

MALLARD EXPLORATION

WELD COUNTY, COLORADO (NAD 83)

NE NE SEC. 30 T8N R60W 6th P.M.

GADWALL FED 30-31-9HN

ORIGINAL WELLBORE

01 September, 2017

Plan: PROPOSAL #1



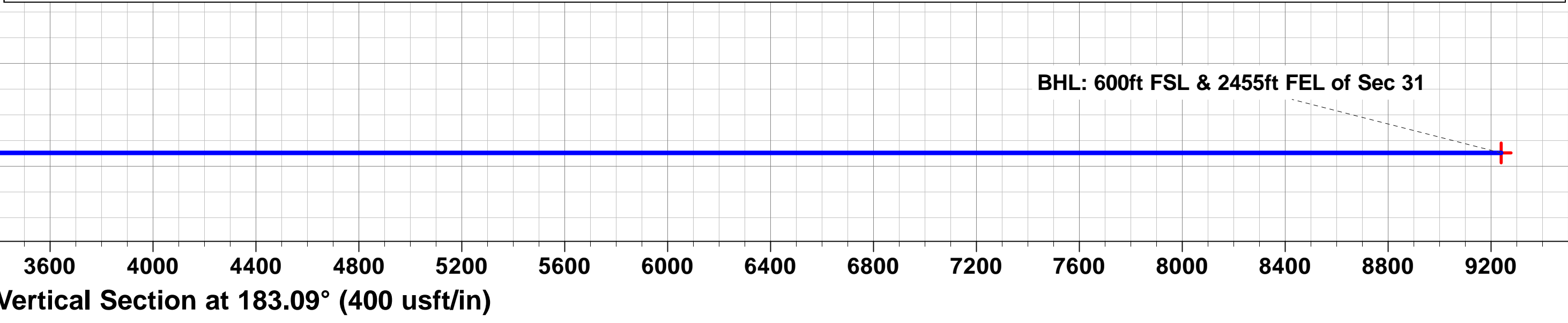
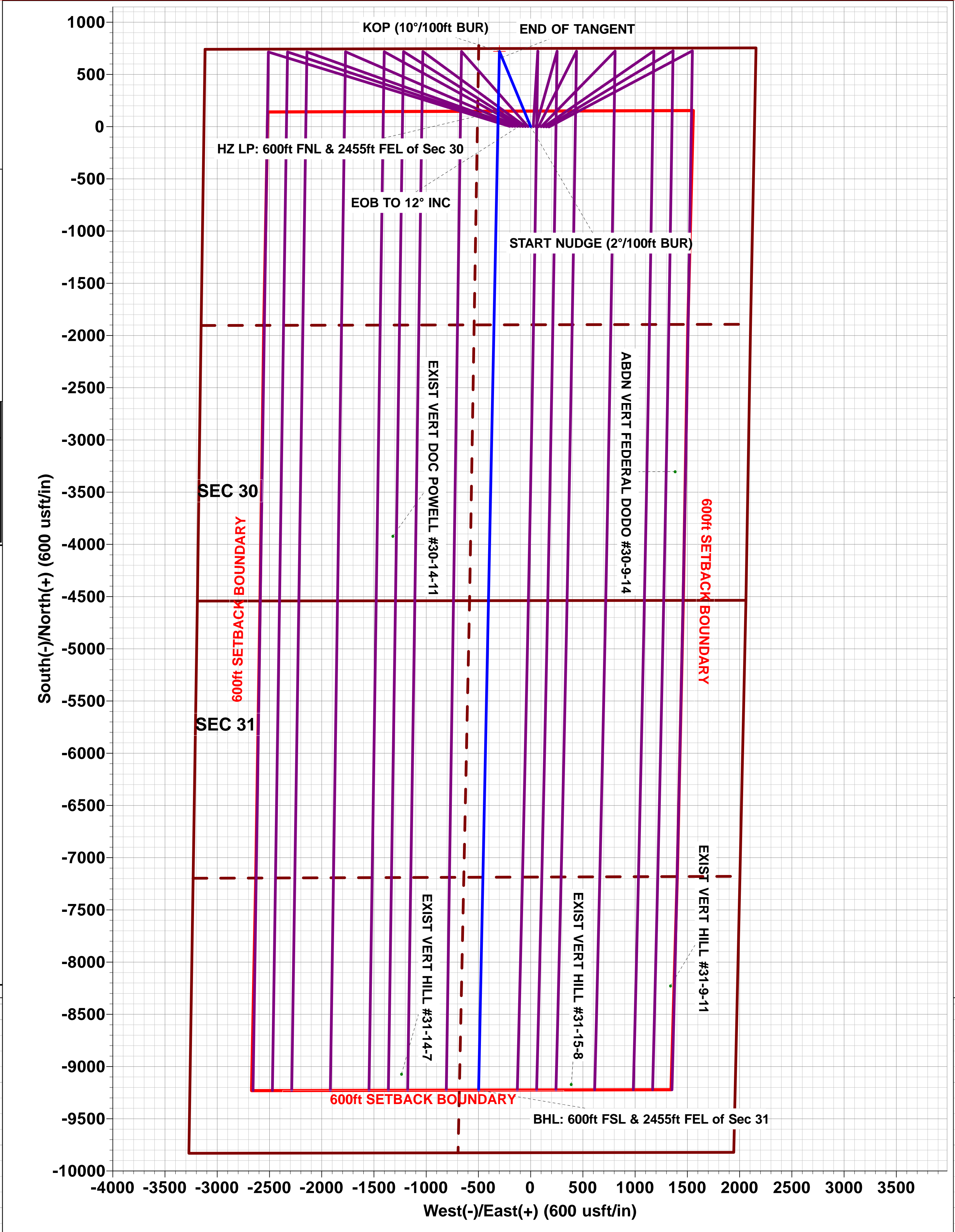
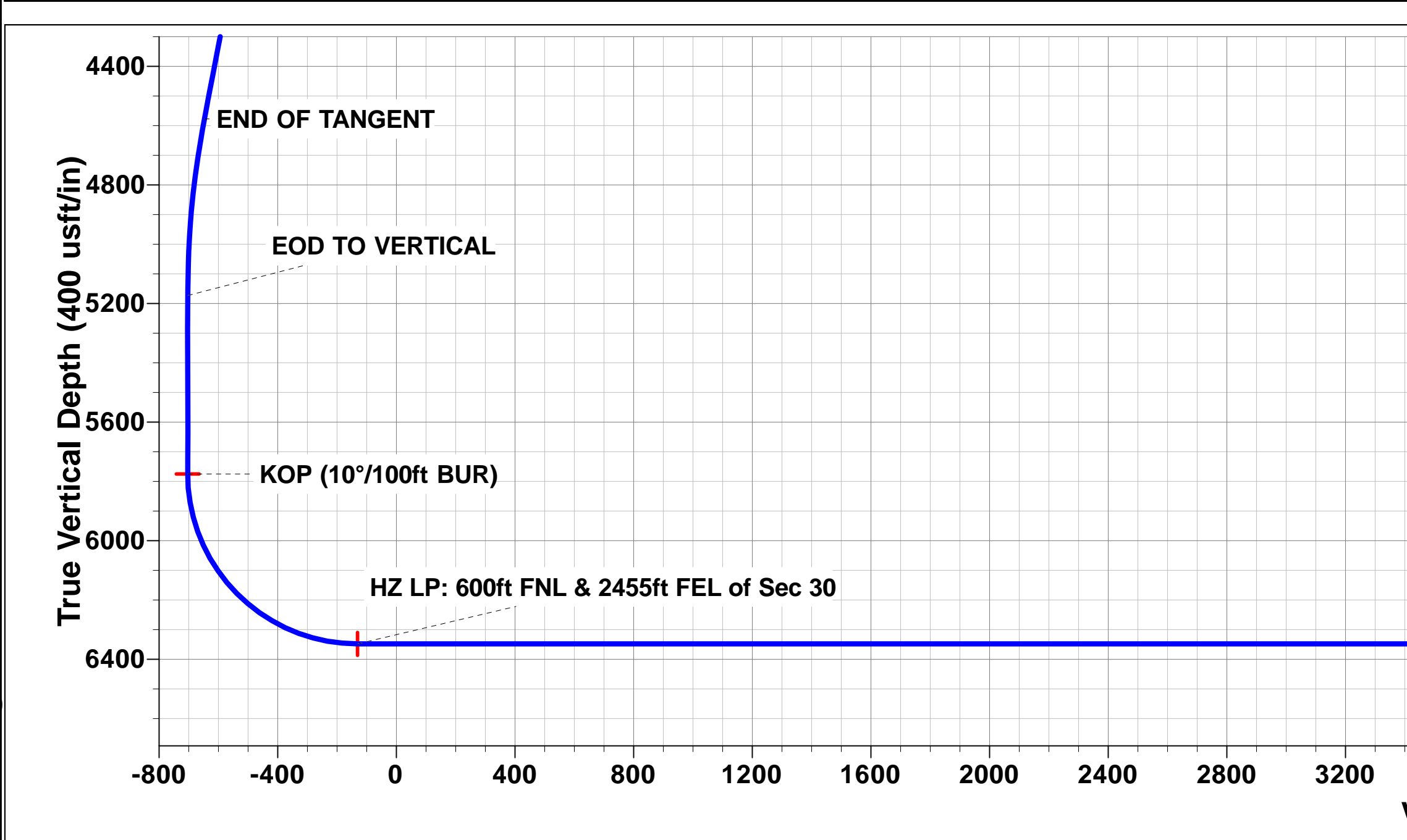
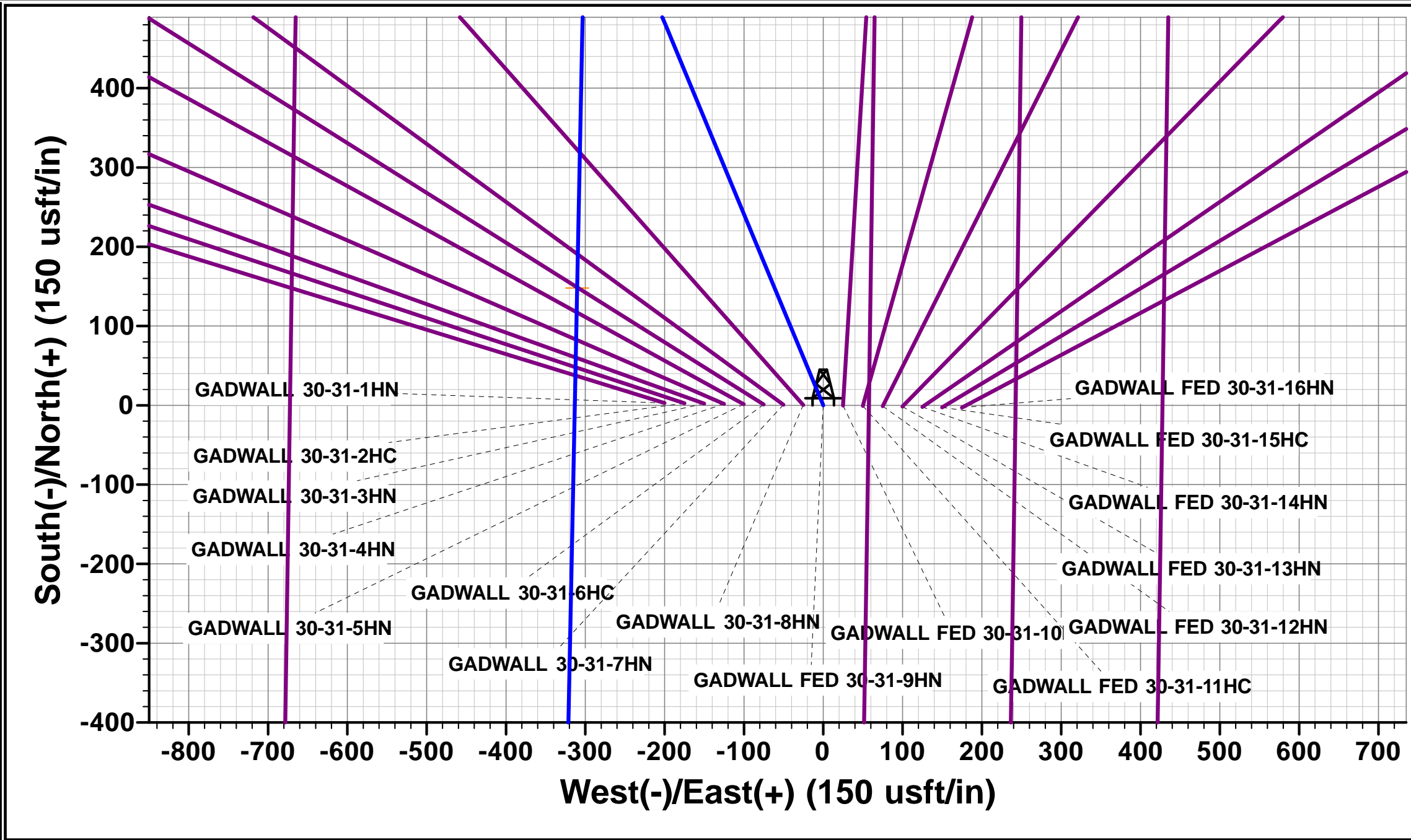
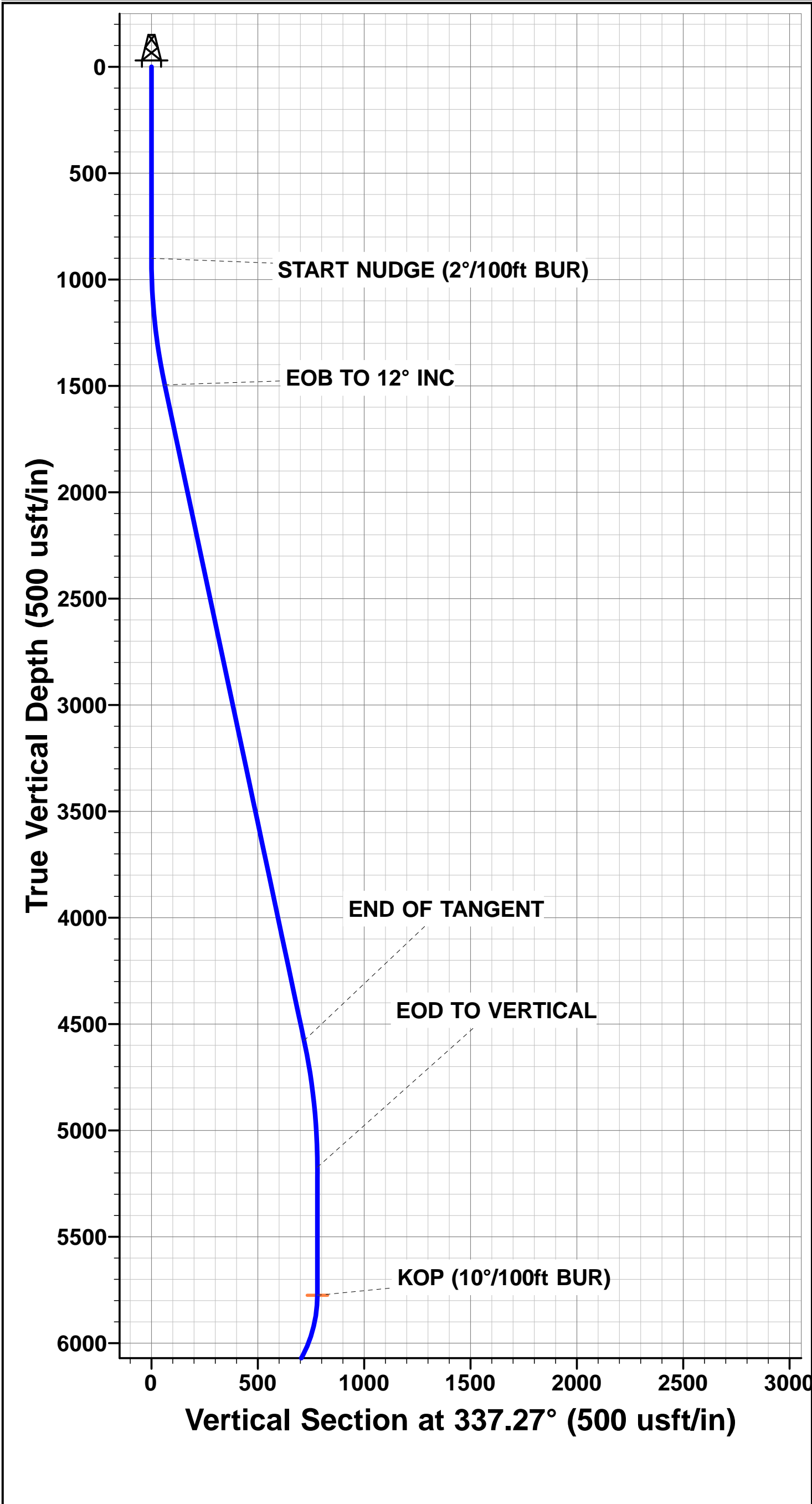


Project: WELD COUNTY, COLORADO (NAD 83)
Site: NE NE SEC. 30 T8N R60W 6th P.M.
Well: GADWALL FED 30-31-9HN
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

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: 749ft FNL & 2142ft FEL of Sec 30	
900.0	900.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)	
1495.5	1499.9	12.00	337.48	57.8	-24.0	-56.4	62.6	EOB TO 12° INC	
4577.6	4650.8	12.00	337.48	662.9	-274.8	-647.1	717.6	END OF TANGENT	
5173.1	5250.7	0.00	0.00	720.7	-298.8	-703.6	780.2	EOD TO VERTICAL	
5775.1	5852.7	0.00	0.00	720.7	-298.8	-703.6	780.2	KOP (10°/100ft BUR)	
6348.0	6752.6	90.00	181.15	147.9	-310.3	-131.0	1353.1	HZ LP: 600ft FNL & 2455ft FEL of Sec 30	
6348.0	16128.5	90.00	181.14	-9226.2	-497.8	9239.6	10729.0	BHL: 600ft FSL & 2455ft FEL of Sec 31	

PROPOSED LOCAL COORDINATES:
SHL: 749ft FNL & 2142ft FEL of Sec 30
HZ LP: 600ft FNL & 2455ft FEL of Sec 30
BHL: 600ft FSL & 2455ft FEL of Sec 31

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP: GADWALL FED 30-31-9HN	5775.1	720.7	-298.8	40.640410	-104.134172
HZ LP: GADWALL FED 30-31-9HN	6348.0	147.9	-310.3	40.638838	-104.134213
BHL: GADWALL FED 30-31-9HN	6348.0	-9226.2	-497.8	40.613108	-104.134888



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GADWALL FED 30-31-9HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4966.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4966.0usft (Original Well Elev)
Site:	NE NE SEC. 30 T8N R60W 6th P.M.	North Reference:	True
Well:	GADWALL FED 30-31-9HN	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	NE NE SEC. 30 T8N R60W 6th P.M.		
Site Position:		Northing:	1,478,346.58 usft
From:	Lat/Long	Easting:	3,379,143.09 usft
Position Uncertainty:	0.0 usft	Slot Radius:	1.10000 ft
		Latitude:	40.638440
		Longitude:	-104.133816
		Grid Convergence:	0.88 °

Well	GADWALL FED 30-31-9HN		
Well Position	+N/-S	-2.9 usft	Northing: 1,478,346.74 usft
	+E/-W	200.1 usft	Easting: 3,379,343.21 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	40.638432
		Longitude:	-104.133095
		Ground Level:	4,950.0 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	30/08/2017	7.87	67.14	52,556

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	183.09

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	-4,966.0	0.0	0.0	0.00	0.00	0.00	0.00	
900.0	0.00	0.00	900.0	-4,066.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,499.9	12.00	337.48	1,495.5	-3,470.5	57.8	-24.0	2.00	2.00	0.00	337.48	
4,650.8	12.00	337.48	4,577.6	-388.4	662.9	-274.8	0.00	0.00	0.00	0.00	
5,250.7	0.00	0.00	5,173.1	207.1	720.7	-298.8	2.00	-2.00	0.00	180.00	
5,852.7	0.00	0.00	5,775.1	809.1	720.7	-298.8	0.00	0.00	0.00	0.00	KOP: GADWALL FI
6,752.6	90.00	181.15	6,348.0	1,382.0	147.9	-310.3	10.00	10.00	-19.87	181.15	HZ LP: GADWALL
16,128.5	90.00	181.14	6,348.0	1,382.0	-9,226.2	-497.8	0.00	0.00	0.00	-66.08	BHL: GADWALL FE

Planning Report



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Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4966.0usft (Original Well Elev)
Site:	NE NE SEC. 30 T8N R60W 6th P.M.	North Reference:	True
Well:	GADWALL FED 30-31-9HN	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: 749ft FNL & 2142ft FEL of Sec 30										
0.0	0.00	0.00	0.0	4,966.00	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	4,866.00	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	4,766.00	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	4,666.00	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	4,566.00	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	4,466.00	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	4,366.00	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	4,266.00	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	4,166.00	0.0	0.0	0.0	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
900.0	0.00	0.00	900.0	4,066.00	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	2.00	337.48	1,000.0	3,966.02	1.6	-0.7	-1.6	2.00	2.00	0.00
1,100.0	4.00	337.48	1,099.8	3,866.16	6.4	-2.7	-6.3	2.00	2.00	0.00
1,200.0	6.00	337.48	1,199.5	3,766.55	14.5	-6.0	-14.2	2.00	2.00	0.00
1,300.0	8.00	337.48	1,298.7	3,667.30	25.8	-10.7	-25.1	2.00	2.00	0.00
1,400.0	10.00	337.48	1,397.5	3,568.53	40.2	-16.7	-39.2	2.00	2.00	0.00
EOB TO 12° INC										
1,499.9	12.00	337.48	1,495.5	3,470.47	57.8	-24.0	-56.4	2.00	2.00	0.00
1,500.0	12.00	337.48	1,495.6	3,470.38	57.8	-24.0	-56.5	0.45	0.45	0.00
FOX HILLS BASE										
1,549.5	12.00	337.48	1,544.0	3,422.00	67.3	-27.9	-65.7	0.00	0.00	0.00
1,600.0	12.00	337.48	1,593.4	3,372.56	77.0	-31.9	-75.2	0.00	0.00	0.00
1,700.0	12.00	337.48	1,691.3	3,274.75	96.2	-39.9	-93.9	0.00	0.00	0.00
1,800.0	12.00	337.48	1,789.1	3,176.93	115.4	-47.9	-112.7	0.00	0.00	0.00
1,900.0	12.00	337.48	1,886.9	3,079.12	134.6	-55.8	-131.4	0.00	0.00	0.00
2,000.0	12.00	337.48	1,984.7	2,981.30	153.8	-63.8	-150.2	0.00	0.00	0.00
2,100.0	12.00	337.48	2,082.5	2,883.48	173.1	-71.7	-168.9	0.00	0.00	0.00
2,200.0	12.00	337.48	2,180.3	2,785.67	192.3	-79.7	-187.7	0.00	0.00	0.00
2,300.0	12.00	337.48	2,278.1	2,687.85	211.5	-87.7	-206.4	0.00	0.00	0.00
2,400.0	12.00	337.48	2,376.0	2,590.04	230.7	-95.6	-225.2	0.00	0.00	0.00
2,500.0	12.00	337.48	2,473.8	2,492.22	249.9	-103.6	-243.9	0.00	0.00	0.00
2,600.0	12.00	337.48	2,571.6	2,394.41	269.1	-111.6	-262.7	0.00	0.00	0.00
2,700.0	12.00	337.48	2,669.4	2,296.59	288.3	-119.5	-281.4	0.00	0.00	0.00
2,800.0	12.00	337.48	2,767.2	2,198.78	307.5	-127.5	-300.2	0.00	0.00	0.00
2,900.0	12.00	337.48	2,865.0	2,100.96	326.7	-135.4	-318.9	0.00	0.00	0.00
3,000.0	12.00	337.48	2,962.9	2,003.15	345.9	-143.4	-337.7	0.00	0.00	0.00
3,100.0	12.00	337.48	3,060.7	1,905.33	365.1	-151.4	-356.4	0.00	0.00	0.00
3,200.0	12.00	337.48	3,158.5	1,807.52	384.3	-159.3	-375.1	0.00	0.00	0.00
3,300.0	12.00	337.48	3,256.3	1,709.70	403.5	-167.3	-393.9	0.00	0.00	0.00
3,400.0	12.00	337.48	3,354.1	1,611.89	422.7	-175.2	-412.6	0.00	0.00	0.00
RICHARD SNADSTONE										
3,444.9	12.00	337.48	3,398.0	1,568.00	431.3	-178.8	-421.1	0.00	0.00	0.00
3,500.0	12.00	337.48	3,451.9	1,514.07	441.9	-183.2	-431.4	0.00	0.00	0.00
PARKMAN SANDSTONE										
3,561.4	12.00	337.48	3,512.0	1,454.00	453.7	-188.1	-442.9	0.00	0.00	0.00
3,600.0	12.00	337.48	3,549.7	1,416.26	461.1	-191.2	-450.1	0.00	0.00	0.00
3,700.0	12.00	337.48	3,647.6	1,318.44	480.3	-199.1	-468.9	0.00	0.00	0.00
3,800.0	12.00	337.48	3,745.4	1,220.62	499.5	-207.1	-487.6	0.00	0.00	0.00
3,900.0	12.00	337.48	3,843.2	1,122.81	518.7	-215.1	-506.4	0.00	0.00	0.00
4,000.0	12.00	337.48	3,941.0	1,024.99	537.9	-223.0	-525.1	0.00	0.00	0.00
4,100.0	12.00	337.48	4,038.8	927.18	557.1	-231.0	-543.9	0.00	0.00	0.00
4,200.0	12.00	337.48	4,136.6	829.36	576.3	-238.9	-562.6	0.00	0.00	0.00

Planning Report



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Site:	NE NE SEC. 30 T8N R60W 6th P.M.	North Reference:	True
Well:	GADWALL FED 30-31-9HN	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	12.00	337.48	4,234.5	731.55	595.5	-246.9	-581.4	0.00	0.00	0.00
SUSSEX SANDSTONE										
4,325.1	12.00	337.48	4,259.0	707.00	600.3	-248.9	-586.1	0.00	0.00	0.00
4,400.0	12.00	337.48	4,332.3	633.73	614.7	-254.9	-600.1	0.00	0.00	0.00
4,500.0	12.00	337.48	4,430.1	535.92	633.9	-262.8	-618.9	0.00	0.00	0.00
4,600.0	12.00	337.48	4,527.9	438.10	653.1	-270.8	-637.6	0.00	0.00	0.00
END OF TANGENT										
4,650.8	12.00	337.48	4,577.6	388.41	662.9	-274.8	-647.1	0.00	0.00	0.00
4,700.0	11.01	337.48	4,625.8	340.20	672.0	-278.6	-656.0	2.00	-2.00	0.00
SHANNON SANDSTONE										
4,791.6	9.18	337.48	4,716.0	250.00	686.8	-284.7	-670.5	2.00	-2.00	0.00
4,800.0	9.01	337.48	4,724.3	241.73	688.0	-285.3	-671.7	2.00	-2.00	0.00
4,900.0	7.01	337.48	4,823.3	142.71	700.9	-290.6	-684.2	2.00	-2.00	0.00
5,000.0	5.01	337.48	4,922.7	43.27	710.6	-294.6	-693.7	2.00	-2.00	0.00
5,100.0	3.01	337.48	5,022.5	-56.48	717.0	-297.3	-700.0	2.00	-2.00	0.00
5,200.0	1.01	337.48	5,122.4	-156.42	720.3	-298.6	-703.2	2.00	-2.00	0.00
EOD TO VERTICAL										
5,250.7	0.00	0.00	5,173.1	-207.11	720.7	-298.8	-703.6	2.00	-2.00	0.00
5,300.0	0.00	0.00	5,222.4	-256.41	720.7	-298.8	-703.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,322.4	-356.41	720.7	-298.8	-703.6	0.00	0.00	0.00
5,500.0	0.00	0.00	5,422.4	-456.41	720.7	-298.8	-703.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,522.4	-556.41	720.7	-298.8	-703.6	0.00	0.00	0.00
5,700.0	0.00	0.00	5,622.4	-656.41	720.7	-298.8	-703.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,722.4	-756.41	720.7	-298.8	-703.6	0.00	0.00	0.00
KOP (10°/100ft BUR)										
5,852.7	0.00	0.00	5,775.1	-809.11	720.7	-298.8	-703.6	0.00	0.00	0.00
5,900.0	4.73	181.15	5,822.4	-856.36	718.7	-298.8	-701.6	10.00	10.00	0.00
6,000.0	14.73	181.15	5,920.8	-954.80	701.9	-299.2	-684.7	10.00	10.00	0.00
6,100.0	24.73	181.15	6,014.8	-1,048.80	668.2	-299.9	-651.0	10.00	10.00	0.00
6,200.0	34.73	181.15	6,101.5	-1,135.53	618.6	-300.8	-601.5	10.00	10.00	0.00
SHARON SPRINGS										
6,291.2	43.85	181.15	6,172.0	-1,206.00	561.0	-302.0	-543.9	10.00	10.00	0.00
6,300.0	44.74	181.15	6,178.3	-1,212.33	554.8	-302.1	-537.7	10.00	10.00	0.00
6,400.0	54.74	181.15	6,242.9	-1,276.88	478.6	-303.7	-461.5	10.00	10.00	0.00
NIOBRARA A CHALK										
6,409.0	55.63	181.15	6,248.0	-1,282.00	471.2	-303.8	-454.2	10.00	10.00	0.00
NIOBRARA A CHALK BASE										
6,462.3	60.97	181.15	6,276.0	-1,310.00	425.9	-304.7	-408.9	10.00	10.00	0.00
6,500.0	64.74	181.15	6,293.2	-1,327.21	392.4	-305.4	-375.3	10.00	10.00	0.00
NIOBRARA B1 CHALK TOP										
6,542.8	69.01	181.15	6,310.0	-1,344.00	353.0	-306.2	-336.0	10.00	10.00	0.00
NIOBRARA B1 CHALK BASE										
6,593.3	74.07	181.15	6,326.0	-1,360.00	305.1	-307.1	-288.1	10.00	10.00	0.00
6,600.0	74.74	181.15	6,327.8	-1,361.80	298.7	-307.3	-281.7	10.00	10.00	0.00
6,700.0	84.74	181.15	6,345.6	-1,379.59	200.4	-309.2	-183.5	10.00	10.00	0.00
HZ LP: 600ft FNL & 2455ft FEL of Sec 30 - NIOBRARA B2 CHALK TOP										
6,752.6	90.00	181.15	6,348.0	-1,382.00	147.9	-310.3	-131.0	10.00	10.00	0.00
6,800.0	90.00	181.15	6,348.0	-1,382.00	100.5	-311.2	-83.6	0.00	0.00	0.00
6,900.0	90.00	181.15	6,348.0	-1,382.00	0.5	-313.2	16.3	0.00	0.00	0.00
7,000.0	90.00	181.15	6,348.0	-1,382.00	-99.4	-315.2	116.3	0.00	0.00	0.00
7,100.0	90.00	181.15	6,348.0	-1,382.01	-199.4	-317.2	216.2	0.00	0.00	0.00
7,200.0	90.00	181.15	6,348.0	-1,382.01	-299.4	-319.3	316.2	0.00	0.00	0.00
7,300.0	90.00	181.15	6,348.0	-1,382.01	-399.4	-321.3	416.1	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GADWALL FED 30-31-9HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4966.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4966.0usft (Original Well Elev)
Site:	NE NE SEC. 30 T8N R60W 6th P.M.	North Reference:	True
Well:	GADWALL FED 30-31-9HN	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)
7,400.0	90.00	181.15	6,348.0	-1,382.01	-499.4	-323.3	516.1	0.00	0.00	0.00
7,500.0	90.00	181.15	6,348.0	-1,382.01	-599.3	-325.3	616.0	0.00	0.00	0.00
7,600.0	90.00	181.15	6,348.0	-1,382.02	-699.3	-327.3	715.9	0.00	0.00	0.00
7,700.0	90.00	181.15	6,348.0	-1,382.02	-799.3	-329.3	815.9	0.00	0.00	0.00
7,800.0	90.00	181.15	6,348.0	-1,382.02	-899.3	-331.3	915.8	0.00	0.00	0.00
7,900.0	90.00	181.15	6,348.0	-1,382.02	-999.3	-333.3	1,015.8	0.00	0.00	0.00
8,000.0	90.00	181.15	6,348.0	-1,382.02	-1,099.2	-335.3	1,115.7	0.00	0.00	0.00
8,100.0	90.00	181.15	6,348.0	-1,382.02	-1,199.2	-337.3	1,215.6	0.00	0.00	0.00
8,200.0	90.00	181.15	6,348.0	-1,382.02	-1,299.2	-339.3	1,315.6	0.00	0.00	0.00
8,300.0	90.00	181.15	6,348.0	-1,382.03	-1,399.2	-341.3	1,415.5	0.00	0.00	0.00
8,400.0	90.00	181.15	6,348.0	-1,382.03	-1,499.2	-343.3	1,515.5	0.00	0.00	0.00
8,500.0	90.00	181.15	6,348.0	-1,382.03	-1,599.1	-345.3	1,615.4	0.00	0.00	0.00
8,600.0	90.00	181.15	6,348.0	-1,382.03	-1,699.1	-347.3	1,715.4	0.00	0.00	0.00
8,700.0	90.00	181.15	6,348.0	-1,382.03	-1,799.1	-349.3	1,815.3	0.00	0.00	0.00
8,800.0	90.00	181.15	6,348.0	-1,382.03	-1,899.1	-351.3	1,915.2	0.00	0.00	0.00
8,900.0	90.00	181.15	6,348.0	-1,382.03	-1,999.1	-353.3	2,015.2	0.00	0.00	0.00
9,000.0	90.00	181.15	6,348.0	-1,382.03	-2,099.0	-355.3	2,115.1	0.00	0.00	0.00
9,100.0	90.00	181.15	6,348.0	-1,382.04	-2,199.0	-357.3	2,215.1	0.00	0.00	0.00
9,200.0	90.00	181.15	6,348.0	-1,382.04	-2,299.0	-359.3	2,315.0	0.00	0.00	0.00
9,300.0	90.00	181.15	6,348.0	-1,382.04	-2,399.0	-361.3	2,415.0	0.00	0.00	0.00
9,400.0	90.00	181.15	6,348.0	-1,382.04	-2,499.0	-363.3	2,514.9	0.00	0.00	0.00
9,500.0	90.00	181.15	6,348.0	-1,382.04	-2,598.9	-365.3	2,614.8	0.00	0.00	0.00
9,600.0	90.00	181.15	6,348.0	-1,382.04	-2,698.9	-367.3	2,714.8	0.00	0.00	0.00
9,700.0	90.00	181.15	6,348.0	-1,382.04	-2,798.9	-369.3	2,814.7	0.00	0.00	0.00
9,800.0	90.00	181.15	6,348.0	-1,382.04	-2,898.9	-371.3	2,914.7	0.00	0.00	0.00
9,900.0	90.00	181.15	6,348.0	-1,382.04	-2,998.9	-373.3	3,014.6	0.00	0.00	0.00
10,000.0	90.00	181.15	6,348.0	-1,382.04	-3,098.8	-375.3	3,114.6	0.00	0.00	0.00
10,100.0	90.00	181.15	6,348.0	-1,382.04	-3,198.8	-377.3	3,214.5	0.00	0.00	0.00
10,200.0	90.00	181.15	6,348.0	-1,382.04	-3,298.8	-379.3	3,314.4	0.00	0.00	0.00
10,300.0	90.00	181.15	6,348.0	-1,382.04	-3,398.8	-381.3	3,414.4	0.00	0.00	0.00
10,400.0	90.00	181.15	6,348.0	-1,382.04	-3,498.8	-383.3	3,514.3	0.00	0.00	0.00
10,500.0	90.00	181.15	6,348.0	-1,382.04	-3,598.7	-385.3	3,614.3	0.00	0.00	0.00
10,600.0	90.00	181.15	6,348.0	-1,382.05	-3,698.7	-387.3	3,714.2	0.00	0.00	0.00
10,700.0	90.00	181.15	6,348.0	-1,382.05	-3,798.7	-389.3	3,814.2	0.00	0.00	0.00
10,800.0	90.00	181.15	6,348.0	-1,382.05	-3,898.7	-391.3	3,914.1	0.00	0.00	0.00
10,900.0	90.00	181.15	6,348.0	-1,382.05	-3,998.7	-393.3	4,014.0	0.00	0.00	0.00
11,000.0	90.00	181.15	6,348.0	-1,382.05	-4,098.6	-395.3	4,114.0	0.00	0.00	0.00
11,100.0	90.00	181.15	6,348.0	-1,382.05	-4,198.6	-397.3	4,213.9	0.00	0.00	0.00
11,200.0	90.00	181.15	6,348.0	-1,382.05	-4,298.6	-399.3	4,313.9	0.00	0.00	0.00
11,300.0	90.00	181.15	6,348.0	-1,382.05	-4,398.6	-401.3	4,413.8	0.00	0.00	0.00
11,400.0	90.00	181.15	6,348.0	-1,382.05	-4,498.6	-403.3	4,513.8	0.00	0.00	0.00
11,500.0	90.00	181.15	6,348.0	-1,382.05	-4,598.5	-405.3	4,613.7	0.00	0.00	0.00
11,600.0	90.00	181.15	6,348.0	-1,382.05	-4,698.5	-407.3	4,713.6	0.00	0.00	0.00
11,700.0	90.00	181.15	6,348.0	-1,382.05	-4,798.5	-409.3	4,813.6	0.00	0.00	0.00
11,800.0	90.00	181.15	6,348.0	-1,382.05	-4,898.5	-411.3	4,913.5	0.00	0.00	0.00
11,900.0	90.00	181.15	6,348.0	-1,382.05	-4,998.5	-413.3	5,013.5	0.00	0.00	0.00
12,000.0	90.00	181.15	6,348.0	-1,382.05	-5,098.4	-415.3	5,113.4	0.00	0.00	0.00
12,100.0	90.00	181.15	6,348.0	-1,382.05	-5,198.4	-417.3	5,213.4	0.00	0.00	0.00
12,200.0	90.00	181.15	6,348.0	-1,382.05	-5,298.4	-419.3	5,313.3	0.00	0.00	0.00
12,300.0	90.00	181.15	6,348.0	-1,382.05	-5,398.4	-421.3	5,413.2	0.00	0.00	0.00
12,400.0	90.00	181.15	6,348.0	-1,382.04	-5,498.4	-423.3	5,513.2	0.00	0.00	0.00
12,500.0	90.00	181.15	6,348.0	-1,382.04	-5,598.3	-425.3	5,613.1	0.00	0.00	0.00
12,600.0	90.00	181.15	6,348.0	-1,382.04	-5,698.3	-427.3	5,713.1	0.00	0.00	0.00
12,700.0	90.00	181.15	6,348.0	-1,382.04	-5,798.3	-429.3	5,813.0	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GADWALL FED 30-31-9HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4966.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4966.0usft (Original Well Elev)
Site:	NE NE SEC. 30 T8N R60W 6th P.M.	North Reference:	True
Well:	GADWALL FED 30-31-9HN	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)
12,800.0	90.00	181.15	6,348.0	-1,382.04	-5,898.3	-431.3	5,913.0	0.00	0.00	0.00
12,900.0	90.00	181.15	6,348.0	-1,382.04	-5,998.3	-433.3	6,012.9	0.00	0.00	0.00
13,000.0	90.00	181.15	6,348.0	-1,382.04	-6,098.2	-435.3	6,112.8	0.00	0.00	0.00
13,100.0	90.00	181.15	6,348.0	-1,382.04	-6,198.2	-437.3	6,212.8	0.00	0.00	0.00
13,200.0	90.00	181.15	6,348.0	-1,382.04	-6,298.2	-439.3	6,312.7	0.00	0.00	0.00
13,300.0	90.00	181.15	6,348.0	-1,382.04	-6,398.2	-441.3	6,412.7	0.00	0.00	0.00
13,400.0	90.00	181.14	6,348.0	-1,382.04	-6,498.2	-443.3	6,512.6	0.00	0.00	0.00
13,500.0	90.00	181.14	6,348.0	-1,382.04	-6,598.1	-445.3	6,612.5	0.00	0.00	0.00
13,600.0	90.00	181.14	6,348.0	-1,382.04	-6,698.1	-447.3	6,712.5	0.00	0.00	0.00
13,700.0	90.00	181.14	6,348.0	-1,382.04	-6,798.1	-449.3	6,812.4	0.00	0.00	0.00
13,800.0	90.00	181.14	6,348.0	-1,382.03	-6,898.1	-451.3	6,912.4	0.00	0.00	0.00
13,900.0	90.00	181.14	6,348.0	-1,382.03	-6,998.1	-453.3	7,012.3	0.00	0.00	0.00
14,000.0	90.00	181.14	6,348.0	-1,382.03	-7,098.0	-455.3	7,112.3	0.00	0.00	0.00
14,100.0	90.00	181.14	6,348.0	-1,382.03	-7,198.0	-457.3	7,212.2	0.00	0.00	0.00
14,200.0	90.00	181.14	6,348.0	-1,382.03	-7,298.0	-459.3	7,312.1	0.00	0.00	0.00
14,300.0	90.00	181.14	6,348.0	-1,382.03	-7,398.0	-461.3	7,412.1	0.00	0.00	0.00
14,400.0	90.00	181.14	6,348.0	-1,382.03	-7,498.0	-463.3	7,512.0	0.00	0.00	0.00
14,500.0	90.00	181.14	6,348.0	-1,382.03	-7,597.9	-465.3	7,612.0	0.00	0.00	0.00
14,600.0	90.00	181.14	6,348.0	-1,382.03	-7,697.9	-467.3	7,711.9	0.00	0.00	0.00
14,700.0	90.00	181.14	6,348.0	-1,382.02	-7,797.9	-469.3	7,811.9	0.00	0.00	0.00
14,800.0	90.00	181.14	6,348.0	-1,382.02	-7,897.9	-471.3	7,911.8	0.00	0.00	0.00
14,900.0	90.00	181.14	6,348.0	-1,382.02	-7,997.9	-473.3	8,011.7	0.00	0.00	0.00
15,000.0	90.00	181.14	6,348.0	-1,382.02	-8,097.8	-475.3	8,111.7	0.00	0.00	0.00
15,100.0	90.00	181.14	6,348.0	-1,382.02	-8,197.8	-477.3	8,211.6	0.00	0.00	0.00
15,200.0	90.00	181.14	6,348.0	-1,382.02	-8,297.8	-479.3	8,311.6	0.00	0.00	0.00
15,300.0	90.00	181.14	6,348.0	-1,382.02	-8,397.8	-481.3	8,411.5	0.00	0.00	0.00
15,400.0	90.00	181.14	6,348.0	-1,382.01	-8,497.8	-483.3	8,511.5	0.00	0.00	0.00
15,500.0	90.00	181.14	6,348.0	-1,382.01	-8,597.7	-485.3	8,611.4	0.00	0.00	0.00
15,600.0	90.00	181.14	6,348.0	-1,382.01	-8,697.7	-487.3	8,711.3	0.00	0.00	0.00
15,700.0	90.00	181.14	6,348.0	-1,382.01	-8,797.7	-489.3	8,811.3	0.00	0.00	0.00
15,800.0	90.00	181.14	6,348.0	-1,382.01	-8,897.7	-491.3	8,911.2	0.00	0.00	0.00
15,900.0	90.00	181.14	6,348.0	-1,382.00	-8,997.7	-493.2	9,011.2	0.00	0.00	0.00
16,000.0	90.00	181.14	6,348.0	-1,382.00	-9,097.6	-495.2	9,111.1	0.00	0.00	0.00
16,100.0	90.00	181.14	6,348.0	-1,382.00	-9,197.6	-497.2	9,211.1	0.00	0.00	0.00
BHL: 600ft FSL & 2455ft FEL of Sec 31										
16,128.5	90.00	181.14	6,348.0	-1,382.00	-9,226.2	-497.8	9,239.6	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GADWALL FED 30-31-9HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4966.0usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4966.0usft (Original Well Elev)
Site:	NE NE SEC. 30 T8N R60W 6th P.M.	North Reference:	True
Well:	GADWALL FED 30-31-9HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Formations					
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,549.5	1,544.0	FOX HILLS BASE			
3,444.9	3,398.0	RICHARD SNADSTONE			
3,561.4	3,512.0	PARKMAN SANDSTONE			
4,325.1	4,259.0	SUSSEX SANDSTONE			
4,791.6	4,716.0	SHANNON SANDSTONE			
6,291.2	6,172.0	SHARON SPRINGS			
6,409.0	6,248.0	NIOBRARA A CHALK			
6,462.3	6,276.0	NIOBRARA A CHALK BASE			
6,542.8	6,310.0	NIOBRARA B1 CHALK TOP			
6,593.3	6,326.0	NIOBRARA B1 CHALK BASE			
6,752.6	6,348.0	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: 749ft FNL & 2142ft FEL of Sec 30
900.0	900.0	0.0	0.0	START NUDGE (2°/100ft BUR)
1,499.9	1,495.5	57.8	-24.0	EOB TO 12° INC
4,650.8	4,577.6	662.9	-274.8	END OF TANGENT
5,250.7	5,173.1	720.7	-298.8	EOD TO VERTICAL
5,852.7	5,775.1	720.7	-298.8	KOP (10°/100ft BUR)
6,752.6	6,348.0	147.9	-310.3	HZ LP: 600ft FNL & 2455ft FEL of Sec 30
16,128.5	6,348.0	-9,226.2	-497.8	BHL: 600ft FSL & 2455ft FEL of Sec 31