

# **MALLARD EXPLORATION**

**WELD COUNTY, COLORADO (NAD 83)**

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

**GADWALL 30-31-8HN**

**ORIGINAL WELLBORE**

**31 August, 2017**

**Plan: PROPOSAL #1**





Project: WELD COUNTY, COLORADO (NAD 83)  
Site: NE NE SEC. 30 T8N R60W 6th P.M.  
Well: GADWALL 30-31-8HN  
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: 748ft FNL & 2167ft FEL of Sec 30	
800.0	800.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)	
1434.0	1439.3	12.79	318.49	53.2	-47.1	-49.0	71.0	EOB TO 12.79° INC	
5041.0	5138.0	12.79	318.49	666.2	-589.5	-614.0	889.6	END OF TANGENT	
5675.0	5777.3	0.00	0.00	719.4	-636.6	-663.1	960.6	EOD TO VERTICAL	
5775.0	5877.3	0.00	0.00	719.4	-636.6	-663.1	960.6	KOP (10°/100ft BUR)	
6348.0	6777.4	90.00	180.84	146.5	-645.0	-91.5	1533.6	HZ LP: 600ft FNL & 2455ft FWL of Sec 30	
6348.0	16151.7	90.00	180.84	-9226.9	-782.1	9260.0	10908.0	BHL: 600ft FSL & 2455ft FWL of Sec 31	

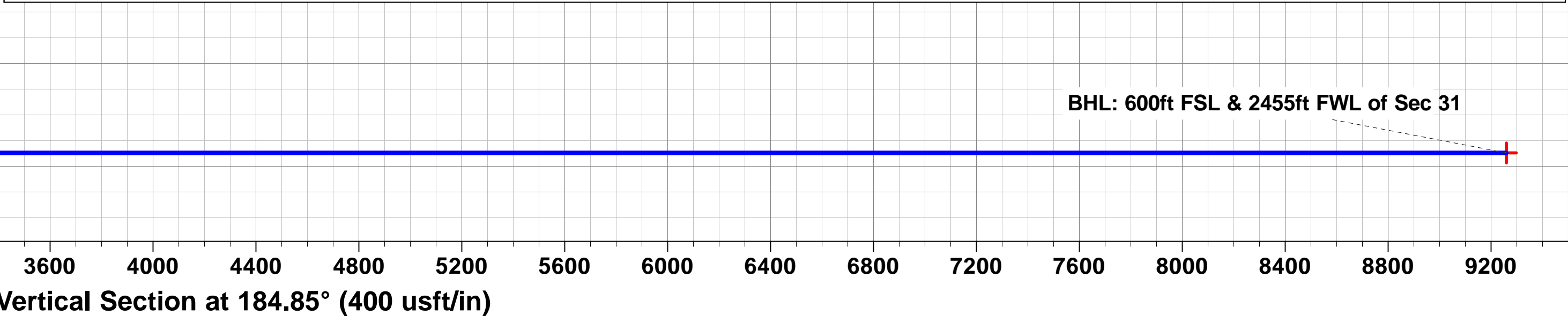
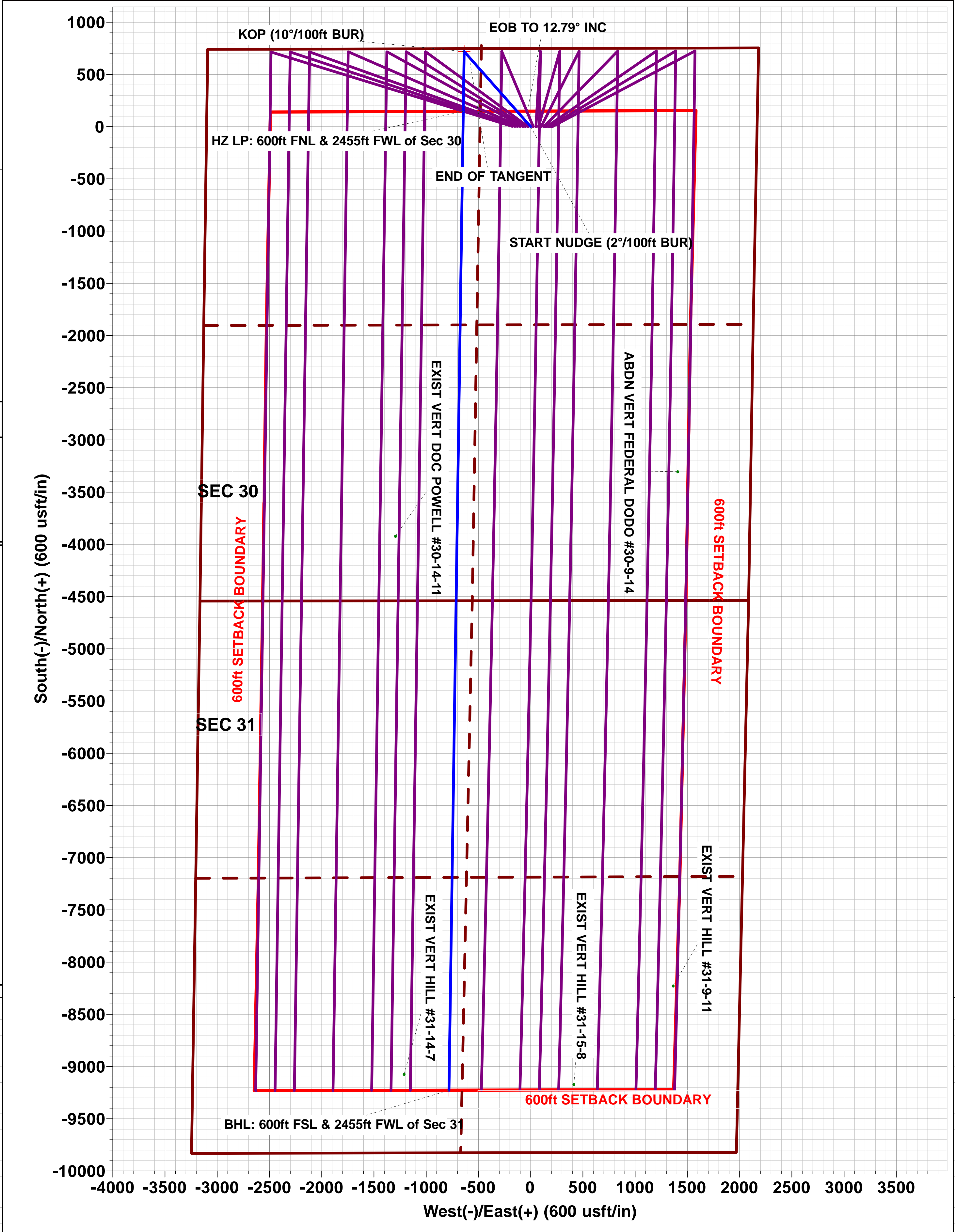
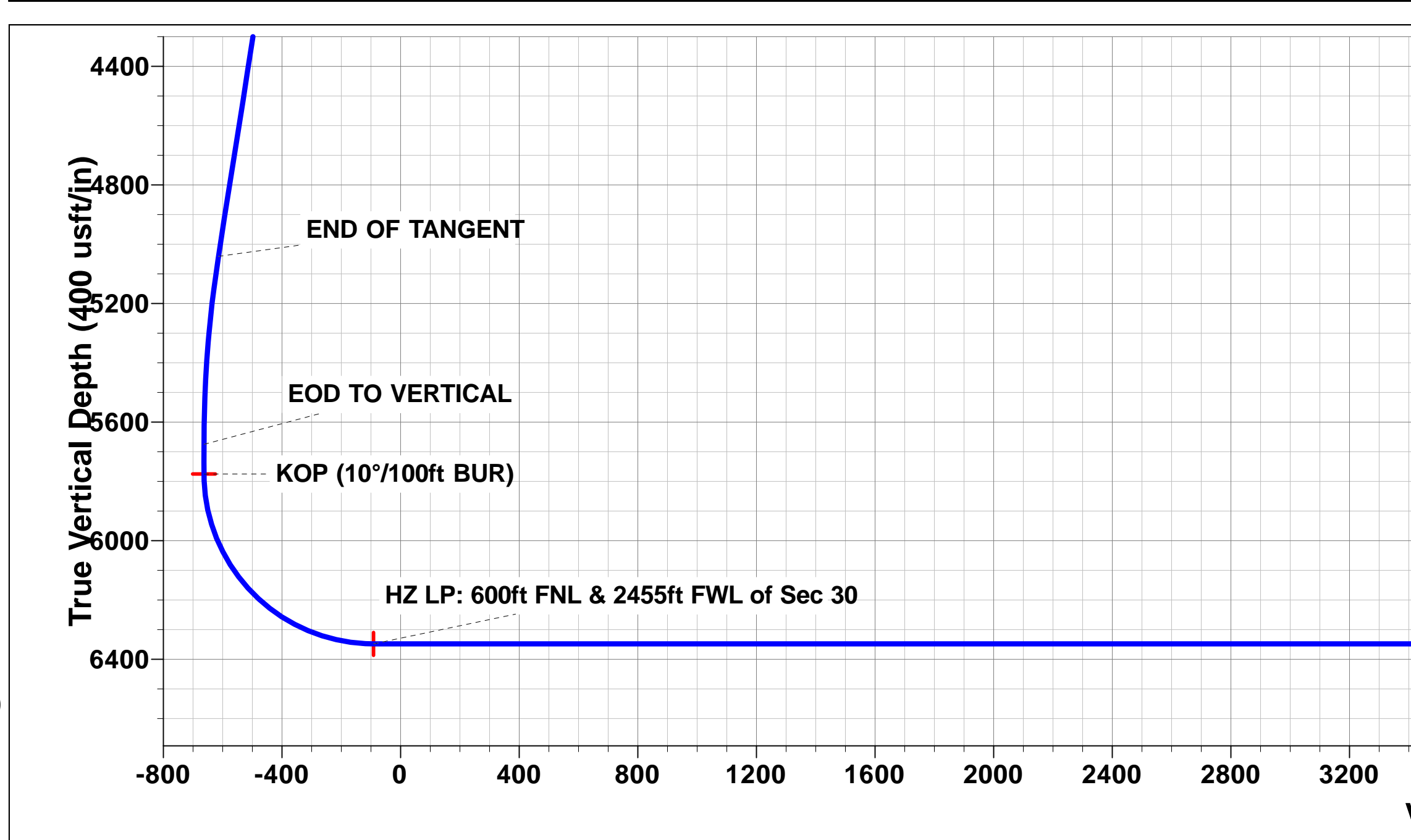
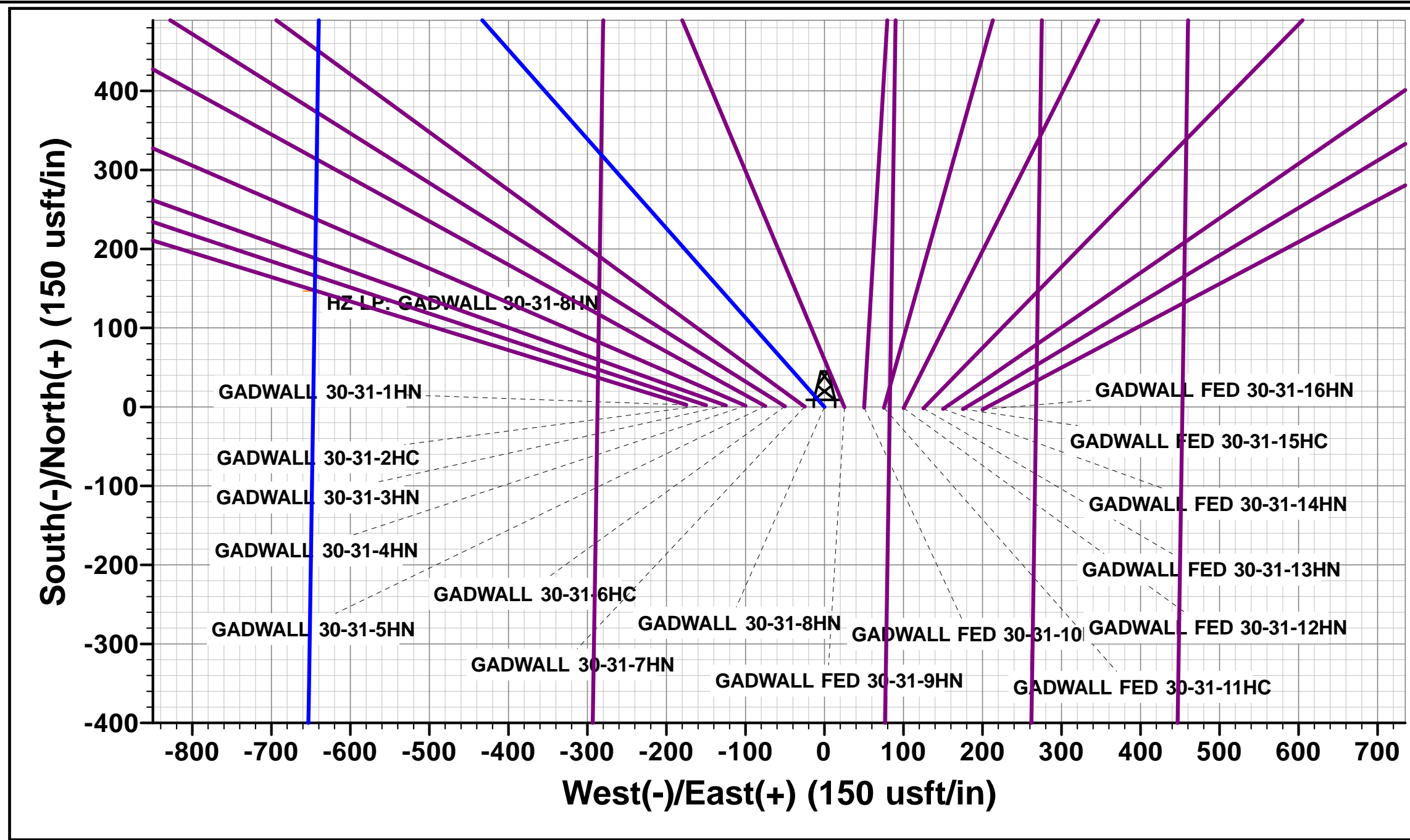
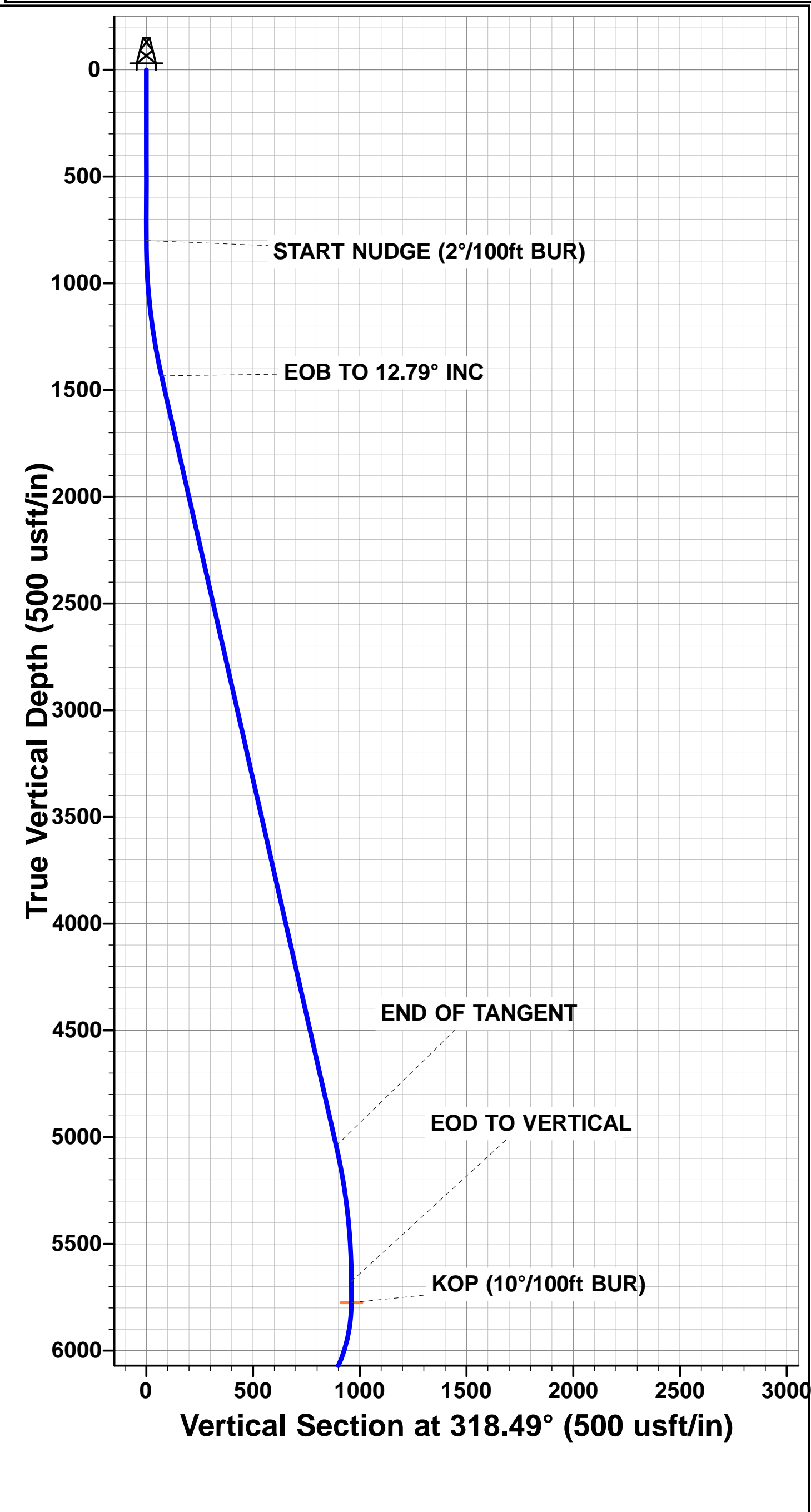
PROPOSED LOCAL COORDINATES:

SHL: 748ft FNL & 2167ft FEL of Sec 30

HZ LP: 600ft FNL & 2455ft FWL of Sec 30

BHL: 600ft FSL & 2455ft FWL of Sec 31

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP: GADWALL 30-31-8HN	5775.0	719.4	-636.6	40.640408	-104.135480
HZ LP: GADWALL 30-31-8HN	6348.0	146.5	-645.0	40.638835	-104.135510
BHL: GADWALL 30-31-8HN	6348.0	-9226.9	-782.1	40.613107	-104.136003



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well GADWALL 30-31-8HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4966.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4966.0usft (Original Well Elev)
<b>Site:</b>	NE NE SEC. 30 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	GADWALL 30-31-8HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

<b>Project</b>	WELD COUNTY, COLORADO (NAD 83)		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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	Latitude:	40.638440
From:	Lat/Long	Easting:	3,379,143.09 usft	Longitude:	-104.133816
Position Uncertainty:	0.0 usft	Slot Radius:	1.10000 ft	Grid Convergence:	0.88 °

Well	GADWALL 30-31-8HN					
Well Position	+N/-S	-2.6 usft	Northing:	1,478,346.72 usft	Latitude:	40.638433
	+E/-W	174.8 usft	Easting:	3,379,317.95 usft	Longitude:	-104.133186
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,950.0 usft

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

<b>Design</b>	PROPOSAL #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	184.85

<b>Plan Sections</b>											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	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	
800.0	0.00	0.00	800.0	-4,166.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,439.3	12.79	318.49	1,434.0	-3,532.0	53.2	-47.1	2.00	2.00	0.00	318.49	
5,138.0	12.79	318.49	5,041.0	75.0	666.2	-589.5	0.00	0.00	0.00	0.00	
5,777.3	0.00	0.00	5,675.0	709.0	719.4	-636.6	2.00	-2.00	0.00	180.00	
5,877.3	0.00	0.00	5,775.0	809.0	719.4	-636.6	0.00	0.00	0.00	0.00	KOP: GADWALL 30-3
6,777.4	90.00	180.84	6,348.0	1,382.0	146.5	-645.0	10.00	10.00	-19.91	180.84	HZ LP: GADWALL 30
16,151.7	90.00	180.84	6,348.0	1,382.0	-9,226.9	-782.1	0.00	0.00	0.00	-33.73	BHL: GADWALL 30-3

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well GADWALL 30-31-8HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4966.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4966.0usft (Original Well Elev)
<b>Site:</b>	NE NE SEC. 30 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	GADWALL 30-31-8HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)
<b>SHL: 748ft FNL &amp; 2167ft FEL of Sec 30</b>										
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
<b>START NUDGE (2°/100ft BUR)</b>										
800.0	0.00	0.00	800.0	4,166.00	0.0	0.0	0.0	0.00	0.00	0.00
900.0	2.00	318.49	900.0	4,066.02	1.3	-1.2	-1.2	2.00	2.00	0.00
1,000.0	4.00	318.49	999.8	3,966.16	5.2	-4.6	-4.8	2.00	2.00	0.00
1,100.0	6.00	318.49	1,099.5	3,866.55	11.8	-10.4	-10.8	2.00	2.00	0.00
1,200.0	8.00	318.49	1,198.7	3,767.30	20.9	-18.5	-19.2	2.00	2.00	0.00
1,300.0	10.00	318.49	1,297.5	3,668.53	32.6	-28.8	-30.0	2.00	2.00	0.00
1,400.0	12.00	318.49	1,395.6	3,570.38	46.9	-41.5	-43.2	2.00	2.00	0.00
<b>EOB TO 12.79° INC</b>										
1,439.3	12.79	318.49	1,434.0	3,532.00	53.2	-47.1	-49.0	2.00	2.00	0.00
1,500.0	12.79	318.49	1,493.2	3,472.80	63.3	-56.0	-58.3	0.00	0.00	0.00
<b>FOX HILLS BASE</b>										
1,552.1	12.79	318.49	1,544.0	3,422.00	71.9	-63.6	-66.3	0.00	0.00	0.00
1,600.0	12.79	318.49	1,590.7	3,375.28	79.8	-70.6	-73.6	0.00	0.00	0.00
1,700.0	12.79	318.49	1,688.2	3,277.76	96.4	-85.3	-88.9	0.00	0.00	0.00
1,800.0	12.79	318.49	1,785.8	3,180.24	113.0	-100.0	-104.1	0.00	0.00	0.00
1,900.0	12.79	318.49	1,883.3	3,082.72	129.6	-114.6	-119.4	0.00	0.00	0.00
2,000.0	12.79	318.49	1,980.8	2,985.20	146.1	-129.3	-134.7	0.00	0.00	0.00
2,100.0	12.79	318.49	2,078.3	2,887.68	162.7	-144.0	-150.0	0.00	0.00	0.00
2,200.0	12.79	318.49	2,175.8	2,790.16	179.3	-158.6	-165.2	0.00	0.00	0.00
2,300.0	12.79	318.49	2,273.4	2,692.63	195.8	-173.3	-180.5	0.00	0.00	0.00
2,400.0	12.79	318.49	2,370.9	2,595.11	212.4	-188.0	-195.8	0.00	0.00	0.00
2,500.0	12.79	318.49	2,468.4	2,497.59	229.0	-202.6	-211.1	0.00	0.00	0.00
2,600.0	12.79	318.49	2,565.9	2,400.07	245.6	-217.3	-226.3	0.00	0.00	0.00
2,700.0	12.79	318.49	2,663.4	2,302.55	262.1	-232.0	-241.6	0.00	0.00	0.00
2,800.0	12.79	318.49	2,761.0	2,205.03	278.7	-246.6	-256.9	0.00	0.00	0.00
2,900.0	12.79	318.49	2,858.5	2,107.51	295.3	-261.3	-272.2	0.00	0.00	0.00
3,000.0	12.79	318.49	2,956.0	2,009.99	311.9	-276.0	-287.4	0.00	0.00	0.00
3,100.0	12.79	318.49	3,053.5	1,912.47	328.4	-290.6	-302.7	0.00	0.00	0.00
3,200.0	12.79	318.49	3,151.0	1,814.95	345.0	-305.3	-318.0	0.00	0.00	0.00
3,300.0	12.79	318.49	3,248.6	1,717.43	361.6	-320.0	-333.3	0.00	0.00	0.00
3,400.0	12.79	318.49	3,346.1	1,619.91	378.2	-334.6	-348.5	0.00	0.00	0.00
<b>RICHARD SNADSTONE</b>										
3,453.2	12.79	318.49	3,398.0	1,568.00	387.0	-342.4	-356.7	0.00	0.00	0.00
3,500.0	12.79	318.49	3,443.6	1,522.39	394.7	-349.3	-363.8	0.00	0.00	0.00
<b>PARKMAN SANDSTONE</b>										
3,570.1	12.79	318.49	3,512.0	1,454.00	406.4	-359.6	-374.5	0.00	0.00	0.00
3,600.0	12.79	318.49	3,541.1	1,424.87	411.3	-364.0	-379.1	0.00	0.00	0.00
3,700.0	12.79	318.49	3,638.7	1,327.35	427.9	-378.6	-394.4	0.00	0.00	0.00
3,800.0	12.79	318.49	3,736.2	1,229.83	444.4	-393.3	-409.6	0.00	0.00	0.00
3,900.0	12.79	318.49	3,833.7	1,132.31	461.0	-408.0	-424.9	0.00	0.00	0.00
4,000.0	12.79	318.49	3,931.2	1,034.79	477.6	-422.6	-440.2	0.00	0.00	0.00
4,100.0	12.79	318.49	4,028.7	937.27	494.2	-437.3	-455.5	0.00	0.00	0.00
4,200.0	12.79	318.49	4,126.3	839.75	510.7	-452.0	-470.7	0.00	0.00	0.00



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well GADWALL 30-31-8HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4966.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4966.0usft (Original Well Elev)
<b>Site:</b>	NE NE SEC. 30 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	GADWALL 30-31-8HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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	12.79	318.49	4,223.8	742.23	527.3	-466.6	-486.0	0.00	0.00	0.00
<b>SUSSEX SANDSTONE</b>										
4,336.1	12.79	318.49	4,259.0	707.00	533.3	-471.9	-491.5	0.00	0.00	0.00
4,400.0	12.79	318.49	4,321.3	644.71	543.9	-481.3	-501.3	0.00	0.00	0.00
4,500.0	12.79	318.49	4,418.8	547.19	560.5	-496.0	-516.6	0.00	0.00	0.00
4,600.0	12.79	318.49	4,516.3	449.67	577.0	-510.6	-531.8	0.00	0.00	0.00
4,700.0	12.79	318.49	4,613.9	352.14	593.6	-525.3	-547.1	0.00	0.00	0.00
4,800.0	12.79	318.49	4,711.4	254.62	610.2	-540.0	-562.4	0.00	0.00	0.00
<b>SHANNON SANDSTONE</b>										
4,804.7	12.79	318.49	4,716.0	250.00	611.0	-540.6	-563.1	0.00	0.00	0.00
4,900.0	12.79	318.49	4,808.9	157.10	626.8	-554.6	-577.7	0.00	0.00	0.00
5,000.0	12.79	318.49	4,906.4	59.58	643.3	-569.3	-592.9	0.00	0.00	0.00
5,100.0	12.79	318.49	5,003.9	-37.94	659.9	-584.0	-608.2	0.00	0.00	0.00
<b>END OF TANGENT</b>										
5,138.0	12.79	318.49	5,041.0	-75.00	666.2	-589.5	-614.0	0.00	0.00	0.00
5,200.0	11.55	318.49	5,101.6	-135.60	676.0	-598.2	-623.0	2.00	-2.00	0.00
5,300.0	9.55	318.49	5,199.9	-233.91	689.7	-610.3	-635.7	2.00	-2.00	0.00
5,400.0	7.55	318.49	5,298.8	-332.79	700.8	-620.2	-645.9	2.00	-2.00	0.00
5,500.0	5.55	318.49	5,398.1	-432.13	709.4	-627.7	-653.8	2.00	-2.00	0.00
5,600.0	3.55	318.49	5,497.8	-531.81	715.3	-633.0	-659.3	2.00	-2.00	0.00
5,700.0	1.55	318.49	5,597.7	-631.71	718.6	-635.9	-662.3	2.00	-2.00	0.00
<b>EOD TO VERTICAL</b>										
5,777.3	0.00	0.00	5,675.0	-709.00	719.4	-636.6	-663.1	2.00	-2.00	0.00
5,800.0	0.00	0.00	5,697.7	-731.70	719.4	-636.6	-663.1	0.00	0.00	0.00
<b>KOP (10°/100ft BUR)</b>										
5,877.3	0.00	0.00	5,775.0	-809.00	719.4	-636.6	-663.1	0.00	0.00	0.00
5,900.0	2.27	180.84	5,797.7	-831.70	719.0	-636.6	-662.6	10.00	10.00	0.00
6,000.0	12.27	180.84	5,896.8	-930.77	706.3	-636.8	-650.0	10.00	10.00	0.00
6,100.0	22.27	180.84	5,992.1	-1,026.14	676.7	-637.2	-620.4	10.00	10.00	0.00
6,200.0	32.27	180.84	6,080.9	-1,114.91	630.9	-637.9	-574.8	10.00	10.00	0.00
6,300.0	42.27	180.84	6,160.4	-1,194.39	570.4	-638.8	-514.5	10.00	10.00	0.00
<b>SHARON SPRINGS</b>										
6,315.9	43.86	180.84	6,172.0	-1,206.00	559.6	-638.9	-503.6	10.00	10.00	0.00
6,400.0	52.27	180.84	6,228.2	-1,262.17	497.1	-639.9	-441.3	10.00	10.00	0.00
<b>NIOBRARA A CHALK</b>										
6,433.7	55.64	180.84	6,248.0	-1,282.00	469.8	-640.3	-414.1	10.00	10.00	0.00
<b>NIOBRARA A CHALK BASE</b>										
6,487.0	60.97	180.84	6,276.0	-1,310.00	424.5	-640.9	-368.9	10.00	10.00	0.00
6,500.0	62.27	180.84	6,282.2	-1,316.17	413.1	-641.1	-357.5	10.00	10.00	0.00
<b>NIOBRARA B1 CHALK TOP</b>										
6,567.5	69.02	180.84	6,310.0	-1,344.00	351.6	-642.0	-296.2	10.00	10.00	0.00
6,600.0	72.26	180.84	6,320.8	-1,354.77	321.0	-642.4	-265.6	10.00	10.00	0.00
<b>NIOBRARA B1 CHALK BASE</b>										
6,618.1	74.07	180.84	6,326.0	-1,360.00	303.7	-642.7	-248.3	10.00	10.00	0.00
6,700.0	82.26	180.84	6,342.8	-1,376.79	223.6	-643.9	-168.4	10.00	10.00	0.00
<b>HZ LP: 600ft FNL &amp; 2455ft FWL of Sec 30 - NIOBRARA B2 CHALK TOP</b>										
6,777.4	90.00	180.84	6,348.0	-1,382.00	146.5	-645.0	-91.5	10.00	10.00	0.00
6,800.0	90.00	180.84	6,348.0	-1,382.00	123.8	-645.3	-68.9	0.00	0.00	0.00
6,900.0	90.00	180.84	6,348.0	-1,382.00	23.8	-646.8	30.9	0.00	0.00	0.00
7,000.0	90.00	180.84	6,348.0	-1,382.01	-76.2	-648.3	130.6	0.00	0.00	0.00
7,100.0	90.00	180.84	6,348.0	-1,382.01	-176.1	-649.7	230.4	0.00	0.00	0.00
7,200.0	90.00	180.84	6,348.0	-1,382.01	-276.1	-651.2	330.1	0.00	0.00	0.00
7,300.0	90.00	180.84	6,348.0	-1,382.01	-376.1	-652.6	429.9	0.00	0.00	0.00

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well GADWALL 30-31-8HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4966.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4966.0usft (Original Well Elev)
<b>Site:</b>	NE NE SEC. 30 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	GADWALL 30-31-8HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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	180.84	6,348.0	-1,382.01	-476.1	-654.1	529.7	0.00	0.00	0.00
7,500.0	90.00	180.84	6,348.0	-1,382.02	-576.1	-655.6	629.4	0.00	0.00	0.00
7,600.0	90.00	180.84	6,348.0	-1,382.02	-676.1	-657.0	729.2	0.00	0.00	0.00
7,700.0	90.00	180.84	6,348.0	-1,382.02	-776.1	-658.5	828.9	0.00	0.00	0.00
7,800.0	90.00	180.84	6,348.0	-1,382.02	-876.1	-660.0	928.7	0.00	0.00	0.00
7,900.0	90.00	180.84	6,348.0	-1,382.02	-976.1	-661.4	1,028.4	0.00	0.00	0.00
8,000.0	90.00	180.84	6,348.0	-1,382.03	-1,076.0	-662.9	1,128.2	0.00	0.00	0.00
8,100.0	90.00	180.84	6,348.0	-1,382.03	-1,176.0	-664.4	1,227.9	0.00	0.00	0.00
8,200.0	90.00	180.84	6,348.0	-1,382.03	-1,276.0	-665.8	1,327.7	0.00	0.00	0.00
8,300.0	90.00	180.84	6,348.0	-1,382.03	-1,376.0	-667.3	1,427.5	0.00	0.00	0.00
8,400.0	90.00	180.84	6,348.0	-1,382.03	-1,476.0	-668.7	1,527.2	0.00	0.00	0.00
8,500.0	90.00	180.84	6,348.0	-1,382.04	-1,576.0	-670.2	1,627.0	0.00	0.00	0.00
8,600.0	90.00	180.84	6,348.0	-1,382.04	-1,676.0	-671.7	1,726.7	0.00	0.00	0.00
8,700.0	90.00	180.84	6,348.0	-1,382.04	-1,776.0	-673.1	1,826.5	0.00	0.00	0.00
8,800.0	90.00	180.84	6,348.0	-1,382.04	-1,876.0	-674.6	1,926.2	0.00	0.00	0.00
8,900.0	90.00	180.84	6,348.0	-1,382.04	-1,975.9	-676.1	2,026.0	0.00	0.00	0.00
9,000.0	90.00	180.84	6,348.0	-1,382.04	-2,075.9	-677.5	2,125.7	0.00	0.00	0.00
9,100.0	90.00	180.84	6,348.0	-1,382.04	-2,175.9	-679.0	2,225.5	0.00	0.00	0.00
9,200.0	90.00	180.84	6,348.0	-1,382.04	-2,275.9	-680.5	2,325.3	0.00	0.00	0.00
9,300.0	90.00	180.84	6,348.0	-1,382.05	-2,375.9	-681.9	2,425.0	0.00	0.00	0.00
9,400.0	90.00	180.84	6,348.0	-1,382.05	-2,475.9	-683.4	2,524.8	0.00	0.00	0.00
9,500.0	90.00	180.84	6,348.0	-1,382.05	-2,575.9	-684.8	2,624.5	0.00	0.00	0.00
9,600.0	90.00	180.84	6,348.0	-1,382.05	-2,675.9	-686.3	2,724.3	0.00	0.00	0.00
9,700.0	90.00	180.84	6,348.1	-1,382.05	-2,775.9	-687.8	2,824.0	0.00	0.00	0.00
9,800.0	90.00	180.84	6,348.1	-1,382.05	-2,875.9	-689.2	2,923.8	0.00	0.00	0.00
9,900.0	90.00	180.84	6,348.1	-1,382.05	-2,975.8	-690.7	3,023.5	0.00	0.00	0.00
10,000.0	90.00	180.84	6,348.1	-1,382.05	-3,075.8	-692.2	3,123.3	0.00	0.00	0.00
10,100.0	90.00	180.84	6,348.1	-1,382.05	-3,175.8	-693.6	3,223.1	0.00	0.00	0.00
10,200.0	90.00	180.84	6,348.1	-1,382.05	-3,275.8	-695.1	3,322.8	0.00	0.00	0.00
10,300.0	90.00	180.84	6,348.1	-1,382.05	-3,375.8	-696.6	3,422.6	0.00	0.00	0.00
10,400.0	90.00	180.84	6,348.1	-1,382.06	-3,475.8	-698.0	3,522.3	0.00	0.00	0.00
10,500.0	90.00	180.84	6,348.1	-1,382.06	-3,575.8	-699.5	3,622.1	0.00	0.00	0.00
10,600.0	90.00	180.84	6,348.1	-1,382.06	-3,675.8	-700.9	3,721.8	0.00	0.00	0.00
10,700.0	90.00	180.84	6,348.1	-1,382.06	-3,775.8	-702.4	3,821.6	0.00	0.00	0.00
10,800.0	90.00	180.84	6,348.1	-1,382.06	-3,875.7	-703.9	3,921.3	0.00	0.00	0.00
10,900.0	90.00	180.84	6,348.1	-1,382.06	-3,975.7	-705.3	4,021.1	0.00	0.00	0.00
11,000.0	90.00	180.84	6,348.1	-1,382.06	-4,075.7	-706.8	4,120.9	0.00	0.00	0.00
11,100.0	90.00	180.84	6,348.1	-1,382.06	-4,175.7	-708.3	4,220.6	0.00	0.00	0.00
11,200.0	90.00	180.84	6,348.1	-1,382.06	-4,275.7	-709.7	4,320.4	0.00	0.00	0.00
11,300.0	90.00	180.84	6,348.1	-1,382.06	-4,375.7	-711.2	4,420.1	0.00	0.00	0.00
11,400.0	90.00	180.84	6,348.1	-1,382.06	-4,475.7	-712.6	4,519.9	0.00	0.00	0.00
11,500.0	90.00	180.84	6,348.1	-1,382.06	-4,575.7	-714.1	4,619.6	0.00	0.00	0.00
11,600.0	90.00	180.84	6,348.1	-1,382.06	-4,675.7	-715.6	4,719.4	0.00	0.00	0.00
11,700.0	90.00	180.84	6,348.1	-1,382.06	-4,775.6	-717.0	4,819.1	0.00	0.00	0.00
11,800.0	90.00	180.84	6,348.1	-1,382.06	-4,875.6	-718.5	4,918.9	0.00	0.00	0.00
11,900.0	90.00	180.84	6,348.1	-1,382.06	-4,975.6	-720.0	5,018.7	0.00	0.00	0.00
12,000.0	90.00	180.84	6,348.1	-1,382.06	-5,075.6	-721.4	5,118.4	0.00	0.00	0.00
12,100.0	90.00	180.84	6,348.1	-1,382.06	-5,175.6	-722.9	5,218.2	0.00	0.00	0.00
12,200.0	90.00	180.84	6,348.1	-1,382.06	-5,275.6	-724.3	5,317.9	0.00	0.00	0.00
12,300.0	90.00	180.84	6,348.1	-1,382.06	-5,375.6	-725.8	5,417.7	0.00	0.00	0.00
12,400.0	90.00	180.84	6,348.1	-1,382.06	-5,475.6	-727.3	5,517.4	0.00	0.00	0.00
12,500.0	90.00	180.84	6,348.1	-1,382.06	-5,575.6	-728.7	5,617.2	0.00	0.00	0.00
12,600.0	90.00	180.84	6,348.1	-1,382.05	-5,675.6	-730.2	5,716.9	0.00	0.00	0.00
12,700.0	90.00	180.84	6,348.1	-1,382.05	-5,775.5	-731.7	5,816.7	0.00	0.00	0.00

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well GADWALL 30-31-8HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4966.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4966.0usft (Original Well Elev)
<b>Site:</b>	NE NE SEC. 30 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	GADWALL 30-31-8HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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	180.84	6,348.1	-1,382.05	-5,875.5	-733.1	5,916.5	0.00	0.00	0.00
12,900.0	90.00	180.84	6,348.1	-1,382.05	-5,975.5	-734.6	6,016.2	0.00	0.00	0.00
13,000.0	90.00	180.84	6,348.1	-1,382.05	-6,075.5	-736.0	6,116.0	0.00	0.00	0.00
13,100.0	90.00	180.84	6,348.1	-1,382.05	-6,175.5	-737.5	6,215.7	0.00	0.00	0.00
13,200.0	90.00	180.84	6,348.1	-1,382.05	-6,275.5	-739.0	6,315.5	0.00	0.00	0.00
13,300.0	90.00	180.84	6,348.0	-1,382.05	-6,375.5	-740.4	6,415.2	0.00	0.00	0.00
13,400.0	90.00	180.84	6,348.0	-1,382.05	-6,475.5	-741.9	6,515.0	0.00	0.00	0.00
13,500.0	90.00	180.84	6,348.0	-1,382.05	-6,575.5	-743.4	6,614.7	0.00	0.00	0.00
13,600.0	90.00	180.84	6,348.0	-1,382.05	-6,675.4	-744.8	6,714.5	0.00	0.00	0.00
13,700.0	90.00	180.84	6,348.0	-1,382.05	-6,775.4	-746.3	6,814.3	0.00	0.00	0.00
13,800.0	90.00	180.84	6,348.0	-1,382.04	-6,875.4	-747.7	6,914.0	0.00	0.00	0.00
13,900.0	90.00	180.84	6,348.0	-1,382.04	-6,975.4	-749.2	7,013.8	0.00	0.00	0.00
14,000.0	90.00	180.84	6,348.0	-1,382.04	-7,075.4	-750.7	7,113.5	0.00	0.00	0.00
14,100.0	90.00	180.84	6,348.0	-1,382.04	-7,175.4	-752.1	7,213.3	0.00	0.00	0.00
14,200.0	90.00	180.84	6,348.0	-1,382.04	-7,275.4	-753.6	7,313.0	0.00	0.00	0.00
14,300.0	90.00	180.84	6,348.0	-1,382.04	-7,375.4	-755.1	7,412.8	0.00	0.00	0.00
14,400.0	90.00	180.84	6,348.0	-1,382.04	-7,475.4	-756.5	7,512.5	0.00	0.00	0.00
14,500.0	90.00	180.84	6,348.0	-1,382.03	-7,575.3	-758.0	7,612.3	0.00	0.00	0.00
14,600.0	90.00	180.84	6,348.0	-1,382.03	-7,675.3	-759.4	7,712.1	0.00	0.00	0.00
14,700.0	90.00	180.84	6,348.0	-1,382.03	-7,775.3	-760.9	7,811.8	0.00	0.00	0.00
14,800.0	90.00	180.84	6,348.0	-1,382.03	-7,875.3	-762.4	7,911.6	0.00	0.00	0.00
14,900.0	90.00	180.84	6,348.0	-1,382.03	-7,975.3	-763.8	8,011.3	0.00	0.00	0.00
15,000.0	90.00	180.84	6,348.0	-1,382.03	-8,075.3	-765.3	8,111.1	0.00	0.00	0.00
15,100.0	90.00	180.84	6,348.0	-1,382.02	-8,175.3	-766.7	8,210.8	0.00	0.00	0.00
15,200.0	90.00	180.84	6,348.0	-1,382.02	-8,275.3	-768.2	8,310.6	0.00	0.00	0.00
15,300.0	90.00	180.84	6,348.0	-1,382.02	-8,375.3	-769.7	8,410.3	0.00	0.00	0.00
15,400.0	90.00	180.84	6,348.0	-1,382.02	-8,475.3	-771.1	8,510.1	0.00	0.00	0.00
15,500.0	90.00	180.84	6,348.0	-1,382.02	-8,575.2	-772.6	8,609.9	0.00	0.00	0.00
15,600.0	90.00	180.84	6,348.0	-1,382.01	-8,675.2	-774.1	8,709.6	0.00	0.00	0.00
15,700.0	90.00	180.84	6,348.0	-1,382.01	-8,775.2	-775.5	8,809.4	0.00	0.00	0.00
15,800.0	90.00	180.84	6,348.0	-1,382.01	-8,875.2	-777.0	8,909.1	0.00	0.00	0.00
15,900.0	90.00	180.84	6,348.0	-1,382.01	-8,975.2	-778.4	9,008.9	0.00	0.00	0.00
16,000.0	90.00	180.84	6,348.0	-1,382.00	-9,075.2	-779.9	9,108.6	0.00	0.00	0.00
16,100.0	90.00	180.84	6,348.0	-1,382.00	-9,175.2	-781.4	9,208.4	0.00	0.00	0.00
<b>BHL: 600ft FSL &amp; 2455ft FWL of Sec 31</b>										
<b>16,151.7</b>	<b>90.00</b>	<b>180.84</b>	<b>6,348.0</b>	<b>-1,382.00</b>	<b>-9,226.9</b>	<b>-782.1</b>	<b>9,260.0</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well GADWALL 30-31-8HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 4966.0usft (Original Well Elev)
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 4966.0usft (Original Well Elev)
<b>Site:</b>	NE NE SEC. 30 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	GADWALL 30-31-8HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

Formations					
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,552.1	1,544.0	FOX HILLS BASE			
3,453.2	3,398.0	RICHARD SNADSTONE			
3,570.1	3,512.0	PARKMAN SANDSTONE			
4,336.1	4,259.0	SUSSEX SANDSTONE			
4,804.7	4,716.0	SHANNON SANDSTONE			
6,315.9	6,172.0	SHARON SPRINGS			
6,433.7	6,248.0	NIOBRARA A CHALK			
6,487.0	6,276.0	NIOBRARA A CHALK BASE			
6,567.5	6,310.0	NIOBRARA B1 CHALK TOP			
6,618.1	6,326.0	NIOBRARA B1 CHALK BASE			
6,777.4	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: 748ft FNL & 2167ft FEL of Sec 30
800.0	800.0	0.0	0.0	START NUDGE (2°/100ft BUR)
1,439.3	1,434.0	53.2	-47.1	EOB TO 12.79° INC
5,138.0	5,041.0	666.2	-589.5	END OF TANGENT
5,777.3	5,675.0	719.4	-636.6	EOD TO VERTICAL
5,877.3	5,775.0	719.4	-636.6	KOP (10°/100ft BUR)
6,777.4	6,348.0	146.5	-645.0	HZ LP: 600ft FNL & 2455ft FWL of Sec 30
16,151.7	6,348.0	-9,226.9	-782.1	BHL: 600ft FSL & 2455ft FWL of Sec 31