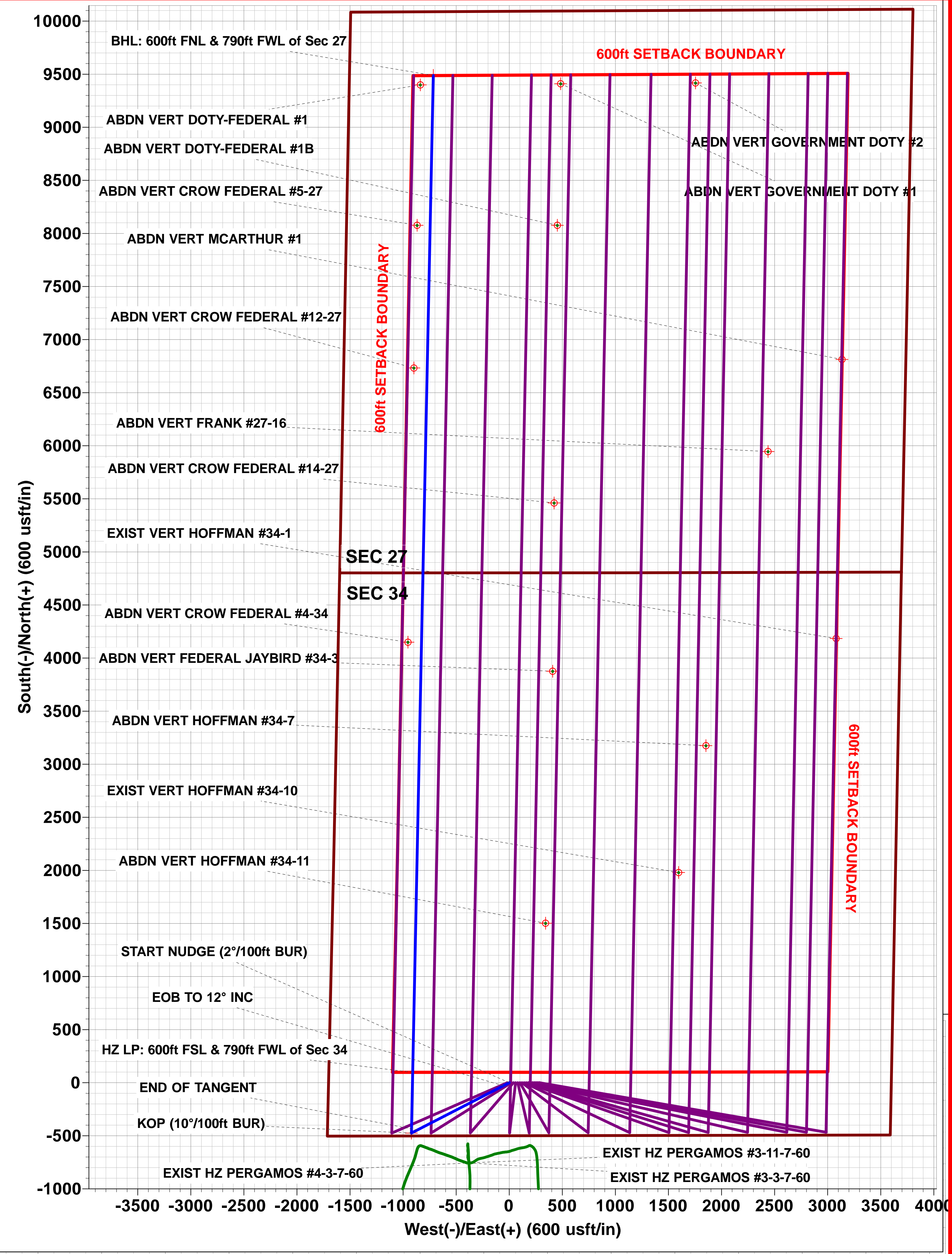
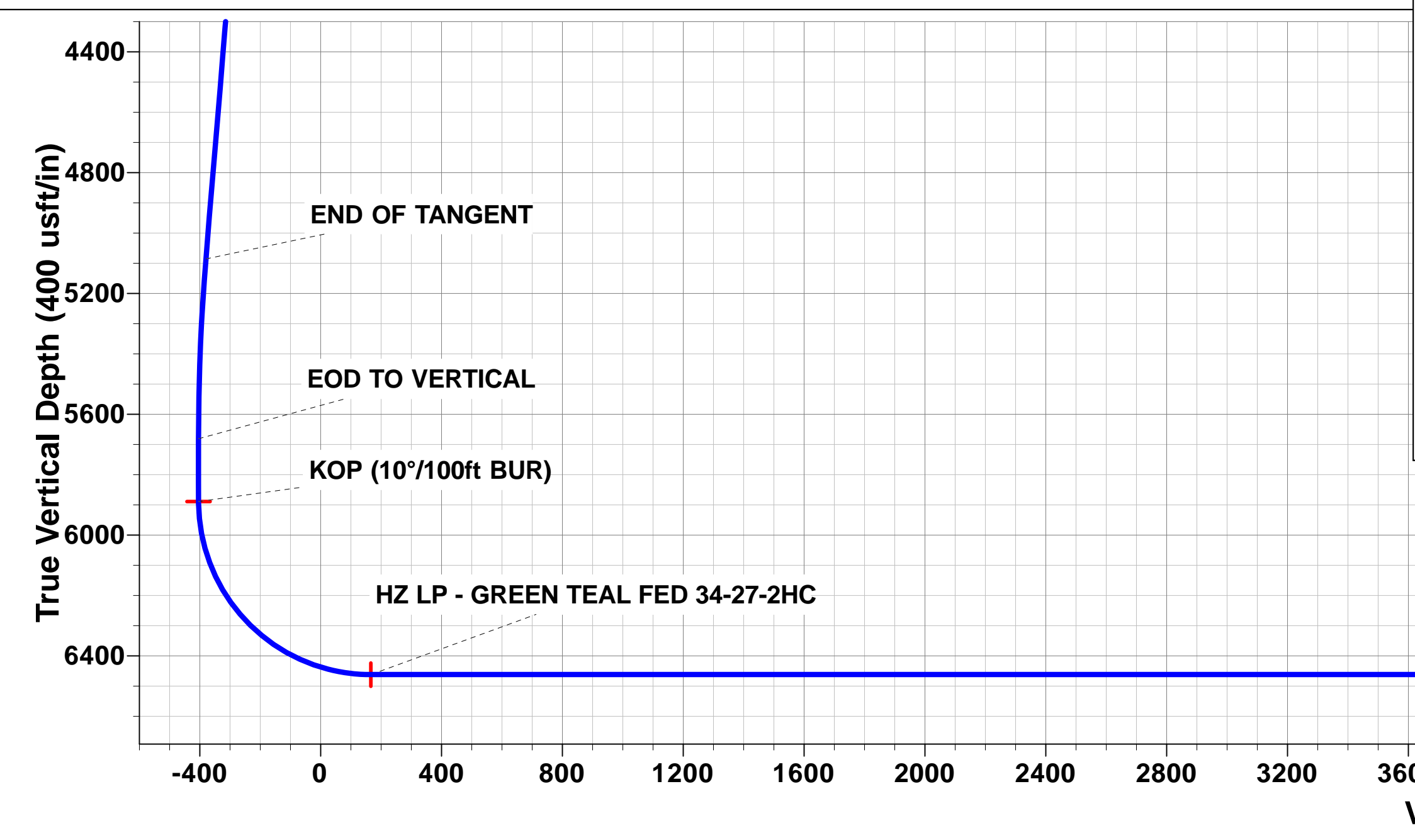
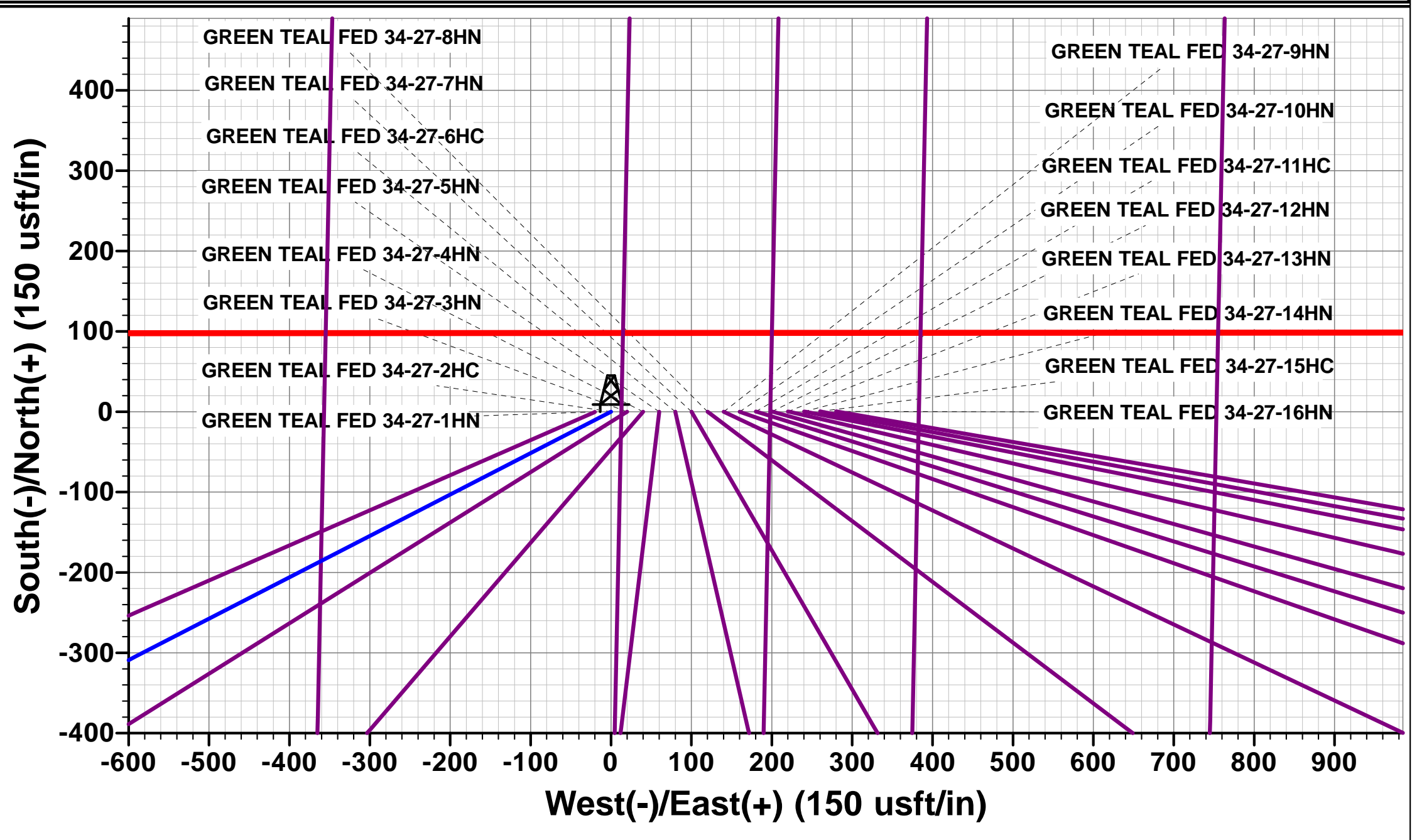
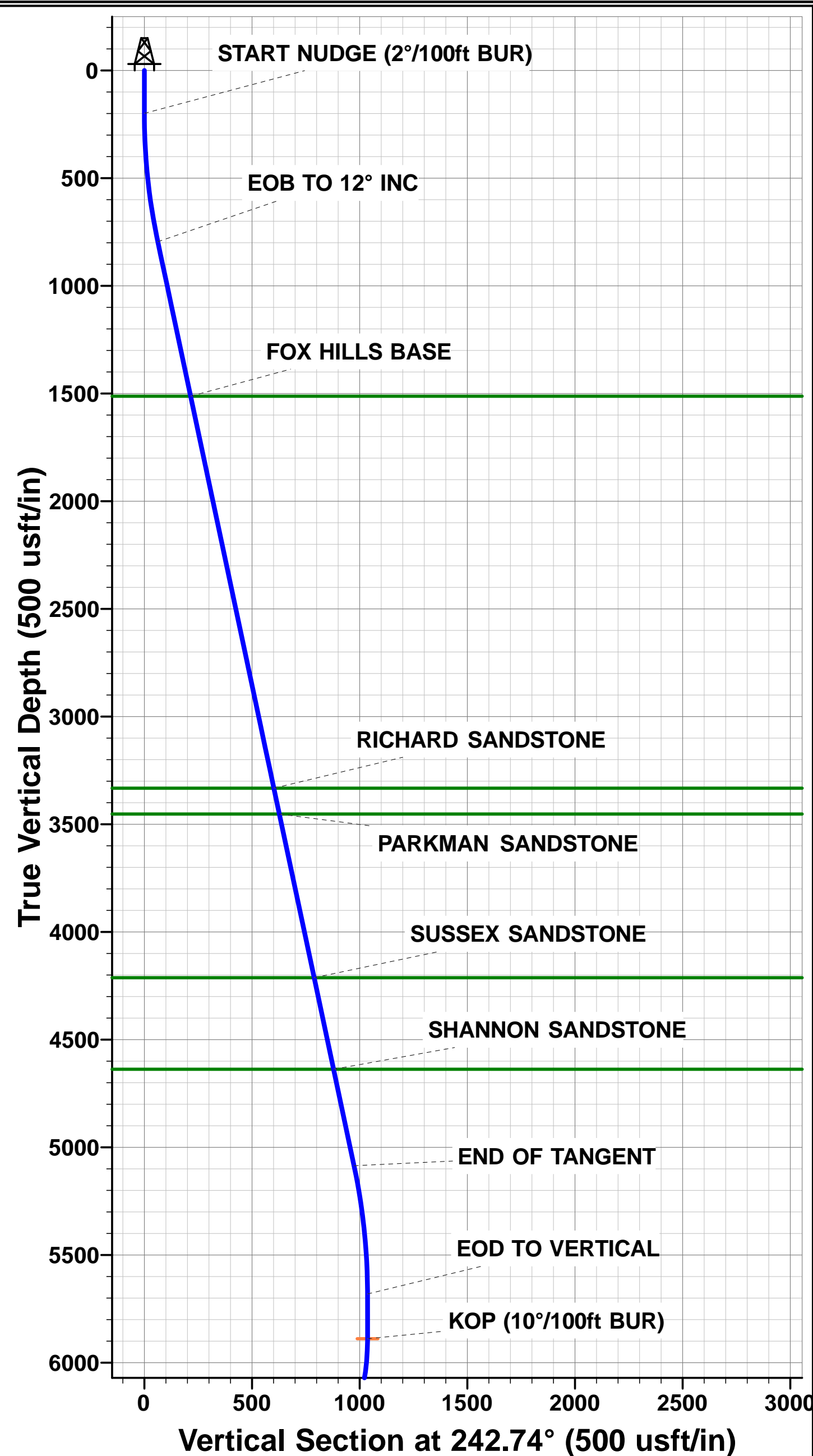
ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Dep	Annotation
0.0	0.0	0.00	0.00	0.0	0.0	0.0	0.0	SHL: 500ft FSL & 1702ft FWL of Sec 34
200.0	200.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)
795.4	799.8	12.00	242.74	-28.7	-55.6	-24.4	62.6	EOB TO 12° INC
5085.7	5185.8	12.00	242.74	-446.1	-866.0	-379.7	974.2	END OF TANGENT
5681.1	5785.6	0.00	0.00	-474.8	-921.6	-404.1	1036.7	EOD TO VERTICAL
5889.1	5993.6	0.00	0.00	-474.8	-921.6	-404.1	1036.7	KOP (10°/100ft BUR)
6462.0	6893.6	90.00	1.18	98.0	-909.8	166.2	1609.7	HZ LP: 600ft FSL & 790ft FWL of Sec 34
6462.0	16285.7	90.00	1.19	9488.2	-715.8	9515.1	11001.8	BHL: 600ft FNL & 790ft FWL of Sec 27

PROPOSED LOCAL COORDINATES:
 SHL: 500ft FSL & 1702ft FWL Sec 34
 HZ LP: 600ft FSL & 790ft FWL Sec 34
 BHL: 600ft FNL & 790ft FWL of Sec 27

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - GREEN TEAL FED 34-27-2HC	5889.1	-474.8	-921.6	40.611573	-104.085154
HZ LP - GREEN TEAL FED 34-27-2HC	6462.0	98.0	-909.8	40.613145	-104.085112
BHL - GREEN TEAL FED 34-27-2HC	6462.0	9488.2	-715.8	40.638919	-104.084414



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GREEN TEAL FED 34-27-2HC
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 34-27-2HC	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	Latitude:	40.612875
From:	Lat/Long	Easting:	3,393,696.59 usft	Longitude:	-104.081907
Position Uncertainty:	0.0 usft	Slot Radius:	1.10000ft	Grid Convergence:	0.92 °

Well	GREEN TEAL FED 34-27-2HC					
Well Position	+N-S	0.4 usft	Northing:	1,469,260.83 usft	Latitude:	40.612876
	+E-W	20.0 usft	Easting:	3,393,716.58 usft	Longitude:	-104.081835
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,923.0 usft

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 (°)
	0.0	0.0	0.0	355.69

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	
200.0	0.00	0.00	200.0	-4,739.0	0.0	0.0	0.00	0.00	0.00	0.00	
799.8	12.00	242.74	795.4	-4,143.6	-28.7	-55.6	2.00	2.00	0.00	242.74	
5,185.8	12.00	242.74	5,085.7	146.7	-446.1	-866.0	0.00	0.00	0.00	0.00	
5,785.6	0.00	0.00	5,681.1	742.1	-474.8	-921.6	2.00	-2.00	0.00	180.00	
5,993.6	0.00	0.00	5,889.1	950.1	-474.8	-921.6	0.00	0.00	0.00	0.00	KOP - GREEN TEA
6,893.6	90.00	1.18	6,462.0	1,523.0	98.0	-909.8	10.00	10.00	0.13	1.18	HZ LP - GREEN TE
16,285.7	90.00	1.19	6,462.0	1,523.0	9,488.2	-715.8	0.00	0.00	0.00	125.59	BHL - GREEN TEA

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 34-27-2HC	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 & 1702ft 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
START NUDDGE (2°/100ft BUR)										
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	2.00	242.74	300.0	4,639.02	-0.8	-1.6	-0.7	2.00	2.00	0.00
400.0	4.00	242.74	399.8	4,539.16	-3.2	-6.2	-2.7	2.00	2.00	0.00
500.0	6.00	242.74	499.5	4,439.55	-7.2	-14.0	-6.1	2.00	2.00	0.00
600.0	8.00	242.74	598.7	4,340.30	-12.8	-24.8	-10.9	2.00	2.00	0.00
700.0	10.00	242.74	697.5	4,241.53	-19.9	-38.7	-17.0	2.00	2.00	0.00
EOB TO 12° INC										
799.8	12.00	242.74	795.4	4,143.58	-28.7	-55.6	-24.4	2.00	2.00	0.00
800.0	12.00	242.74	795.6	4,143.38	-28.7	-55.7	-24.4	0.00	0.00	0.00
900.0	12.00	242.74	893.4	4,045.56	-38.2	-74.1	-32.5	0.00	0.00	0.00
1,000.0	12.00	242.74	991.3	3,947.74	-47.7	-92.6	-40.6	0.00	0.00	0.00
1,100.0	12.00	242.74	1,089.1	3,849.93	-57.2	-111.1	-48.7	0.00	0.00	0.00
1,200.0	12.00	242.74	1,186.9	3,752.11	-66.7	-129.6	-56.8	0.00	0.00	0.00
1,300.0	12.00	242.74	1,284.7	3,654.30	-76.3	-148.0	-64.9	0.00	0.00	0.00
1,400.0	12.00	242.74	1,382.5	3,556.48	-85.8	-166.5	-73.0	0.00	0.00	0.00
1,500.0	12.00	242.74	1,480.3	3,458.66	-95.3	-185.0	-81.1	0.00	0.00	0.00
FOX HILLS BASE										
1,533.4	12.00	242.74	1,513.0	3,426.00	-98.5	-191.2	-83.8	0.00	0.00	0.00
1,600.0	12.00	242.74	1,578.2	3,360.85	-104.8	-203.5	-89.2	0.00	0.00	0.00
1,700.0	12.00	242.74	1,676.0	3,263.03	-114.3	-221.9	-97.3	0.00	0.00	0.00
1,800.0	12.00	242.74	1,773.8	3,165.21	-123.9	-240.4	-105.4	0.00	0.00	0.00
1,900.0	12.00	242.74	1,871.6	3,067.40	-133.4	-258.9	-113.5	0.00	0.00	0.00
2,000.0	12.00	242.74	1,969.4	2,969.58	-142.9	-277.4	-121.6	0.00	0.00	0.00
2,100.0	12.00	242.74	2,067.2	2,871.77	-152.4	-295.8	-129.7	0.00	0.00	0.00
2,200.0	12.00	242.74	2,165.1	2,773.95	-161.9	-314.3	-137.8	0.00	0.00	0.00
2,300.0	12.00	242.74	2,262.9	2,676.13	-171.5	-332.8	-145.9	0.00	0.00	0.00
2,400.0	12.00	242.74	2,360.7	2,578.32	-181.0	-351.3	-154.0	0.00	0.00	0.00
2,500.0	12.00	242.74	2,458.5	2,480.50	-190.5	-369.7	-162.1	0.00	0.00	0.00
2,600.0	12.00	242.74	2,556.3	2,382.68	-200.0	-388.2	-170.2	0.00	0.00	0.00
2,700.0	12.00	242.74	2,654.1	2,284.87	-209.5	-406.7	-178.3	0.00	0.00	0.00
2,800.0	12.00	242.74	2,751.9	2,187.05	-219.0	-425.2	-186.4	0.00	0.00	0.00
2,900.0	12.00	242.74	2,849.8	2,089.24	-228.6	-443.7	-194.5	0.00	0.00	0.00
3,000.0	12.00	242.74	2,947.6	1,991.42	-238.1	-462.1	-202.6	0.00	0.00	0.00
3,100.0	12.00	242.74	3,045.4	1,893.60	-247.6	-480.6	-210.7	0.00	0.00	0.00
3,200.0	12.00	242.74	3,143.2	1,795.79	-257.1	-499.1	-218.9	0.00	0.00	0.00
3,300.0	12.00	242.74	3,241.0	1,697.97	-266.6	-517.6	-227.0	0.00	0.00	0.00
RICHARD SANDSTONE										
3,394.0	12.00	242.74	3,333.0	1,606.00	-275.6	-534.9	-234.6	0.00	0.00	0.00
3,400.0	12.00	242.74	3,338.8	1,600.15	-276.2	-536.0	-235.1	0.00	0.00	0.00
3,500.0	12.00	242.74	3,436.7	1,502.34	-285.7	-554.5	-243.2	0.00	0.00	0.00
PARKMAN SANDSTONE										
3,516.7	12.00	242.74	3,453.0	1,486.00	-287.3	-557.6	-244.5	0.00	0.00	0.00
3,600.0	12.00	242.74	3,534.5	1,404.52	-295.2	-573.0	-251.3	0.00	0.00	0.00
3,700.0	12.00	242.74	3,632.3	1,306.71	-304.7	-591.5	-259.4	0.00	0.00	0.00
3,800.0	12.00	242.74	3,730.1	1,208.89	-314.2	-609.9	-267.5	0.00	0.00	0.00
3,900.0	12.00	242.74	3,827.9	1,111.07	-323.8	-628.4	-275.6	0.00	0.00	0.00
4,000.0	12.00	242.74	3,925.7	1,013.26	-333.3	-646.9	-283.7	0.00	0.00	0.00
4,100.0	12.00	242.74	4,023.6	915.44	-342.8	-665.4	-291.8	0.00	0.00	0.00
4,200.0	12.00	242.74	4,121.4	817.62	-352.3	-683.8	-299.9	0.00	0.00	0.00

Planning Report



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Well:	GREEN TEAL FED 34-27-2HC	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)
SUSSEX SANDSTONE										
4,293.7	12.00	242.74	4,213.0	726.00	-361.2	-701.1	-307.5	0.00	0.00	0.00
4,300.0	12.00	242.74	4,219.2	719.81	-361.8	-702.3	-308.0	0.00	0.00	0.00
4,400.0	12.00	242.74	4,317.0	621.99	-371.3	-720.8	-316.1	0.00	0.00	0.00
4,500.0	12.00	242.74	4,414.8	524.18	-380.9	-739.3	-324.2	0.00	0.00	0.00
4,600.0	12.00	242.74	4,512.6	426.36	-390.4	-757.7	-332.3	0.00	0.00	0.00
4,700.0	12.00	242.74	4,610.5	328.54	-399.9	-776.2	-340.4	0.00	0.00	0.00
SHANNON SANDSTONE										
4,728.2	12.00	242.74	4,638.0	301.00	-402.6	-781.4	-342.7	0.00	0.00	0.00
4,800.0	12.00	242.74	4,708.3	230.73	-409.4	-794.7	-348.5	0.00	0.00	0.00
4,900.0	12.00	242.74	4,806.1	132.91	-418.9	-813.2	-356.6	0.00	0.00	0.00
5,000.0	12.00	242.74	4,903.9	35.09	-428.5	-831.7	-364.7	0.00	0.00	0.00
5,100.0	12.00	242.74	5,001.7	-62.72	-438.0	-850.1	-372.8	0.00	0.00	0.00
END OF TANGENT										
5,185.8	12.00	242.74	5,085.7	-146.68	-446.1	-866.0	-379.7	0.00	0.00	0.00
5,200.0	11.71	242.74	5,099.5	-160.55	-447.5	-868.6	-380.9	2.00	-2.00	0.00
5,300.0	9.71	242.74	5,197.8	-258.80	-456.0	-885.1	-388.1	2.00	-2.00	0.00
5,400.0	7.71	242.74	5,296.6	-357.64	-462.9	-898.6	-394.0	2.00	-2.00	0.00
5,500.0	5.71	242.74	5,395.9	-456.95	-468.3	-909.0	-398.6	2.00	-2.00	0.00
5,600.0	3.71	242.74	5,495.6	-556.61	-472.0	-916.3	-401.8	2.00	-2.00	0.00
5,700.0	1.71	242.74	5,595.5	-656.49	-474.2	-920.5	-403.6	2.00	-2.00	0.00
EOD TO VERTICAL										
5,785.6	0.00	0.00	5,681.1	-742.10	-474.8	-921.6	-404.1	2.00	-2.00	0.00
5,800.0	0.00	0.00	5,695.5	-756.48	-474.8	-921.6	-404.1	0.00	0.00	0.00
5,900.0	0.00	0.00	5,795.5	-856.48	-474.8	-921.6	-404.1	0.00	0.00	0.00
KOP (10°/100ft BUR)										
5,993.6	0.00	0.00	5,889.1	-950.10	-474.8	-921.6	-404.1	0.00	0.00	0.00
6,000.0	0.64	1.18	5,895.5	-956.48	-474.8	-921.6	-404.1	10.00	10.00	0.00
6,100.0	10.64	1.18	5,994.9	-1,055.87	-465.0	-921.4	-394.3	10.00	10.00	0.00
6,200.0	20.64	1.18	6,091.0	-1,152.04	-438.0	-920.8	-367.5	10.00	10.00	0.00
SHARON SPRINGS										
6,210.7	21.71	1.18	6,101.0	-1,162.00	-434.2	-920.8	-363.7	10.00	10.00	0.00
NIOBRARA A CHALK										
6,288.4	29.48	1.18	6,171.0	-1,232.00	-400.7	-920.1	-330.3	10.00	10.00	0.00
6,300.0	30.64	1.18	6,181.1	-1,242.08	-394.8	-920.0	-324.5	10.00	10.00	0.00
NIOBRARA A CHALK BASE										
6,321.1	32.75	1.18	6,199.0	-1,260.00	-383.8	-919.7	-313.5	10.00	10.00	0.00
NIOBRARA B1 CHALK TOP										
6,353.8	36.02	1.18	6,226.0	-1,287.00	-365.3	-919.3	-295.1	10.00	10.00	0.00
NIOBRARA B1 CHALK BASE										
6,387.9	39.43	1.18	6,253.0	-1,314.00	-344.4	-918.9	-274.3	10.00	10.00	0.00
6,400.0	40.64	1.18	6,262.2	-1,323.24	-336.6	-918.8	-266.6	10.00	10.00	0.00
NIOBRARA B2 CHALK TOP										
6,417.0	42.34	1.18	6,275.0	-1,336.00	-325.4	-918.5	-255.3	10.00	10.00	0.00
NIOBRARA B2 CHALK BASE										
6,467.9	47.43	1.18	6,311.0	-1,372.00	-289.5	-917.8	-219.7	10.00	10.00	0.00
6,500.0	50.64	1.18	6,332.1	-1,393.07	-265.3	-917.3	-195.5	10.00	10.00	0.00
NIOBRARA C CHALK TOP										
6,511.1	51.75	1.18	6,339.0	-1,400.00	-256.6	-917.1	-186.9	10.00	10.00	0.00
6,600.0	60.64	1.18	6,388.4	-1,449.43	-182.8	-915.6	-113.4	10.00	10.00	0.00
NIOBRARA C CHALK BASE										
6,607.4	61.38	1.18	6,392.0	-1,453.00	-176.4	-915.5	-107.0	10.00	10.00	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 34-27-2HC	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)
NIORARA D CHALK TOP										
6,640.4	64.69	1.18	6,407.0	-1,468.00	-146.9	-914.9	-77.7	10.00	10.00	0.00
6,700.0	70.64	1.18	6,429.6	-1,490.62	-91.9	-913.7	-22.9	10.00	10.00	0.00
FT. HAYS										
6,723.7	73.01	1.18	6,437.0	-1,498.00	-69.4	-913.3	-0.5	10.00	10.00	0.00
6,800.0	80.65	1.18	6,454.4	-1,515.38	4.9	-911.7	73.5	10.00	10.00	0.00
CODELL										
6,893.5	90.00	1.18	6,462.0	-1,523.00	97.9	-909.8	166.1	10.00	10.00	0.00
HZ LP: 600ft FSL & 790ft FWL of Sec 34										
6,893.6	90.00	1.18	6,462.0	-1,523.00	98.0	-909.8	166.2	10.00	10.00	0.00
6,900.0	90.00	1.18	6,462.0	-1,523.00	104.4	-909.7	172.6	0.00	0.00	0.00
7,000.0	90.00	1.18	6,462.0	-1,522.99	204.4	-907.6	272.1	0.00	0.00	0.00
7,100.0	90.00	1.18	6,462.0	-1,522.98	304.4	-905.6	371.7	0.00	0.00	0.00
7,200.0	90.00	1.18	6,462.0	-1,522.97	404.4	-903.5	471.2	0.00	0.00	0.00
7,300.0	90.00	1.18	6,462.0	-1,522.97	504.4	-901.5	570.7	0.00	0.00	0.00
7,400.0	90.00	1.18	6,462.0	-1,522.96	604.3	-899.4	670.3	0.00	0.00	0.00
7,500.0	90.00	1.18	6,462.0	-1,522.95	704.3	-897.4	769.8	0.00	0.00	0.00
7,600.0	90.00	1.18	6,461.9	-1,522.94	804.3	-895.3	869.4	0.00	0.00	0.00
7,700.0	90.00	1.18	6,461.9	-1,522.94	904.3	-893.3	968.9	0.00	0.00	0.00
7,800.0	90.00	1.18	6,461.9	-1,522.93	1,004.3	-891.2	1,068.4	0.00	0.00	0.00
7,900.0	90.00	1.18	6,461.9	-1,522.92	1,104.2	-889.1	1,168.0	0.00	0.00	0.00
8,000.0	90.00	1.18	6,461.9	-1,522.92	1,204.2	-887.1	1,267.5	0.00	0.00	0.00
8,100.0	90.00	1.18	6,461.9	-1,522.91	1,304.2	-885.0	1,367.1	0.00	0.00	0.00
8,200.0	90.00	1.18	6,461.9	-1,522.90	1,404.2	-883.0	1,466.6	0.00	0.00	0.00
8,300.0	90.00	1.18	6,461.9	-1,522.90	1,504.1	-880.9	1,566.2	0.00	0.00	0.00
8,400.0	90.00	1.18	6,461.9	-1,522.89	1,604.1	-878.9	1,665.7	0.00	0.00	0.00
8,500.0	90.00	1.18	6,461.9	-1,522.89	1,704.1	-876.8	1,765.2	0.00	0.00	0.00
8,600.0	90.00	1.18	6,461.9	-1,522.88	1,804.1	-874.7	1,864.8	0.00	0.00	0.00
8,700.0	90.00	1.18	6,461.9	-1,522.87	1,904.1	-872.7	1,964.3	0.00	0.00	0.00
8,800.0	90.00	1.18	6,461.9	-1,522.87	2,004.0	-870.6	2,063.9	0.00	0.00	0.00
8,900.0	90.00	1.18	6,461.9	-1,522.86	2,104.0	-868.6	2,163.4	0.00	0.00	0.00
9,000.0	90.00	1.18	6,461.9	-1,522.86	2,204.0	-866.5	2,262.9	0.00	0.00	0.00
9,100.0	90.00	1.18	6,461.9	-1,522.86	2,304.0	-864.4	2,362.5	0.00	0.00	0.00
9,200.0	90.00	1.18	6,461.9	-1,522.85	2,404.0	-862.4	2,462.0	0.00	0.00	0.00
9,300.0	90.00	1.18	6,461.8	-1,522.85	2,503.9	-860.3	2,561.6	0.00	0.00	0.00
9,400.0	90.00	1.18	6,461.8	-1,522.84	2,603.9	-858.3	2,661.1	0.00	0.00	0.00
9,500.0	90.00	1.18	6,461.8	-1,522.84	2,703.9	-856.2	2,760.6	0.00	0.00	0.00
9,600.0	90.00	1.18	6,461.8	-1,522.83	2,803.9	-854.1	2,860.2	0.00	0.00	0.00
9,700.0	90.00	1.18	6,461.8	-1,522.83	2,903.9	-852.1	2,959.7	0.00	0.00	0.00
9,800.0	90.00	1.18	6,461.8	-1,522.83	3,003.8	-850.0	3,059.3	0.00	0.00	0.00
9,900.0	90.00	1.18	6,461.8	-1,522.82	3,103.8	-848.0	3,158.8	0.00	0.00	0.00
10,000.0	90.00	1.18	6,461.8	-1,522.82	3,203.8	-845.9	3,258.3	0.00	0.00	0.00
10,100.0	90.00	1.18	6,461.8	-1,522.82	3,303.8	-843.8	3,357.9	0.00	0.00	0.00
10,200.0	90.00	1.18	6,461.8	-1,522.82	3,403.7	-841.8	3,457.4	0.00	0.00	0.00
10,300.0	90.00	1.18	6,461.8	-1,522.81	3,503.7	-839.7	3,557.0	0.00	0.00	0.00
10,400.0	90.00	1.18	6,461.8	-1,522.81	3,603.7	-837.6	3,656.5	0.00	0.00	0.00
10,500.0	90.00	1.18	6,461.8	-1,522.81	3,703.7	-835.6	3,756.0	0.00	0.00	0.00
10,600.0	90.00	1.18	6,461.8	-1,522.81	3,803.7	-833.5	3,855.6	0.00	0.00	0.00
10,700.0	90.00	1.18	6,461.8	-1,522.81	3,903.6	-831.5	3,955.1	0.00	0.00	0.00
10,800.0	90.00	1.18	6,461.8	-1,522.80	4,003.6	-829.4	4,054.7	0.00	0.00	0.00
10,900.0	90.00	1.18	6,461.8	-1,522.80	4,103.6	-827.3	4,154.2	0.00	0.00	0.00
11,000.0	90.00	1.18	6,461.8	-1,522.80	4,203.6	-825.3	4,253.7	0.00	0.00	0.00
11,100.0	90.00	1.18	6,461.8	-1,522.80	4,303.6	-823.2	4,353.3	0.00	0.00	0.00
11,200.0	90.00	1.18	6,461.8	-1,522.80	4,403.5	-821.1	4,452.8	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GREEN TEAL FED 34-27-2HC
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 34-27-2HC	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)
11,300.0	90.00	1.18	6,461.8	-1,522.80	4,503.5	-819.1	4,552.4	0.00	0.00	0.00
11,400.0	90.00	1.18	6,461.8	-1,522.80	4,603.5	-817.0	4,651.9	0.00	0.00	0.00
11,500.0	90.00	1.18	6,461.8	-1,522.80	4,703.5	-814.9	4,751.4	0.00	0.00	0.00
11,600.0	90.00	1.18	6,461.8	-1,522.80	4,803.4	-812.9	4,851.0	0.00	0.00	0.00
11,700.0	90.00	1.18	6,461.8	-1,522.80	4,903.4	-810.8	4,950.5	0.00	0.00	0.00
11,800.0	90.00	1.18	6,461.8	-1,522.80	5,003.4	-808.7	5,050.1	0.00	0.00	0.00
11,900.0	90.00	1.18	6,461.8	-1,522.80	5,103.4	-806.7	5,149.6	0.00	0.00	0.00
12,000.0	90.00	1.18	6,461.8	-1,522.80	5,203.4	-804.6	5,249.1	0.00	0.00	0.00
12,100.0	90.00	1.18	6,461.8	-1,522.80	5,303.3	-802.5	5,348.7	0.00	0.00	0.00
12,200.0	90.00	1.18	6,461.8	-1,522.80	5,403.3	-800.5	5,448.2	0.00	0.00	0.00
12,300.0	90.00	1.19	6,461.8	-1,522.80	5,503.3	-798.4	5,547.8	0.00	0.00	0.00
12,400.0	90.00	1.19	6,461.8	-1,522.80	5,603.3	-796.3	5,647.3	0.00	0.00	0.00
12,500.0	90.00	1.19	6,461.8	-1,522.81	5,703.3	-794.3	5,746.8	0.00	0.00	0.00
12,600.0	90.00	1.19	6,461.8	-1,522.81	5,803.2	-792.2	5,846.4	0.00	0.00	0.00
12,700.0	90.00	1.19	6,461.8	-1,522.81	5,903.2	-790.1	5,945.9	0.00	0.00	0.00
12,800.0	90.00	1.19	6,461.8	-1,522.81	6,003.2	-788.1	6,045.5	0.00	0.00	0.00
12,900.0	90.00	1.19	6,461.8	-1,522.81	6,103.2	-786.0	6,145.0	0.00	0.00	0.00
13,000.0	90.00	1.19	6,461.8	-1,522.82	6,203.1	-783.9	6,244.5	0.00	0.00	0.00
13,100.0	90.00	1.19	6,461.8	-1,522.82	6,303.1	-781.8	6,344.1	0.00	0.00	0.00
13,200.0	90.00	1.19	6,461.8	-1,522.82	6,403.1	-779.8	6,443.6	0.00	0.00	0.00
13,300.0	90.00	1.19	6,461.8	-1,522.83	6,503.1	-777.7	6,543.2	0.00	0.00	0.00
13,400.0	90.00	1.19	6,461.8	-1,522.83	6,603.1	-775.6	6,642.7	0.00	0.00	0.00
13,500.0	90.00	1.19	6,461.8	-1,522.83	6,703.0	-773.6	6,742.2	0.00	0.00	0.00
13,600.0	90.00	1.19	6,461.8	-1,522.84	6,803.0	-771.5	6,841.8	0.00	0.00	0.00
13,700.0	90.00	1.19	6,461.8	-1,522.84	6,903.0	-769.4	6,941.3	0.00	0.00	0.00
13,800.0	90.00	1.19	6,461.8	-1,522.84	7,003.0	-767.3	7,040.9	0.00	0.00	0.00
13,900.0	90.00	1.19	6,461.8	-1,522.85	7,103.0	-765.3	7,140.4	0.00	0.00	0.00
14,000.0	90.00	1.19	6,461.9	-1,522.85	7,202.9	-763.2	7,239.9	0.00	0.00	0.00
14,100.0	90.00	1.19	6,461.9	-1,522.86	7,302.9	-761.1	7,339.5	0.00	0.00	0.00
14,200.0	90.00	1.19	6,461.9	-1,522.86	7,402.9	-759.1	7,439.0	0.00	0.00	0.00
14,300.0	90.00	1.19	6,461.9	-1,522.87	7,502.9	-757.0	7,538.6	0.00	0.00	0.00
14,400.0	90.00	1.19	6,461.9	-1,522.87	7,602.8	-754.9	7,638.1	0.00	0.00	0.00
14,500.0	90.00	1.19	6,461.9	-1,522.88	7,702.8	-752.8	7,737.6	0.00	0.00	0.00
14,600.0	90.00	1.19	6,461.9	-1,522.88	7,802.8	-750.8	7,837.2	0.00	0.00	0.00
14,700.0	90.00	1.19	6,461.9	-1,522.89	7,902.8	-748.7	7,936.7	0.00	0.00	0.00
14,800.0	90.00	1.19	6,461.9	-1,522.89	8,002.8	-746.6	8,036.2	0.00	0.00	0.00
14,900.0	90.00	1.19	6,461.9	-1,522.90	8,102.7	-744.5	8,135.8	0.00	0.00	0.00
15,000.0	90.00	1.19	6,461.9	-1,522.90	8,202.7	-742.5	8,235.3	0.00	0.00	0.00
15,100.0	90.00	1.19	6,461.9	-1,522.91	8,302.7	-740.4	8,334.9	0.00	0.00	0.00
15,200.0	90.00	1.19	6,461.9	-1,522.92	8,402.7	-738.3	8,434.4	0.00	0.00	0.00
15,300.0	90.00	1.19	6,461.9	-1,522.92	8,502.7	-736.2	8,533.9	0.00	0.00	0.00
15,400.0	90.00	1.19	6,461.9	-1,522.93	8,602.6	-734.2	8,633.5	0.00	0.00	0.00
15,500.0	90.00	1.19	6,461.9	-1,522.94	8,702.6	-732.1	8,733.0	0.00	0.00	0.00
15,600.0	90.00	1.19	6,461.9	-1,522.95	8,802.6	-730.0	8,832.6	0.00	0.00	0.00
15,700.0	90.00	1.19	6,462.0	-1,522.95	8,902.6	-727.9	8,932.1	0.00	0.00	0.00
15,800.0	90.00	1.19	6,462.0	-1,522.96	9,002.5	-725.9	9,031.6	0.00	0.00	0.00
15,900.0	90.00	1.19	6,462.0	-1,522.97	9,102.5	-723.8	9,131.2	0.00	0.00	0.00
16,000.0	90.00	1.19	6,462.0	-1,522.98	9,202.5	-721.7	9,230.7	0.00	0.00	0.00
16,100.0	90.00	1.19	6,462.0	-1,522.98	9,302.5	-719.6	9,330.3	0.00	0.00	0.00
16,200.0	90.00	1.19	6,462.0	-1,522.99	9,402.5	-717.5	9,429.8	0.00	0.00	0.00
BHL: 600ft FNL & 790ft FWL of Sec 27										
16,285.7	90.00	1.19	6,462.0	-1,523.00	9,488.2	-715.8	9,515.1	0.00	0.00	0.00



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GREEN TEAL FED 34-27-2HC
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 34-27-2HC	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL 1		

Formations						
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,533.4	1,513.0	FOX HILLS BASE				
3,394.0	3,333.0	RICHARD SANDSTONE				
3,516.7	3,453.0	PARKMAN SANDSTONE				
4,293.7	4,213.0	SUSSEX SANDSTONE				
4,728.2	4,638.0	SHANNON SANDSTONE				
6,210.7	6,101.0	SHARON SPRINGS				
6,288.4	6,171.0	NIOBRARA A CHALK				
6,321.1	6,199.0	NIOBRARA A CHALK BASE				
6,353.8	6,226.0	NIOBRARA B1 CHALK TOP				
6,387.9	6,253.0	NIOBRARA B1 CHALK BASE				
6,417.0	6,275.0	NIOBRARA B2 CHALK TOP				
6,467.9	6,311.0	NIOBRARA B2 CHALK BASE				
6,511.1	6,339.0	NIOBRARA C CHALK TOP				
6,607.4	6,392.0	NIOBRARA C CHALK BASE				
6,640.4	6,407.0	NIOBRARA D CHALK TOP				
6,723.7	6,437.0	FT. HAYS				
6,893.5	6,462.0	CODELL				

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 & 1702ft FWL of Sec 34	
200.0	200.0	0.0	0.0	START NUDGE (2°/100ft BUR)	
799.8	795.4	-28.7	-55.6	EOB TO 12° INC	
5,185.8	5,085.7	-446.1	-866.0	END OF TANGENT	
5,785.6	5,681.1	-474.8	-921.6	EOD TO VERTICAL	
5,993.6	5,889.1	-474.8	-921.6	KOP (10°/100ft BUR)	
6,893.6	6,462.0	98.0	-909.8	HZ LP: 600ft FSL & 790ft FWL of Sec 34	
16,285.7	6,462.0	9,488.2	-715.8	BHL: 600ft FNL & 790ft FWL of Sec 27	