

# **BISON EXPLORATION**

**ARAPAHOE COUNTY, COLORADO (NAD 83)  
NW SW SEC. 14 T5S R64W 6th P.M.  
DTH 5-64 14B-13-1**

**ORIGINAL WELLBORE**

**25 July, 2017**

**Plan: PROPOSAL #1**



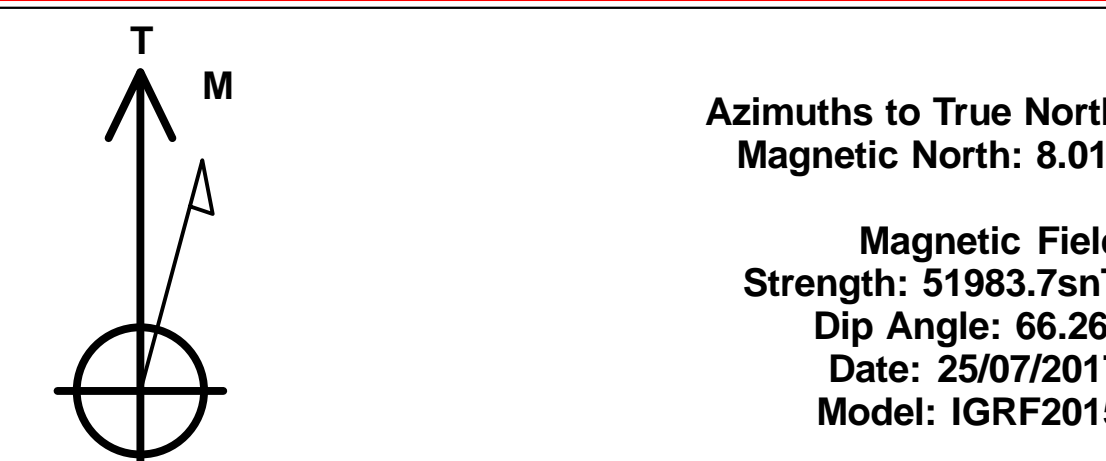
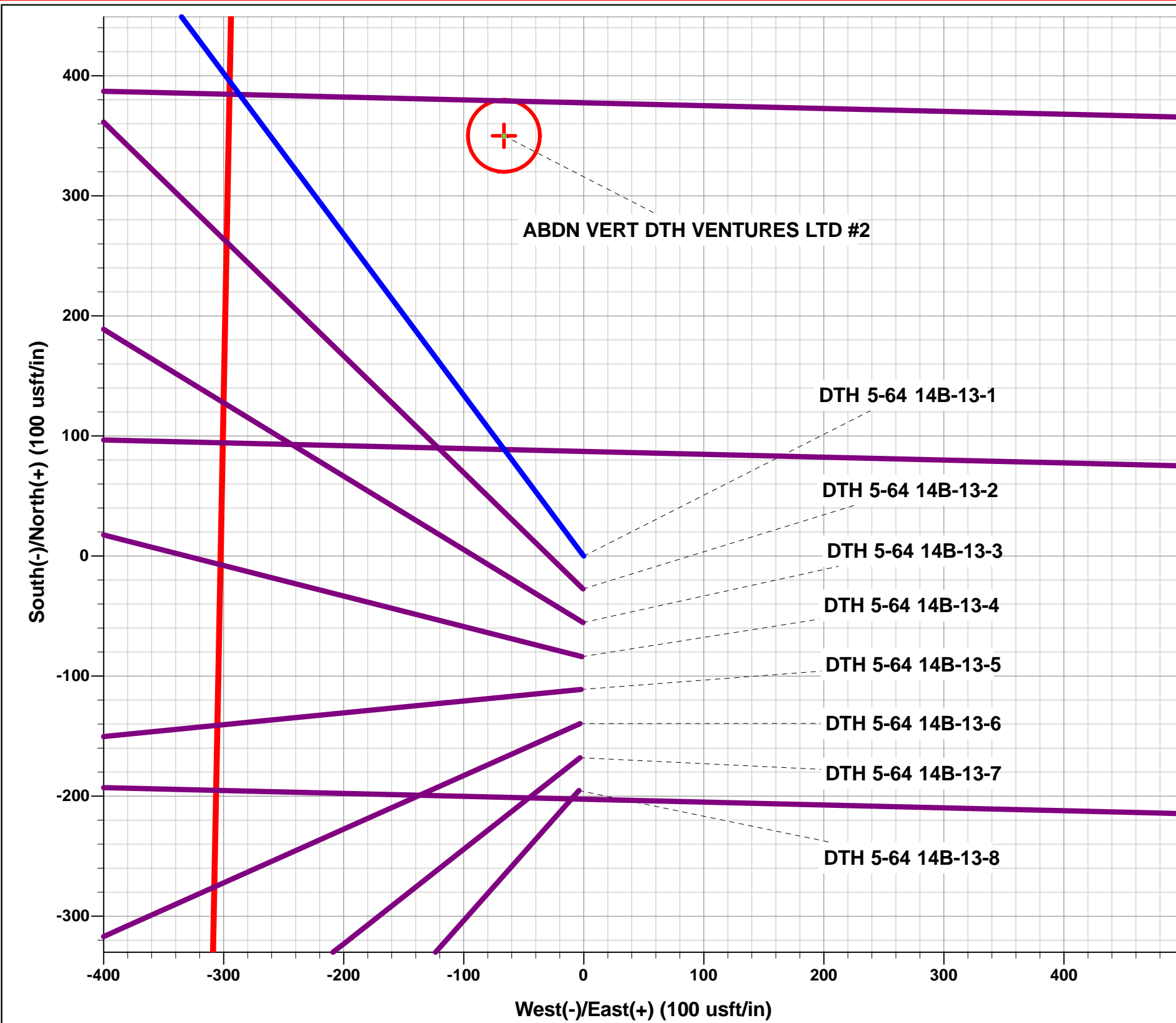
Project: ARAPAHOE COUNTY, COLORADO (NAD 83)  
Site: NW SW SEC. 14 T5S R64W 6th P.M.  
Well: DTH 5-64 14B-13-1  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL #1

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: 1561ft FSL & 760ft FWL of Sec 14
100.0	100.0	0.00	0.00	0.0	0.0	0.0	0.0	START NUDGE (2°/100ft BUR)
695.7	700.1	12.00	323.28	50.2	-37.4	-33.4	62.6	EOB TO 12° INC
5823.0	5942.0	12.00	323.28	923.9	-689.2	-615.1	1152.6	END OF TANGENT
6418.7	6542.0	0.00	0.00	974.1	-726.6	-648.5	1215.2	EOD TO VERTICAL
7031.7	7155.0	0.00	0.00	974.1	-726.6	-648.5	1215.2	KOP (10°/100ft BUR)
7590.2	7926.0	77.10	91.36	963.5	-281.7	-205.8	1660.4	BPI: 2519ft FSL & 460ft FWL of Sec 14
7604.7	8055.0	90.00	91.36	960.5	-153.8	-78.5	1788.2	HZ LP: 2516ft FSL & 587.9ft FWL of Sec 14
7604.7	17596.3	90.00	91.37	733.5	9384.8	9413.4	11329.5	BHL: 2505ft FSL & 460ft FEL of Sec 13

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - DTH 5-64 14B-13-1	7031.7	974.1	-726.6	39.615168	-104.529371
BHL - DTH 5-64 14B-13-1	7604.7	733.5	9384.8	39.614503	-104.493481
BPI - DTH 5-64 14B-13-1	7590.2	963.5	-281.7	39.615139	-104.527792
HZ LP - DTH 5-64 14B-13-1	7604.7	960.5	-153.8	39.615131	-104.527338

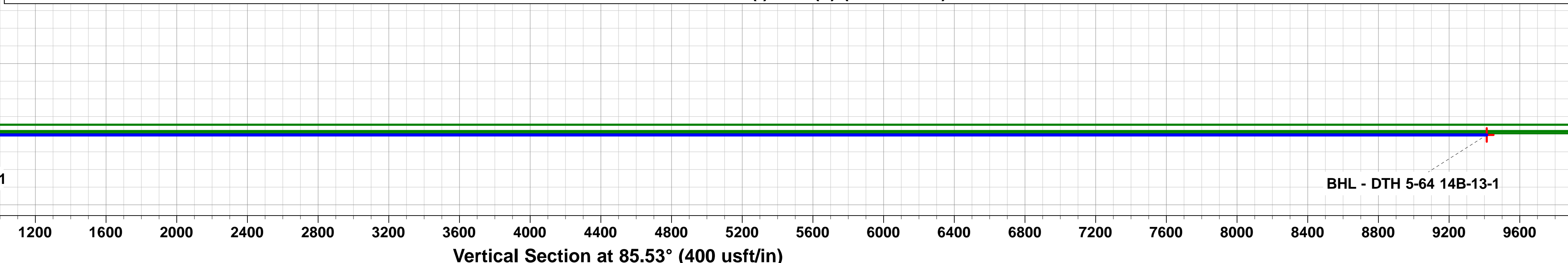
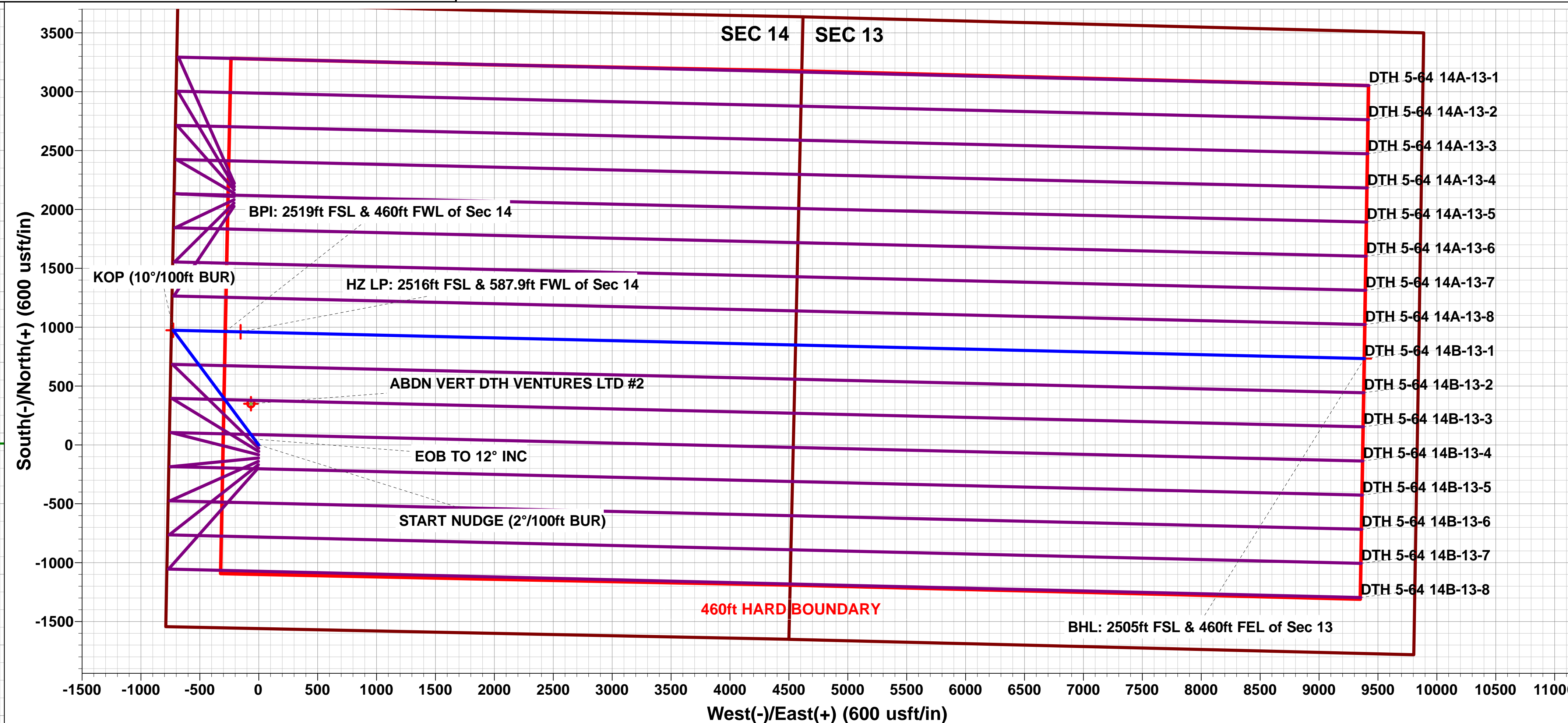
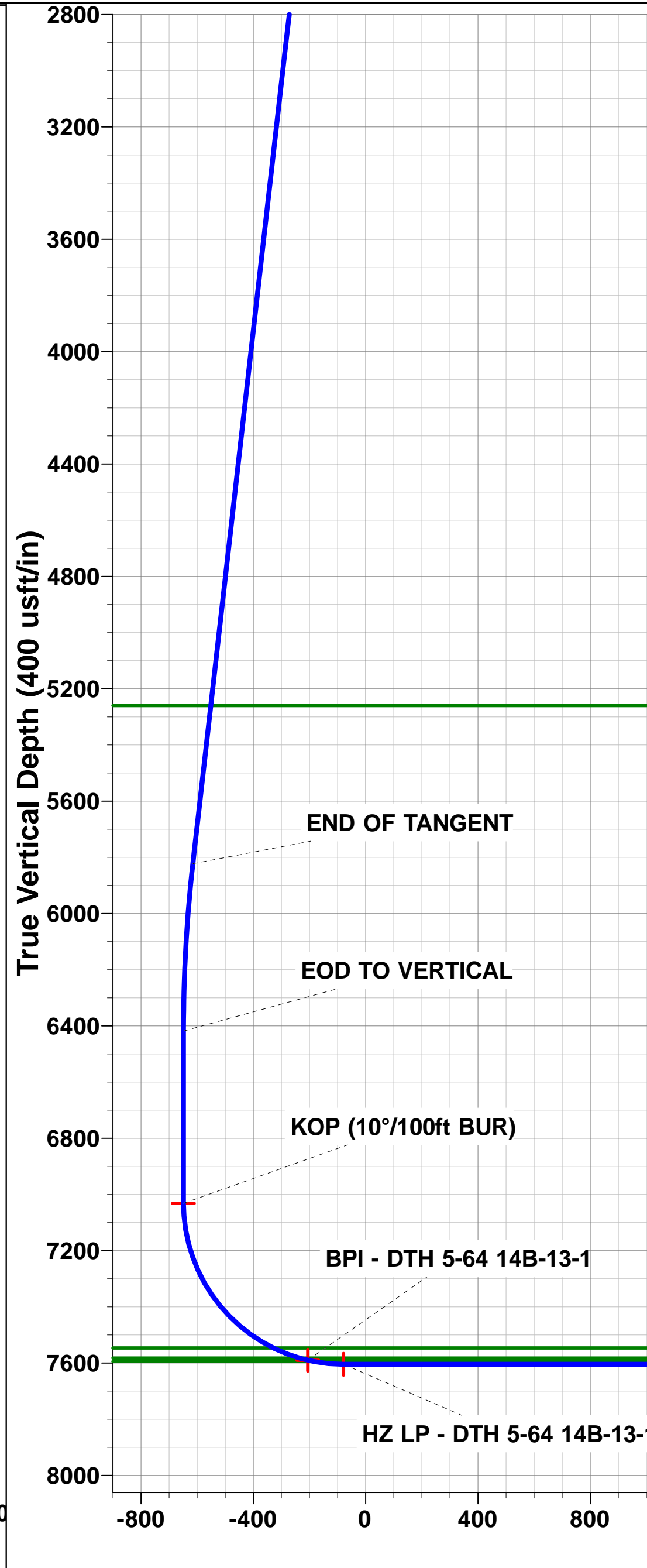
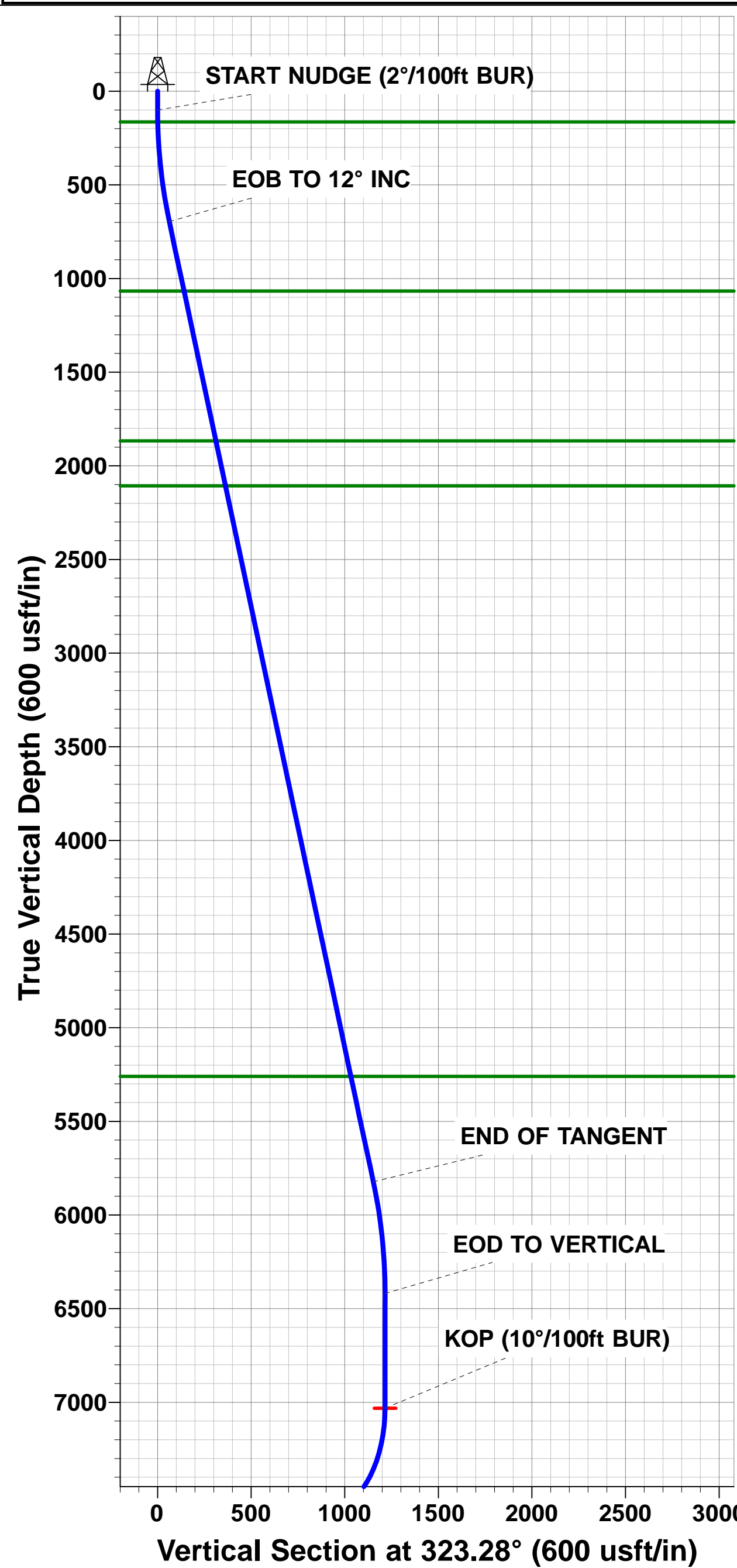


FORMATION TOP DETAILS

TVDPath	MDPath	Formation
163.7	163.7	DENVER
1066.7	1079.4	UPPER ARAPAHOE
1866.7	1897.2	LARAMIE - FOX HILLS
2106.7	2142.6	P SHALE (BASE FOX HILLS)
5259.7	5366.1	SHANNON SANDSTONE MBR
7546.7	7795.1	SHARON SPRINGS SHALE
7582.7	7895.9	NIOBARA FORMATION
7594.7	7948.1	NIOBARA A CHALK

PROPOSED LOCAL COORDINATES:

SHL: 1561ft FSL & 760ft FWL of Sec 14  
BEGIN PROD INT: 2519ft FSL & 460ft FWL of Sec 14  
HZ LP: 2516ft FSL & 587.9ft FWL of Sec 14  
BHL: 2505ft FSL & 460ft FEL of Sec 13



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well DTH 5-64 14B-13-1
<b>Company:</b>	BISON EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 5997.7usft (Original Well Elev)
<b>Project:</b>	ARAPAHOE COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 5997.7usft (Original Well Elev)
<b>Site:</b>	NW SW SEC. 14 T5S R64W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	DTH 5-64 14B-13-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

<b>Project</b>	ARAPAHOE 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 Central Zone		Using geodetic scale factor

<b>Site</b>	NW SW SEC. 14 T5S R64W 6th P.M.		
<b>Site Position:</b>		<b>Northing:</b>	1,649,447.95 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,274,179.95 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	1.10000ft
		<b>Latitude:</b>	39.612494
		<b>Longitude:</b>	-104.526792
		<b>Grid Convergence:</b>	0.61 °

<b>Well</b>	DTH 5-64 14B-13-1		
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b> 1,649,447.95 usft
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b> 3,274,179.95 usft
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	usft
		<b>Latitude:</b>	39.612494
		<b>Longitude:</b>	-104.526792
		<b>Ground Level:</b>	5,972.7 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	25/07/2017	8.01	66.26	51,984

<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>
	7,604.7	0.0	0.0	85.53

<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	-5,997.7	0.0	0.0	0.00	0.00	0.00	0.00	
100.0	0.00	0.00	100.0	-5,897.7	0.0	0.0	0.00	0.00	0.00	0.00	
700.1	12.00	323.28	695.7	-5,302.0	50.2	-37.4	2.00	2.00	0.00	323.28	
5,942.0	12.00	323.28	5,823.0	-174.7	923.9	-689.2	0.00	0.00	0.00	0.00	
6,542.0	0.00	0.00	6,418.7	421.0	974.1	-726.6	2.00	-2.00	0.00	180.00	
7,155.0	0.00	0.00	7,031.7	1,034.0	974.1	-726.6	0.00	0.00	0.00	0.00	KOP - DTH 5-64 14
8,055.0	90.00	91.36	7,604.7	1,607.0	960.5	-153.8	10.00	10.00	0.00	91.36	
17,596.3	90.00	91.37	7,604.7	1,607.0	733.5	9,384.8	0.00	0.00	0.00	94.61	BHL - DTH 5-64 14

## Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well DTH 5-64 14B-13-1
<b>Company:</b>	BISON EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 5997.7usft (Original Well Elev)
<b>Project:</b>	ARAPAHOE COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 5997.7usft (Original Well Elev)
<b>Site:</b>	NW SW SEC. 14 T5S R64W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	DTH 5-64 14B-13-1	<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: 1561ft FSL &amp; 760ft FWL of Sec 14</b>										
0.0	0.00	0.00	0.0	5,997.70	0.0	0.0	0.0	0.00	0.00	0.00
<b>START NUDGE (2°/100ft BUR)</b>										
100.0	0.00	0.00	100.0	5,897.70	0.0	0.0	0.0	0.00	0.00	0.00
<b>DENVER</b>										
163.7	1.27	323.28	163.7	5,834.00	0.6	-0.4	-0.4	2.00	2.00	0.00
200.0	2.00	323.28	200.0	5,797.72	1.4	-1.0	-0.9	2.00	2.00	0.00
300.0	4.00	323.28	299.8	5,697.86	5.6	-4.2	-3.7	2.00	2.00	0.00
400.0	6.00	323.28	399.5	5,598.25	12.6	-9.4	-8.4	2.00	2.00	0.00
500.0	8.00	323.28	498.7	5,499.00	22.3	-16.7	-14.9	2.00	2.00	0.00
600.0	10.00	323.28	597.5	5,400.23	34.9	-26.0	-23.2	2.00	2.00	0.00
700.0	12.00	323.28	695.6	5,302.08	50.2	-37.4	-33.4	2.00	2.00	0.00
<b>EOB TO 12° INC</b>										
700.1	12.00	323.28	695.7	5,301.99	50.2	-37.4	-33.4	2.00	2.00	0.00
800.0	12.00	323.28	793.4	5,204.26	66.8	-49.9	-44.5	0.00	0.00	0.00
900.0	12.00	323.28	891.3	5,106.45	83.5	-62.3	-55.6	0.00	0.00	0.00
1,000.0	12.00	323.28	989.1	5,008.63	100.2	-74.7	-66.7	0.00	0.00	0.00
<b>UPPER ARAPAHOE</b>										
1,079.4	12.00	323.28	1,066.7	4,931.00	113.4	-84.6	-75.5	0.00	0.00	0.00
1,100.0	12.00	323.28	1,086.9	4,910.82	116.9	-87.2	-77.8	0.00	0.00	0.00
1,200.0	12.00	323.28	1,184.7	4,813.01	133.5	-99.6	-88.9	0.00	0.00	0.00
1,300.0	12.00	323.28	1,282.5	4,715.19	150.2	-112.0	-100.0	0.00	0.00	0.00
1,400.0	12.00	323.28	1,380.3	4,617.38	166.9	-124.5	-111.1	0.00	0.00	0.00
1,500.0	12.00	323.28	1,478.1	4,519.56	183.5	-136.9	-122.2	0.00	0.00	0.00
1,600.0	12.00	323.28	1,576.0	4,421.75	200.2	-149.3	-133.3	0.00	0.00	0.00
1,700.0	12.00	323.28	1,673.8	4,323.94	216.9	-161.8	-144.4	0.00	0.00	0.00
1,800.0	12.00	323.28	1,771.6	4,226.12	233.5	-174.2	-155.5	0.00	0.00	0.00
<b>LARAMIE - FOX HILLS</b>										
1,897.2	12.00	323.28	1,866.7	4,131.00	249.7	-186.3	-166.3	0.00	0.00	0.00
1,900.0	12.00	323.28	1,869.4	4,128.31	250.2	-186.6	-166.6	0.00	0.00	0.00
2,000.0	12.00	323.28	1,967.2	4,030.49	266.9	-199.1	-177.7	0.00	0.00	0.00
2,100.0	12.00	323.28	2,065.0	3,932.68	283.5	-211.5	-188.8	0.00	0.00	0.00
<b>PIERRE SHALE (BASE FOX HILLS)</b>										
2,142.6	12.00	323.28	2,106.7	3,891.00	290.6	-216.8	-193.5	0.00	0.00	0.00
2,200.0	12.00	323.28	2,162.8	3,834.87	300.2	-223.9	-199.9	0.00	0.00	0.00
2,300.0	12.00	323.28	2,260.6	3,737.05	316.9	-236.4	-210.9	0.00	0.00	0.00
2,400.0	12.00	323.28	2,358.5	3,639.24	333.5	-248.8	-222.0	0.00	0.00	0.00
2,500.0	12.00	323.28	2,456.3	3,541.42	350.2	-261.2	-233.1	0.00	0.00	0.00
2,600.0	12.00	323.28	2,554.1	3,443.61	366.9	-273.7	-244.2	0.00	0.00	0.00
2,700.0	12.00	323.28	2,651.9	3,345.79	383.5	-286.1	-255.3	0.00	0.00	0.00
2,800.0	12.00	323.28	2,749.7	3,247.98	400.2	-298.5	-266.4	0.00	0.00	0.00
2,900.0	12.00	323.28	2,847.5	3,150.17	416.9	-311.0	-277.5	0.00	0.00	0.00
3,000.0	12.00	323.28	2,945.3	3,052.35	433.5	-323.4	-288.6	0.00	0.00	0.00
3,100.0	12.00	323.28	3,043.2	2,954.54	450.2	-335.8	-299.7	0.00	0.00	0.00
3,200.0	12.00	323.28	3,141.0	2,856.72	466.9	-348.3	-310.8	0.00	0.00	0.00
3,300.0	12.00	323.28	3,238.8	2,758.91	483.5	-360.7	-321.9	0.00	0.00	0.00
3,400.0	12.00	323.28	3,336.6	2,661.10	500.2	-373.1	-333.0	0.00	0.00	0.00
3,500.0	12.00	323.28	3,434.4	2,563.28	516.9	-385.6	-344.1	0.00	0.00	0.00
3,600.0	12.00	323.28	3,532.2	2,465.47	533.6	-398.0	-355.2	0.00	0.00	0.00
3,700.0	12.00	323.28	3,630.0	2,367.65	550.2	-410.4	-366.3	0.00	0.00	0.00
3,800.0	12.00	323.28	3,727.9	2,269.84	566.9	-422.9	-377.4	0.00	0.00	0.00
3,900.0	12.00	323.28	3,825.7	2,172.03	583.6	-435.3	-388.5	0.00	0.00	0.00
4,000.0	12.00	323.28	3,923.5	2,074.21	600.2	-447.7	-399.6	0.00	0.00	0.00



# Planning Report



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<b>Company:</b>	BISON EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 5997.7usft (Original Well Elev)
<b>Project:</b>	ARAPAHOE COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 5997.7usft (Original Well Elev)
<b>Site:</b>	NW SW SEC. 14 T5S R64W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	DTH 5-64 14B-13-1	<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)
4,100.0	12.00	323.28	4,021.3	1,976.40	616.9	-460.2	-410.7	0.00	0.00	0.00
4,200.0	12.00	323.28	4,119.1	1,878.58	633.6	-472.6	-421.8	0.00	0.00	0.00
4,300.0	12.00	323.28	4,216.9	1,780.77	650.2	-485.0	-432.9	0.00	0.00	0.00
4,400.0	12.00	323.28	4,314.7	1,682.95	666.9	-497.4	-444.0	0.00	0.00	0.00
4,500.0	12.00	323.28	4,412.6	1,585.14	683.6	-509.9	-455.1	0.00	0.00	0.00
4,600.0	12.00	323.28	4,510.4	1,487.33	700.2	-522.3	-466.2	0.00	0.00	0.00
4,700.0	12.00	323.28	4,608.2	1,389.51	716.9	-534.7	-477.3	0.00	0.00	0.00
4,800.0	12.00	323.28	4,706.0	1,291.70	733.6	-547.2	-488.4	0.00	0.00	0.00
4,900.0	12.00	323.28	4,803.8	1,193.88	750.2	-559.6	-499.5	0.00	0.00	0.00
5,000.0	12.00	323.28	4,901.6	1,096.07	766.9	-572.0	-510.5	0.00	0.00	0.00
5,100.0	12.00	323.28	4,999.4	998.26	783.6	-584.5	-521.6	0.00	0.00	0.00
5,200.0	12.00	323.28	5,097.3	900.44	800.2	-596.9	-532.7	0.00	0.00	0.00
5,300.0	12.00	323.28	5,195.1	802.63	816.9	-609.3	-543.8	0.00	0.00	0.00
<b>SHANNON SANDSTONE MBR</b>										
<b>5,366.1</b>	<b>12.00</b>	<b>323.28</b>	<b>5,259.7</b>	<b>738.00</b>	<b>827.9</b>	<b>-617.6</b>	<b>-551.2</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
5,400.0	12.00	323.28	5,292.9	704.81	833.6	-621.8	-554.9	0.00	0.00	0.00
5,500.0	12.00	323.28	5,390.7	607.00	850.2	-634.2	-566.0	0.00	0.00	0.00
5,600.0	12.00	323.28	5,488.5	509.19	866.9	-646.6	-577.1	0.00	0.00	0.00
5,700.0	12.00	323.28	5,586.3	411.37	883.6	-659.1	-588.2	0.00	0.00	0.00
5,800.0	12.00	323.28	5,684.1	313.56	900.2	-671.5	-599.3	0.00	0.00	0.00
5,900.0	12.00	323.28	5,782.0	215.74	916.9	-683.9	-610.4	0.00	0.00	0.00
<b>END OF TANGENT</b>										
<b>5,942.0</b>	<b>12.00</b>	<b>323.28</b>	<b>5,823.0</b>	<b>174.71</b>	<b>923.9</b>	<b>-689.2</b>	<b>-615.1</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
6,000.0	10.84	323.28	5,879.9	117.81	933.1	-696.0	-621.2	2.00	-2.00	0.00
6,100.0	8.84	323.28	5,978.4	19.29	946.8	-706.2	-630.3	2.00	-2.00	0.00
6,200.0	6.84	323.28	6,077.5	-79.77	957.8	-714.4	-637.6	2.00	-2.00	0.00
6,300.0	4.84	323.28	6,176.9	-179.25	965.9	-720.5	-643.0	2.00	-2.00	0.00
6,400.0	2.84	323.28	6,276.7	-279.02	971.3	-724.5	-646.6	2.00	-2.00	0.00
6,500.0	0.84	323.28	6,376.7	-378.96	973.9	-726.4	-648.3	2.00	-2.00	0.00
<b>EOD TO VERTICAL</b>										
<b>6,542.0</b>	<b>0.00</b>	<b>0.00</b>	<b>6,418.7</b>	<b>-421.00</b>	<b>974.1</b>	<b>-726.6</b>	<b>-648.5</b>	<b>2.00</b>	<b>-2.00</b>	<b>0.00</b>
6,600.0	0.00	0.00	6,476.7	-478.96	974.1	-726.6	-648.5	0.00	0.00	0.00
6,700.0	0.00	0.00	6,576.7	-578.96	974.1	-726.6	-648.5	0.00	0.00	0.00
6,800.0	0.00	0.00	6,676.7	-678.96	974.1	-726.6	-648.5	0.00	0.00	0.00
6,900.0	0.00	0.00	6,776.7	-778.96	974.1	-726.6	-648.5	0.00	0.00	0.00
7,000.0	0.00	0.00	6,876.7	-878.96	974.1	-726.6	-648.5	0.00	0.00	0.00
7,100.0	0.00	0.00	6,976.7	-978.96	974.1	-726.6	-648.5	0.00	0.00	0.00
<b>KOP (10°/100ft BUR)</b>										
<b>7,155.0</b>	<b>0.00</b>	<b>0.00</b>	<b>7,031.7</b>	<b>-1,034.00</b>	<b>974.1</b>	<b>-726.6</b>	<b>-648.5</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
7,200.0	4.50	91.36	7,076.6	-1,078.92	974.1	-724.8	-646.7	10.00	10.00	0.00
7,300.0	14.50	91.36	7,175.1	-1,177.42	973.7	-708.4	-630.3	10.00	10.00	0.00
7,400.0	24.50	91.36	7,269.3	-1,271.57	972.9	-675.0	-597.2	10.00	10.00	0.00
7,500.0	34.50	91.36	7,356.2	-1,358.50	971.7	-625.9	-548.3	10.00	10.00	0.00
7,600.0	44.50	91.36	7,433.3	-1,435.56	970.2	-562.4	-485.1	10.00	10.00	0.00
7,700.0	54.50	91.36	7,498.1	-1,500.43	968.4	-486.5	-409.5	10.00	10.00	0.00
<b>SHARON SPRINGS SHALE</b>										
<b>7,795.1</b>	<b>64.01</b>	<b>91.36</b>	<b>7,546.7</b>	<b>-1,549.00</b>	<b>966.5</b>	<b>-404.8</b>	<b>-328.3</b>	<b>10.00</b>	<b>10.00</b>	<b>0.00</b>
7,800.0	64.50	91.36	7,548.8	-1,551.13	966.4	-400.4	-323.9	10.00	10.00	0.00
<b>NIOBRARA FORMATION</b>										
<b>7,895.9</b>	<b>74.09</b>	<b>91.36</b>	<b>7,582.7</b>	<b>-1,585.00</b>	<b>964.2</b>	<b>-310.9</b>	<b>-234.8</b>	<b>10.00</b>	<b>10.00</b>	<b>0.00</b>
7,900.0	74.50	91.36	7,583.8	-1,586.11	964.1	-306.9	-230.9	10.00	10.00	0.00
<b>BPI: 2519ft FSL &amp; 460ft FWL of Sec 14</b>										
<b>7,926.0</b>	<b>77.10</b>	<b>91.36</b>	<b>7,590.2</b>	<b>-1,592.49</b>	<b>963.5</b>	<b>-281.7</b>	<b>-205.8</b>	<b>10.00</b>	<b>10.00</b>	<b>0.00</b>

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well DTH 5-64 14B-13-1
<b>Company:</b>	BISON EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 5997.7usft (Original Well Elev)
<b>Project:</b>	ARAPAHOE COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 5997.7usft (Original Well Elev)
<b>Site:</b>	NW SW SEC. 14 T5S R64W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	DTH 5-64 14B-13-1	<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>NIORARA A CHALK</b>										
7,948.1	79.30	91.36	7,594.7	-1,597.00	963.0	-260.1	-184.3	10.00	10.00	0.00
8,000.0	84.50	91.36	7,602.0	-1,604.32	961.8	-208.7	-133.2	10.00	10.00	0.00
<b>HZ LP: 2516ft FSL &amp; 587.9ft FWL of Sec 14</b>										
8,055.0	90.00	91.36	7,604.7	-1,606.96	960.5	-153.8	-78.5	10.00	10.00	0.00
8,100.0	90.00	91.36	7,604.7	-1,606.96	959.4	-108.9	-33.8	0.00	0.00	0.00
8,200.0	90.00	91.36	7,604.7	-1,606.96	957.1	-8.9	65.7	0.00	0.00	0.00
8,300.0	90.00	91.36	7,604.7	-1,606.96	954.7	91.1	165.2	0.00	0.00	0.00
8,400.0	90.00	91.36	7,604.7	-1,606.96	952.3	191.1	264.7	0.00	0.00	0.00
8,500.0	90.00	91.36	7,604.7	-1,606.96	949.9	291.0	364.2	0.00	0.00	0.00
8,600.0	90.00	91.36	7,604.7	-1,606.96	947.6	391.0	463.7	0.00	0.00	0.00
8,700.0	90.00	91.36	7,604.7	-1,606.96	945.2	491.0	563.1	0.00	0.00	0.00
8,800.0	90.00	91.36	7,604.7	-1,606.96	942.8	590.9	662.6	0.00	0.00	0.00
8,900.0	90.00	91.36	7,604.7	-1,606.96	940.4	690.9	762.1	0.00	0.00	0.00
9,000.0	90.00	91.36	7,604.7	-1,606.96	938.1	790.9	861.6	0.00	0.00	0.00
9,100.0	90.00	91.36	7,604.7	-1,606.96	935.7	890.9	961.1	0.00	0.00	0.00
9,200.0	90.00	91.36	7,604.7	-1,606.96	933.3	990.8	1,060.5	0.00	0.00	0.00
9,300.0	90.00	91.36	7,604.7	-1,606.96	930.9	1,090.8	1,160.0	0.00	0.00	0.00
9,400.0	90.00	91.36	7,604.7	-1,606.96	928.6	1,190.8	1,259.5	0.00	0.00	0.00
9,500.0	90.00	91.36	7,604.7	-1,606.96	926.2	1,290.8	1,359.0	0.00	0.00	0.00
9,600.0	90.00	91.36	7,604.7	-1,606.96	923.8	1,390.7	1,458.5	0.00	0.00	0.00
9,700.0	90.00	91.36	7,604.7	-1,606.96	921.4	1,490.7	1,558.0	0.00	0.00	0.00
9,800.0	90.00	91.36	7,604.7	-1,606.96	919.1	1,590.7	1,657.4	0.00	0.00	0.00
9,900.0	90.00	91.36	7,604.7	-1,606.96	916.7	1,690.6	1,756.9	0.00	0.00	0.00
10,000.0	90.00	91.36	7,604.7	-1,606.96	914.3	1,790.6	1,856.4	0.00	0.00	0.00
10,100.0	90.00	91.36	7,604.7	-1,606.96	911.9	1,890.6	1,955.9	0.00	0.00	0.00
10,200.0	90.00	91.36	7,604.7	-1,606.96	909.6	1,990.6	2,055.4	0.00	0.00	0.00
10,300.0	90.00	91.36	7,604.7	-1,606.96	907.2	2,090.5	2,154.9	0.00	0.00	0.00
10,400.0	90.00	91.36	7,604.7	-1,606.96	904.8	2,190.5	2,254.3	0.00	0.00	0.00
10,500.0	90.00	91.36	7,604.7	-1,606.96	902.4	2,290.5	2,353.8	0.00	0.00	0.00
10,600.0	90.00	91.36	7,604.7	-1,606.96	900.1	2,390.4	2,453.3	0.00	0.00	0.00
10,700.0	90.00	91.36	7,604.7	-1,606.96	897.7	2,490.4	2,552.8	0.00	0.00	0.00
10,800.0	90.00	91.36	7,604.7	-1,606.96	895.3	2,590.4	2,652.3	0.00	0.00	0.00
10,900.0	90.00	91.36	7,604.7	-1,606.96	892.9	2,690.4	2,751.8	0.00	0.00	0.00
11,000.0	90.00	91.36	7,604.7	-1,606.96	890.6	2,790.3	2,851.2	0.00	0.00	0.00
11,100.0	90.00	91.36	7,604.7	-1,606.96	888.2	2,890.3	2,950.7	0.00	0.00	0.00
11,200.0	90.00	91.36	7,604.7	-1,606.96	885.8	2,990.3	3,050.2	0.00	0.00	0.00
11,300.0	90.00	91.36	7,604.7	-1,606.96	883.4	3,090.2	3,149.7	0.00	0.00	0.00
11,400.0	90.00	91.36	7,604.7	-1,606.96	881.0	3,190.2	3,249.2	0.00	0.00	0.00
11,500.0	90.00	91.36	7,604.7	-1,606.96	878.7	3,290.2	3,348.7	0.00	0.00	0.00
11,600.0	90.00	91.36	7,604.7	-1,606.96	876.3	3,390.2	3,448.1	0.00	0.00	0.00
11,700.0	90.00	91.36	7,604.7	-1,606.96	873.9	3,490.1	3,547.6	0.00	0.00	0.00
11,800.0	90.00	91.36	7,604.7	-1,606.96	871.5	3,590.1	3,647.1	0.00	0.00	0.00
11,900.0	90.00	91.36	7,604.7	-1,606.96	869.2	3,690.1	3,746.6	0.00	0.00	0.00
12,000.0	90.00	91.36	7,604.7	-1,606.97	866.8	3,790.0	3,846.1	0.00	0.00	0.00
12,100.0	90.00	91.36	7,604.7	-1,606.97	864.4	3,890.0	3,945.5	0.00	0.00	0.00
12,200.0	90.00	91.36	7,604.7	-1,606.97	862.0	3,990.0	4,045.0	0.00	0.00	0.00
12,300.0	90.00	91.36	7,604.7	-1,606.97	859.6	4,090.0	4,144.5	0.00	0.00	0.00
12,400.0	90.00	91.36	7,604.7	-1,606.97	857.3	4,189.9	4,244.0	0.00	0.00	0.00
12,500.0	90.00	91.36	7,604.7	-1,606.97	854.9	4,289.9	4,343.5	0.00	0.00	0.00
12,600.0	90.00	91.36	7,604.7	-1,606.97	852.5	4,389.9	4,443.0	0.00	0.00	0.00
12,700.0	90.00	91.36	7,604.7	-1,606.97	850.1	4,489.8	4,542.4	0.00	0.00	0.00
12,800.0	90.00	91.36	7,604.7	-1,606.97	847.8	4,589.8	4,641.9	0.00	0.00	0.00
12,900.0	90.00	91.36	7,604.7	-1,606.97	845.4	4,689.8	4,741.4	0.00	0.00	0.00

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well DTH 5-64 14B-13-1
<b>Company:</b>	BISON EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 5997.7usft (Original Well Elev)
<b>Project:</b>	ARAPAHOE COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 5997.7usft (Original Well Elev)
<b>Site:</b>	NW SW SEC. 14 T5S R64W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	DTH 5-64 14B-13-1	<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)
13,000.0	90.00	91.36	7,604.7	-1,606.97	843.0	4,789.8	4,840.9	0.00	0.00	0.00
13,100.0	90.00	91.36	7,604.7	-1,606.97	840.6	4,889.7	4,940.4	0.00	0.00	0.00
13,200.0	90.00	91.36	7,604.7	-1,606.97	838.2	4,989.7	5,039.9	0.00	0.00	0.00
13,300.0	90.00	91.36	7,604.7	-1,606.97	835.9	5,089.7	5,139.3	0.00	0.00	0.00
13,400.0	90.00	91.36	7,604.7	-1,606.97	833.5	5,189.6	5,238.8	0.00	0.00	0.00
13,500.0	90.00	91.36	7,604.7	-1,606.97	831.1	5,289.6	5,338.3	0.00	0.00	0.00
13,600.0	90.00	91.36	7,604.7	-1,606.97	828.7	5,389.6	5,437.8	0.00	0.00	0.00
13,700.0	90.00	91.36	7,604.7	-1,606.97	826.3	5,489.6	5,537.3	0.00	0.00	0.00
13,800.0	90.00	91.36	7,604.7	-1,606.97	824.0	5,589.5	5,636.7	0.00	0.00	0.00
13,900.0	90.00	91.36	7,604.7	-1,606.97	821.6	5,689.5	5,736.2	0.00	0.00	0.00
14,000.0	90.00	91.36	7,604.7	-1,606.97	819.2	5,789.5	5,835.7	0.00	0.00	0.00
14,100.0	90.00	91.36	7,604.7	-1,606.97	816.8	5,889.5	5,935.2	0.00	0.00	0.00
14,200.0	90.00	91.36	7,604.7	-1,606.98	814.4	5,989.4	6,034.7	0.00	0.00	0.00
14,300.0	90.00	91.36	7,604.7	-1,606.98	812.1	6,089.4	6,134.2	0.00	0.00	0.00
14,400.0	90.00	91.36	7,604.7	-1,606.98	809.7	6,189.4	6,233.6	0.00	0.00	0.00
14,500.0	90.00	91.36	7,604.7	-1,606.98	807.3	6,289.3	6,333.1	0.00	0.00	0.00
14,600.0	90.00	91.36	7,604.7	-1,606.98	804.9	6,389.3	6,432.6	0.00	0.00	0.00
14,700.0	90.00	91.36	7,604.7	-1,606.98	802.5	6,489.3	6,532.1	0.00	0.00	0.00
14,800.0	90.00	91.36	7,604.7	-1,606.98	800.2	6,589.3	6,631.6	0.00	0.00	0.00
14,900.0	90.00	91.36	7,604.7	-1,606.98	797.8	6,689.2	6,731.0	0.00	0.00	0.00
15,000.0	90.00	91.36	7,604.7	-1,606.98	795.4	6,789.2	6,830.5	0.00	0.00	0.00
15,100.0	90.00	91.36	7,604.7	-1,606.98	793.0	6,889.2	6,930.0	0.00	0.00	0.00
15,200.0	90.00	91.36	7,604.7	-1,606.98	790.6	6,989.1	7,029.5	0.00	0.00	0.00
15,300.0	90.00	91.36	7,604.7	-1,606.98	788.2	7,089.1	7,129.0	0.00	0.00	0.00
15,400.0	90.00	91.36	7,604.7	-1,606.98	785.9	7,189.1	7,228.5	0.00	0.00	0.00
15,500.0	90.00	91.36	7,604.7	-1,606.98	783.5	7,289.1	7,327.9	0.00	0.00	0.00
15,600.0	90.00	91.36	7,604.7	-1,606.98	781.1	7,389.0	7,427.4	0.00	0.00	0.00
15,700.0	90.00	91.37	7,604.7	-1,606.98	778.7	7,489.0	7,526.9	0.00	0.00	0.00
15,800.0	90.00	91.37	7,604.7	-1,606.99	776.3	7,589.0	7,626.4	0.00	0.00	0.00
15,900.0	90.00	91.37	7,604.7	-1,606.99	774.0	7,688.9	7,725.9	0.00	0.00	0.00
16,000.0	90.00	91.37	7,604.7	-1,606.99	771.6	7,788.9	7,825.4	0.00	0.00	0.00
16,100.0	90.00	91.37	7,604.7	-1,606.99	769.2	7,888.9	7,924.8	0.00	0.00	0.00
16,200.0	90.00	91.37	7,604.7	-1,606.99	766.8	7,988.9	8,024.3	0.00	0.00	0.00
16,300.0	90.00	91.37	7,604.7	-1,606.99	764.4	8,088.8	8,123.8	0.00	0.00	0.00
16,400.0	90.00	91.37	7,604.7	-1,606.99	762.0	8,188.8	8,223.3	0.00	0.00	0.00
16,500.0	90.00	91.37	7,604.7	-1,606.99	759.7	8,288.8	8,322.8	0.00	0.00	0.00
16,600.0	90.00	91.37	7,604.7	-1,606.99	757.3	8,388.7	8,422.2	0.00	0.00	0.00
16,700.0	90.00	91.37	7,604.7	-1,606.99	754.9	8,488.7	8,521.7	0.00	0.00	0.00
16,800.0	90.00	91.37	7,604.7	-1,606.99	752.5	8,588.7	8,621.2	0.00	0.00	0.00
16,900.0	90.00	91.37	7,604.7	-1,606.99	750.1	8,688.7	8,720.7	0.00	0.00	0.00
17,000.0	90.00	91.37	7,604.7	-1,606.99	747.7	8,788.6	8,820.2	0.00	0.00	0.00
17,100.0	90.00	91.37	7,604.7	-1,607.00	745.4	8,888.6	8,919.7	0.00	0.00	0.00
17,200.0	90.00	91.37	7,604.7	-1,607.00	743.0	8,988.6	9,019.1	0.00	0.00	0.00
17,300.0	90.00	91.37	7,604.7	-1,607.00	740.6	9,088.5	9,118.6	0.00	0.00	0.00
17,400.0	90.00	91.37	7,604.7	-1,607.00	738.2	9,188.5	9,218.1	0.00	0.00	0.00
17,500.0	90.00	91.37	7,604.7	-1,607.00	735.8	9,288.5	9,317.6	0.00	0.00	0.00
<b>BHL: 2505ft FSL &amp; 460ft FEL of Sec 13</b>										
<b>17,596.3</b>	<b>90.00</b>	<b>91.37</b>	<b>7,604.7</b>	<b>-1,607.00</b>	<b>733.5</b>	<b>9,384.8</b>	<b>9,413.4</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well DTH 5-64 14B-13-1
<b>Company:</b>	BISON EXPLORATION	<b>TVD Reference:</b>	KB-EST @ 5997.7usft (Original Well Elev)
<b>Project:</b>	ARAPAHOE COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB-EST @ 5997.7usft (Original Well Elev)
<b>Site:</b>	NW SW SEC. 14 T5S R64W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	DTH 5-64 14B-13-1	<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 (°)
163.7	163.7	DENVER			
1,079.4	1,066.7	UPPER ARAPAHOE			
1,897.2	1,866.7	LARAMIE - FOX HILLS			
2,142.6	2,106.7	PIERRE SHALE (BASE FOX HILLS)			
5,366.1	5,259.7	SHANNON SANDSTONE MBR			
7,795.1	7,546.7	SHARON SPRINGS SHALE			
7,895.9	7,582.7	NIOBRARA FORMATION			
7,948.1	7,594.7	NIOBRARA A CHALK			

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.0	0.0	0.0	0.0	SHL: 1561ft FSL & 760ft FWL of Sec 14
100.0	100.0	0.0	0.0	START NUDGE (2°/100ft BUR)
700.1	695.7	50.2	-37.4	EOB TO 12° INC
5,942.0	5,823.0	923.9	-689.2	END OF TANGENT
6,542.0	6,418.7	974.1	-726.6	EOD TO VERTICAL
7,155.0	7,031.7	974.1	-726.6	KOP (10°/100ft BUR)
7,926.0	7,590.2	963.5	-281.7	BPI: 2519ft FSL & 460ft FWL of Sec 14
8,055.0	7,604.7	960.5	-153.8	HZ LP: 2516ft FSL & 587.9ft FWL of Sec 14
17,596.3	7,604.7	733.5	9,384.8	BHL: 2505ft FSL & 460ft FEL of Sec 13