

BISON EXPLORATION

**ARAPAHOE COUNTY, COLORADO (NAD 83)
NW SW SEC. 14 T5S R64W 6th P.M.
DTH 5-64 14B-13-2**

ORIGINAL WELLBORE

25 July, 2017

Plan: PROPOSAL #1



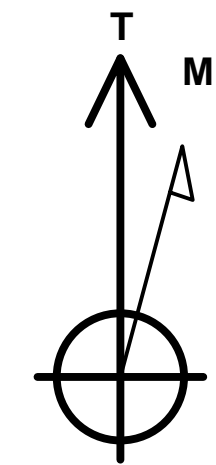
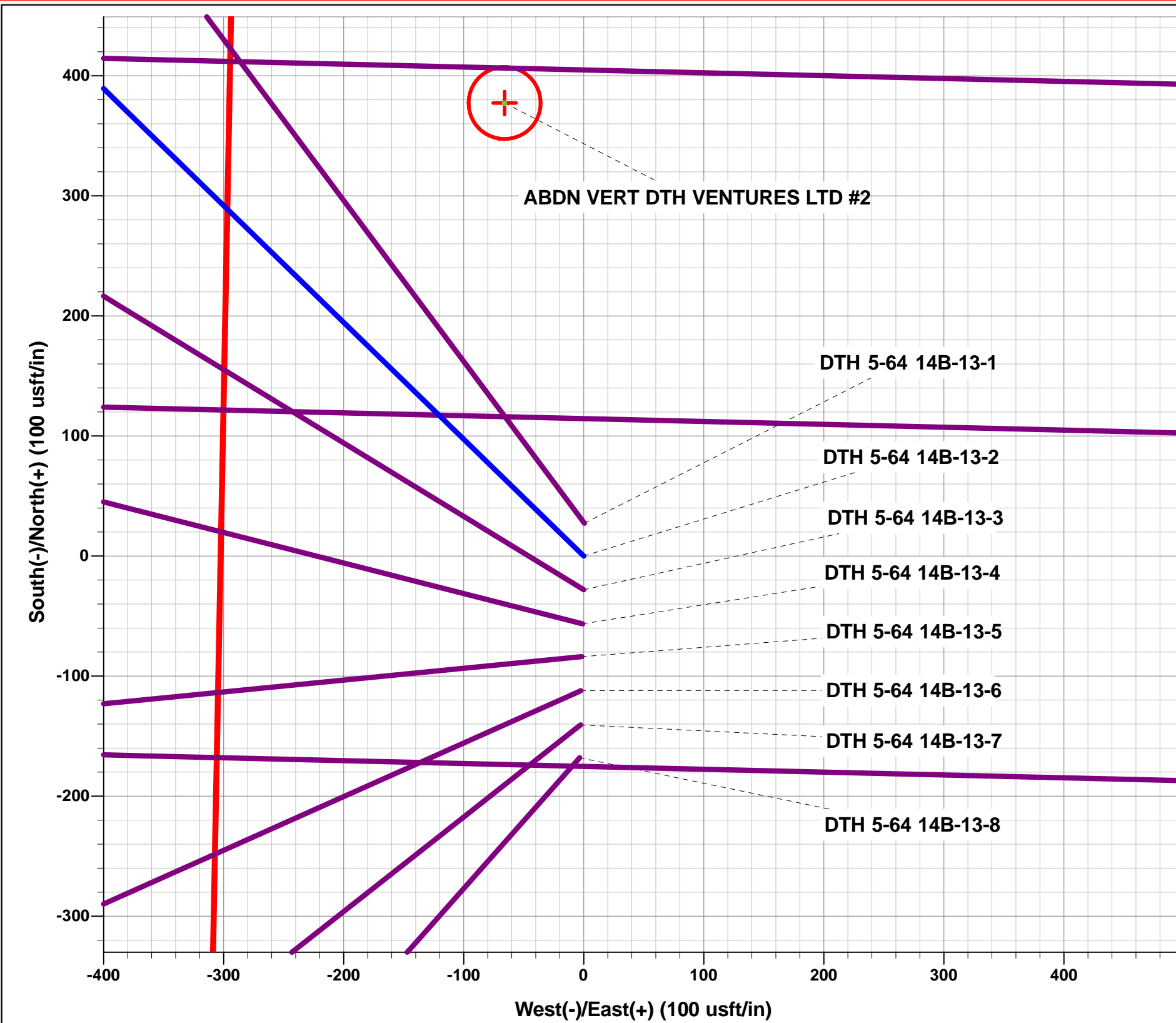
Project: ARAPAHOE COUNTY, COLORADO (NAD 83)
Site: NW SW SEC. 14 T5S R64W 6th P.M.
Well: DTH 5-64 14B-13-2
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

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: 1533ft FSL & 760ft FWL of Sec 14
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	314.22	43.6	-44.8	-42.6	62.6	EOB TO 12° INC
5010.1	5108.6	12.00	314.22	668.2	-686.6	-652.2	958.0	END OF TANGENT
5605.5	5708.3	0.00	0.00	711.8	-731.4	-694.8	1020.6	EOD TO VERTICAL
7173.5	7276.3	0.00	0.00	711.8	-731.4	-694.8	1020.6	KOP (10°/100ft BUR)
7732.0	8047.3	77.10	91.37	701.2	-286.5	-251.0	1465.6	BPI: 2229ft FSL & 460ft FWL of Sec 14
7746.5	8176.3	90.00	91.37	698.1	-158.6	-123.4	1593.5	HZ LP: 2225.9ft FSL & 587.9ft FWL of Sec 14
7746.5	17718.6	90.00	91.36	470.5	9380.9	9392.7	11135.8	BHL: 2215ft FSL & 460ft FEL of Sec 13

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - DTH 5-64 14B-13-2	7173.5	711.8	-731.4	39.614373	-104.529390
BHL - DTH 5-64 14B-13-2	7746.5	470.5	9380.9	39.613706	-104.493497
BPI - DTH 5-64 14B-13-2	7732.0	701.2	-286.5	39.614344	-104.527811
H ZLP - DTH 5-64 14B-13-2	7746.5	698.1	-158.6	39.614335	-104.527357



Azimuths to True North
Magnetic North: 8.01°

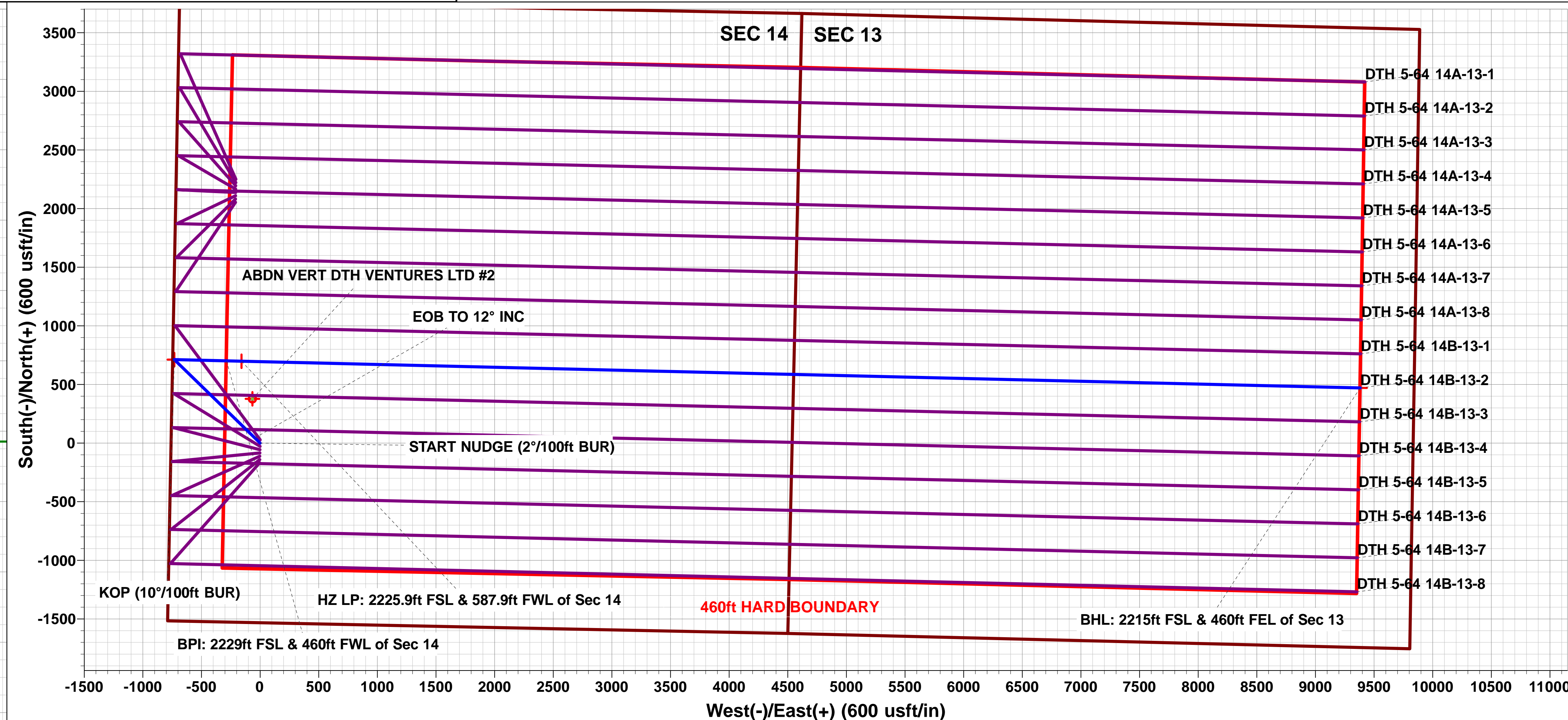
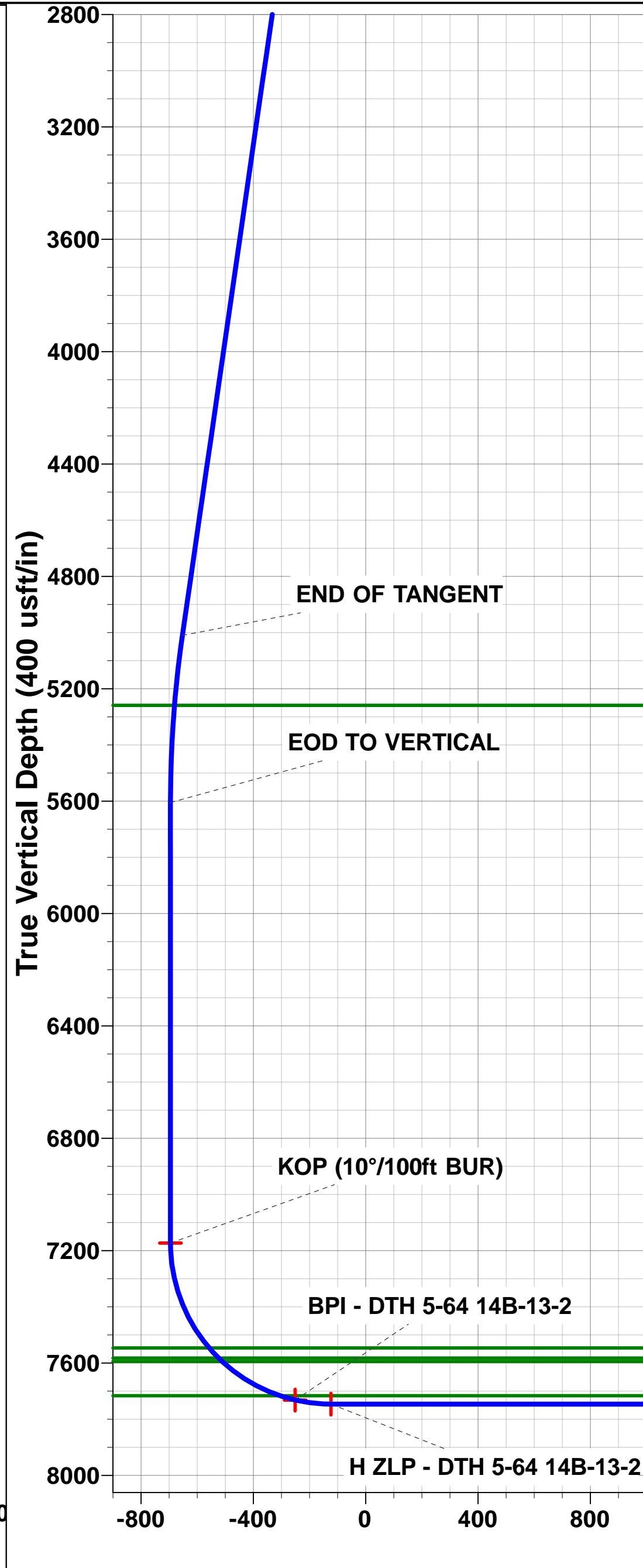
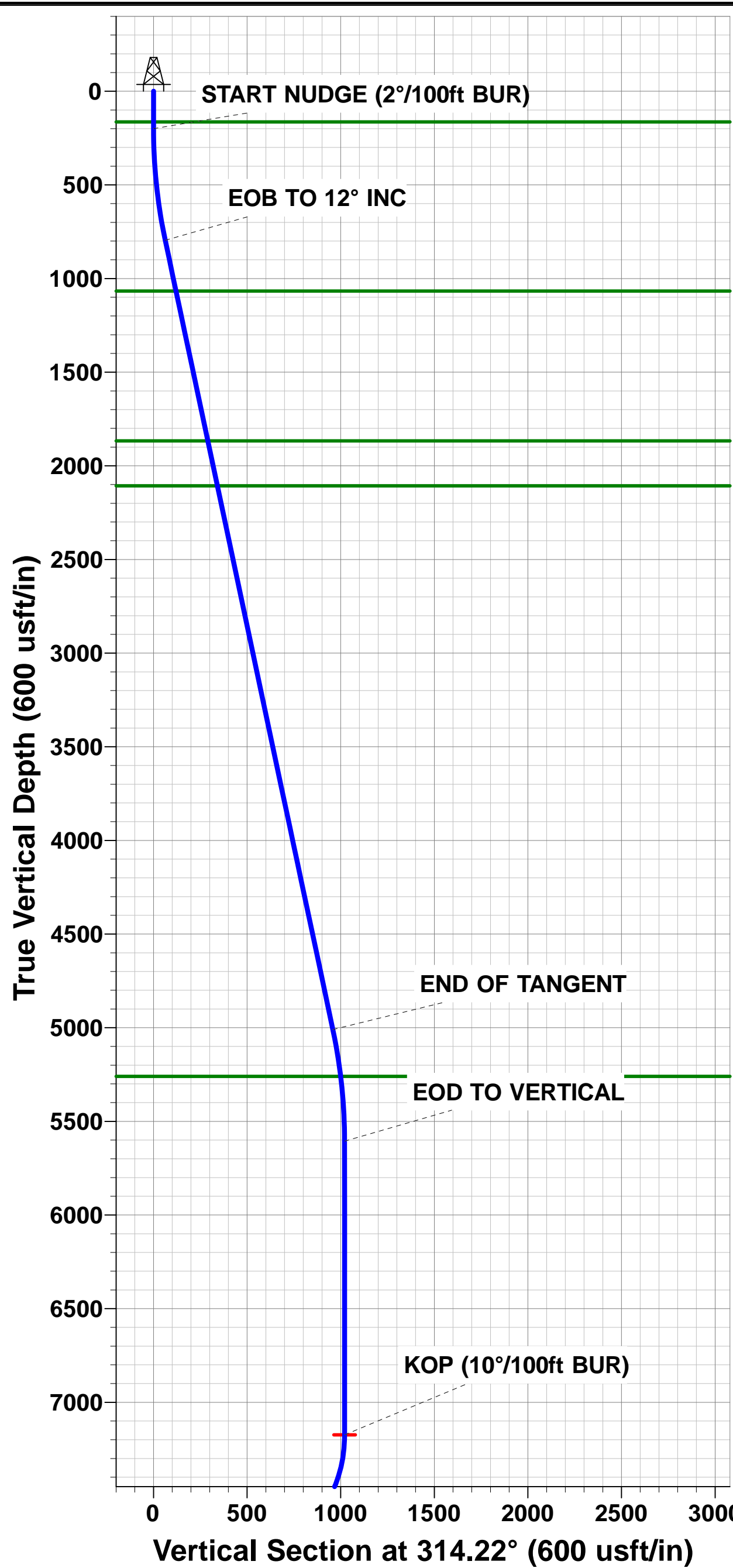
Magnetic Field
Strength: 51983.7snT
Dip Angle: 66.26°
Date: 25/07/2017
Model: IGRF2015

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
163.5	163.5	DENVER
1066.5	1076.9	UPPER ARAPAHOE
1866.5	1894.8	LARAMIE - FOX HILLS
2106.5	2140.1	P SHALE (BASE FOX HILLS)
5259.5	5361.5	SHANNON SANDSTONE MBR
7546.5	7682.5	SHARON SPRINGS SHALE
7582.5	7731.8	NIOBRARA FORMATION
7594.5	7749.2	NIOBRARA A CHALK
7716.5	7990.2	NIOBRARA B CHALK

PROPOSED LOCAL COORDINATES:

SHL: 1533ft FSL & 760ft FWL of Sec 14
BEGIN PROD INT: 2229ft FSL & 460ft FWL of Sec 14
HZ LP: 2225.9ft FSL & 587.9ft FWL of Sec 14
BHL: 2215ft FSL & 460ft FEL of Sec 13



BHL - DTH 5-64 14B-13-2

Vertical Section at 87.13° (400 usft/in)

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DTH 5-64 14B-13-2
Company:	BISON EXPLORATION	TVD Reference:	KB-EST @ 5997.5usft (Original Well Elev)
Project:	ARAPAHOE COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 5997.5usft (Original Well Elev)
Site:	NW SW SEC. 14 T5S R64W 6th P.M.	North Reference:	True
Well:	DTH 5-64 14B-13-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Project	ARAPAHOE COUNTY, COLORADO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

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

Well	DTH 5-64 14B-13-2		
Well Position	+N/-S	-27.3 usft	Northing:
	+E/-W	-0.6 usft	Easting:
Position Uncertainty	0.0 usft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	25/07/2017	8.01	66.26	51,984

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 (°)
	7,746.5	0.0	0.0	87.13

Plan Sections											
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	-5,997.5	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	-5,797.5	0.0	0.0	0.00	0.00	0.00	0.00	
799.8	12.00	314.22	795.4	-5,202.1	43.6	-44.8	2.00	2.00	0.00	314.22	
5,108.6	12.00	314.22	5,010.1	-987.4	668.2	-686.6	0.00	0.00	0.00	0.00	
5,708.3	0.00	0.00	5,605.5	-392.0	711.8	-731.4	2.00	-2.00	0.00	180.00	
7,276.3	0.00	0.00	7,173.5	1,176.0	711.8	-731.4	0.00	0.00	0.00	0.00	KOP - DTH 5-64 14
8,176.3	90.00	91.37	7,746.5	1,749.0	698.1	-158.6	10.00	10.00	0.00	91.37	
17,718.6	90.00	91.36	7,746.5	1,749.0	470.5	9,380.9	0.00	0.00	0.00	-94.20	BHL - DTH 5-64 14

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DTH 5-64 14B-13-2
Company:	BISON EXPLORATION	TVD Reference:	KB-EST @ 5997.5usft (Original Well Elev)
Project:	ARAPAHOE COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 5997.5usft (Original Well Elev)
Site:	NW SW SEC. 14 T5S R64W 6th P.M.	North Reference:	True
Well:	DTH 5-64 14B-13-2	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: 1533ft FSL & 760ft FWL of Sec 14										
0.0	0.00	0.00	0.0	5,997.50	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	5,897.50	0.0	0.0	0.0	0.00	0.00	0.00
DENVER										
163.5	0.00	0.00	163.5	5,834.00	0.0	0.0	0.0	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
200.0	0.00	0.00	200.0	5,797.50	0.0	0.0	0.0	0.00	0.00	0.00
300.0	2.00	314.22	300.0	5,697.52	1.2	-1.3	-1.2	2.00	2.00	0.00
400.0	4.00	314.22	399.8	5,597.66	4.9	-5.0	-4.8	2.00	2.00	0.00
500.0	6.00	314.22	499.5	5,498.05	10.9	-11.2	-10.7	2.00	2.00	0.00
600.0	8.00	314.22	598.7	5,398.80	19.4	-20.0	-19.0	2.00	2.00	0.00
700.0	10.00	314.22	697.5	5,300.03	30.4	-31.2	-29.6	2.00	2.00	0.00
EOB TO 12° INC										
799.8	12.00	314.22	795.4	5,202.12	43.6	-44.8	-42.6	2.00	2.00	0.00
800.0	12.00	314.22	795.6	5,201.88	43.7	-44.9	-42.6	0.00	0.00	0.00
900.0	12.00	314.22	893.4	5,104.06	58.2	-59.8	-56.8	0.00	0.00	0.00
1,000.0	12.00	314.22	991.3	5,006.24	72.7	-74.7	-70.9	0.00	0.00	0.00
UPPER ARAPAHOE										
1,076.9	12.00	314.22	1,066.5	4,931.00	83.8	-86.1	-81.8	0.00	0.00	0.00
1,100.0	12.00	314.22	1,089.1	4,908.43	87.1	-89.5	-85.1	0.00	0.00	0.00
1,200.0	12.00	314.22	1,186.9	4,810.61	101.6	-104.4	-99.2	0.00	0.00	0.00
1,300.0	12.00	314.22	1,284.7	4,712.79	116.1	-119.3	-113.4	0.00	0.00	0.00
1,400.0	12.00	314.22	1,382.5	4,614.98	130.6	-134.2	-127.5	0.00	0.00	0.00
1,500.0	12.00	314.22	1,480.3	4,517.16	145.1	-149.1	-141.7	0.00	0.00	0.00
1,600.0	12.00	314.22	1,578.2	4,419.34	159.6	-164.0	-155.8	0.00	0.00	0.00
1,700.0	12.00	314.22	1,676.0	4,321.53	174.1	-178.9	-170.0	0.00	0.00	0.00
1,800.0	12.00	314.22	1,773.8	4,223.71	188.6	-193.8	-184.1	0.00	0.00	0.00
LARAMIE - FOX HILLS										
1,894.8	12.00	314.22	1,866.5	4,131.00	202.3	-207.9	-197.5	0.00	0.00	0.00
1,900.0	12.00	314.22	1,871.6	4,125.89	203.1	-208.7	-198.3	0.00	0.00	0.00
2,000.0	12.00	314.22	1,969.4	4,028.08	217.6	-223.6	-212.4	0.00	0.00	0.00
2,100.0	12.00	314.22	2,067.2	3,930.26	232.1	-238.5	-226.6	0.00	0.00	0.00
PIERRE SHALE (BASE FOX HILLS)										
2,140.1	12.00	314.22	2,106.5	3,891.00	237.9	-244.5	-232.2	0.00	0.00	0.00
2,200.0	12.00	314.22	2,165.1	3,832.45	246.6	-253.4	-240.7	0.00	0.00	0.00
2,300.0	12.00	314.22	2,262.9	3,734.63	261.1	-268.3	-254.9	0.00	0.00	0.00
2,400.0	12.00	314.22	2,360.7	3,636.81	275.6	-283.2	-269.0	0.00	0.00	0.00
2,500.0	12.00	314.22	2,458.5	3,539.00	290.1	-298.1	-283.2	0.00	0.00	0.00
2,600.0	12.00	314.22	2,556.3	3,441.18	304.6	-313.0	-297.3	0.00	0.00	0.00
2,700.0	12.00	314.22	2,654.1	3,343.36	319.1	-327.8	-311.5	0.00	0.00	0.00
2,800.0	12.00	314.22	2,752.0	3,245.55	333.6	-342.7	-325.6	0.00	0.00	0.00
2,900.0	12.00	314.22	2,849.8	3,147.73	348.0	-357.6	-339.7	0.00	0.00	0.00
3,000.0	12.00	314.22	2,947.6	3,049.91	362.5	-372.5	-353.9	0.00	0.00	0.00
3,100.0	12.00	314.22	3,045.4	2,952.10	377.0	-387.4	-368.0	0.00	0.00	0.00
3,200.0	12.00	314.22	3,143.2	2,854.28	391.5	-402.3	-382.2	0.00	0.00	0.00
3,300.0	12.00	314.22	3,241.0	2,756.46	406.0	-417.2	-396.3	0.00	0.00	0.00
3,400.0	12.00	314.22	3,338.9	2,658.65	420.5	-432.1	-410.5	0.00	0.00	0.00
3,500.0	12.00	314.22	3,436.7	2,560.83	435.0	-447.0	-424.6	0.00	0.00	0.00
3,600.0	12.00	314.22	3,534.5	2,463.01	449.5	-461.9	-438.8	0.00	0.00	0.00
3,700.0	12.00	314.22	3,632.3	2,365.20	464.0	-476.8	-452.9	0.00	0.00	0.00
3,800.0	12.00	314.22	3,730.1	2,267.38	478.5	-491.7	-467.1	0.00	0.00	0.00
3,900.0	12.00	314.22	3,827.9	2,169.56	493.0	-506.6	-481.2	0.00	0.00	0.00
4,000.0	12.00	314.22	3,925.8	2,071.75	507.5	-521.5	-495.4	0.00	0.00	0.00

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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)
4,100.0	12.00	314.22	4,023.6	1,973.93	522.0	-536.4	-509.5	0.00	0.00	0.00
4,200.0	12.00	314.22	4,121.4	1,876.11	536.5	-551.3	-523.7	0.00	0.00	0.00
4,300.0	12.00	314.22	4,219.2	1,778.30	551.0	-566.1	-537.8	0.00	0.00	0.00
4,400.0	12.00	314.22	4,317.0	1,680.48	565.5	-581.0	-552.0	0.00	0.00	0.00
4,500.0	12.00	314.22	4,414.8	1,582.66	580.0	-595.9	-566.1	0.00	0.00	0.00
4,600.0	12.00	314.22	4,512.7	1,484.85	594.5	-610.8	-580.3	0.00	0.00	0.00
4,700.0	12.00	314.22	4,610.5	1,387.03	609.0	-625.7	-594.4	0.00	0.00	0.00
4,800.0	12.00	314.22	4,708.3	1,289.21	623.4	-640.6	-608.6	0.00	0.00	0.00
4,900.0	12.00	314.22	4,806.1	1,191.40	637.9	-655.5	-622.7	0.00	0.00	0.00
5,000.0	12.00	314.22	4,903.9	1,093.58	652.4	-670.4	-636.9	0.00	0.00	0.00
5,100.0	12.00	314.22	5,001.7	995.76	666.9	-685.3	-651.0	0.00	0.00	0.00
END OF TANGENT										
5,108.6	12.00	314.22	5,010.1	987.38	668.2	-686.6	-652.2	0.00	0.00	0.00
5,200.0	10.17	314.22	5,099.8	897.66	680.4	-699.2	-664.2	2.00	-2.00	0.00
5,300.0	8.17	314.22	5,198.6	798.94	691.5	-710.6	-675.0	2.00	-2.00	0.00
SHANNON SANDSTONE MBR										
5,361.5	6.94	314.22	5,259.5	738.00	697.2	-716.4	-680.5	2.00	-2.00	0.00
5,400.0	6.17	314.22	5,297.8	699.73	700.2	-719.5	-683.5	2.00	-2.00	0.00
5,500.0	4.17	314.22	5,397.4	600.14	706.5	-726.0	-689.7	2.00	-2.00	0.00
5,600.0	2.17	314.22	5,497.2	500.30	710.4	-729.9	-693.4	2.00	-2.00	0.00
5,700.0	0.17	314.22	5,597.2	400.32	711.8	-731.4	-694.8	2.00	-2.00	0.00
EOD TO VERTICAL										
5,708.3	0.00	0.00	5,605.5	392.00	711.8	-731.4	-694.8	2.00	-2.00	0.00
5,800.0	0.00	0.00	5,697.2	300.32	711.8	-731.4	-694.8	0.00	0.00	0.00
5,900.0	0.00	0.00	5,797.2	200.32	711.8	-731.4	-694.8	0.00	0.00	0.00
6,000.0	0.00	0.00	5,897.2	100.32	711.8	-731.4	-694.8	0.00	0.00	0.00
6,100.0	0.00	0.00	5,997.2	0.32	711.8	-731.4	-694.8	0.00	0.00	0.00
6,200.0	0.00	0.00	6,097.2	-99.68	711.8	-731.4	-694.8	0.00	0.00	0.00
6,300.0	0.00	0.00	6,197.2	-199.68	711.8	-731.4	-694.8	0.00	0.00	0.00
6,400.0	0.00	0.00	6,297.2	-299.68	711.8	-731.4	-694.8	0.00	0.00	0.00
6,500.0	0.00	0.00	6,397.2	-399.68	711.8	-731.4	-694.8	0.00	0.00	0.00
6,600.0	0.00	0.00	6,497.2	-499.68	711.8	-731.4	-694.8	0.00	0.00	0.00
6,700.0	0.00	0.00	6,597.2	-599.68	711.8	-731.4	-694.8	0.00	0.00	0.00
6,800.0	0.00	0.00	6,697.2	-699.68	711.8	-731.4	-694.8	0.00	0.00	0.00
6,900.0	0.00	0.00	6,797.2	-799.68	711.8	-731.4	-694.8	0.00	0.00	0.00
7,000.0	0.00	0.00	6,897.2	-899.68	711.8	-731.4	-694.8	0.00	0.00	0.00
7,100.0	0.00	0.00	6,997.2	-999.68	711.8	-731.4	-694.8	0.00	0.00	0.00
7,200.0	0.00	0.00	7,097.2	-1,099.68	711.8	-731.4	-694.8	0.00	0.00	0.00
KOP (10°/100ft BUR)										
7,276.3	0.00	0.00	7,173.5	-1,176.00	711.8	-731.4	-694.8	0.00	0.00	0.00
7,300.0	2.37	91.37	7,197.2	-1,199.67	711.8	-730.9	-694.3	10.00	10.00	0.00
7,400.0	12.37	91.37	7,296.2	-1,298.72	711.5	-718.1	-681.6	10.00	10.00	0.00
7,500.0	22.37	91.37	7,391.5	-1,394.04	710.8	-688.3	-651.8	10.00	10.00	0.00
7,600.0	32.37	91.37	7,480.2	-1,482.73	709.7	-642.4	-606.0	10.00	10.00	0.00
SHARON SPRINGS SHALE										
7,682.5	40.62	91.37	7,546.5	-1,549.00	708.5	-593.4	-557.2	10.00	10.00	0.00
7,700.0	42.37	91.37	7,559.6	-1,562.11	708.2	-581.8	-545.6	10.00	10.00	0.00
NIORRARA FORMATION										
7,731.8	45.55	91.37	7,582.5	-1,585.00	707.7	-559.7	-523.6	10.00	10.00	0.00
NIORRARA A CHALK										
7,749.2	47.29	91.37	7,594.5	-1,597.00	707.4	-547.1	-511.0	10.00	10.00	0.00
7,800.0	52.37	91.37	7,627.3	-1,629.75	706.5	-508.3	-472.3	10.00	10.00	0.00
7,900.0	62.37	91.37	7,681.1	-1,683.61	704.5	-424.3	-388.4	10.00	10.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DTH 5-64 14B-13-2
Company:	BISON EXPLORATION	TVD Reference:	KB-EST @ 5997.5usft (Original Well Elev)
Project:	ARAPAHOE COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 5997.5usft (Original Well Elev)
Site:	NW SW SEC. 14 T5S R64W 6th P.M.	North Reference:	True
Well:	DTH 5-64 14B-13-2	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)
NIORRARA B CHALK										
7,990.2	71.39	91.37	7,716.5	-1,719.00	702.5	-341.4	-305.8	10.00	10.00	0.00
8,000.0	72.37	91.37	7,719.5	-1,722.04	702.3	-332.1	-296.5	10.00	10.00	0.00
BPI: 2229ft FSL & 460ft FWL of Sec 14										
8,047.3	77.10	91.37	7,732.0	-1,734.49	701.2	-286.5	-251.0	10.00	10.00	0.00
8,100.0	82.37	91.37	7,741.4	-1,743.88	699.9	-234.7	-199.3	10.00	10.00	0.00
HZ LP: 2225.9ft FSL & 587.9ft FWL of Sec 14										
8,176.3	90.00	91.37	7,746.5	-1,748.96	698.1	-158.6	-123.4	10.00	10.00	0.00
8,200.0	90.00	91.37	7,746.5	-1,748.96	697.5	-134.9	-99.8	0.00	0.00	0.00
8,300.0	90.00	91.37	7,746.5	-1,748.96	695.1	-35.0	-0.1	0.00	0.00	0.00
8,400.0	90.00	91.37	7,746.5	-1,748.96	692.8	65.0	99.6	0.00	0.00	0.00
8,500.0	90.00	91.37	7,746.5	-1,748.96	690.4	165.0	199.4	0.00	0.00	0.00
8,600.0	90.00	91.37	7,746.5	-1,748.96	688.0	264.9	299.1	0.00	0.00	0.00
8,700.0	90.00	91.37	7,746.5	-1,748.96	685.6	364.9	398.8	0.00	0.00	0.00
8,800.0	90.00	91.37	7,746.5	-1,748.96	683.2	464.9	498.5	0.00	0.00	0.00
8,900.0	90.00	91.37	7,746.5	-1,748.96	680.8	564.9	598.3	0.00	0.00	0.00
9,000.0	90.00	91.37	7,746.5	-1,748.96	678.4	664.8	698.0	0.00	0.00	0.00
9,100.0	90.00	91.37	7,746.5	-1,748.96	676.0	764.8	797.7	0.00	0.00	0.00
9,200.0	90.00	91.37	7,746.5	-1,748.96	673.6	864.8	897.4	0.00	0.00	0.00
9,300.0	90.00	91.37	7,746.5	-1,748.96	671.2	964.7	997.2	0.00	0.00	0.00
9,400.0	90.00	91.37	7,746.5	-1,748.96	668.9	1,064.7	1,096.9	0.00	0.00	0.00
9,500.0	90.00	91.37	7,746.5	-1,748.96	666.5	1,164.7	1,196.6	0.00	0.00	0.00
9,600.0	90.00	91.37	7,746.5	-1,748.96	664.1	1,264.7	1,296.3	0.00	0.00	0.00
9,700.0	90.00	91.37	7,746.5	-1,748.96	661.7	1,364.6	1,396.1	0.00	0.00	0.00
9,800.0	90.00	91.37	7,746.5	-1,748.96	659.3	1,464.6	1,495.8	0.00	0.00	0.00
9,900.0	90.00	91.37	7,746.5	-1,748.96	656.9	1,564.6	1,595.5	0.00	0.00	0.00
10,000.0	90.00	91.37	7,746.5	-1,748.96	654.5	1,664.5	1,695.2	0.00	0.00	0.00
10,100.0	90.00	91.37	7,746.5	-1,748.96	652.1	1,764.5	1,795.0	0.00	0.00	0.00
10,200.0	90.00	91.37	7,746.5	-1,748.96	649.7	1,864.5	1,894.7	0.00	0.00	0.00
10,300.0	90.00	91.37	7,746.5	-1,748.96	647.4	1,964.5	1,994.4	0.00	0.00	0.00
10,400.0	90.00	91.37	7,746.5	-1,748.96	645.0	2,064.4	2,094.2	0.00	0.00	0.00
10,500.0	90.00	91.37	7,746.5	-1,748.96	642.6	2,164.4	2,193.9	0.00	0.00	0.00
10,600.0	90.00	91.37	7,746.5	-1,748.96	640.2	2,264.4	2,293.6	0.00	0.00	0.00
10,700.0	90.00	91.37	7,746.5	-1,748.96	637.8	2,364.4	2,393.3	0.00	0.00	0.00
10,800.0	90.00	91.37	7,746.5	-1,748.96	635.4	2,464.3	2,493.1	0.00	0.00	0.00
10,900.0	90.00	91.37	7,746.5	-1,748.96	633.0	2,564.3	2,592.8	0.00	0.00	0.00
11,000.0	90.00	91.37	7,746.5	-1,748.96	630.6	2,664.3	2,692.5	0.00	0.00	0.00
11,100.0	90.00	91.37	7,746.5	-1,748.96	628.3	2,764.2	2,792.2	0.00	0.00	0.00
11,200.0	90.00	91.37	7,746.5	-1,748.96	625.9	2,864.2	2,892.0	0.00	0.00	0.00
11,300.0	90.00	91.37	7,746.5	-1,748.96	623.5	2,964.2	2,991.7	0.00	0.00	0.00
11,400.0	90.00	91.37	7,746.5	-1,748.96	621.1	3,064.2	3,091.4	0.00	0.00	0.00
11,500.0	90.00	91.37	7,746.5	-1,748.96	618.7	3,164.1	3,191.1	0.00	0.00	0.00
11,600.0	90.00	91.37	7,746.5	-1,748.96	616.3	3,264.1	3,290.9	0.00	0.00	0.00
11,700.0	90.00	91.37	7,746.5	-1,748.96	613.9	3,364.1	3,390.6	0.00	0.00	0.00
11,800.0	90.00	91.37	7,746.5	-1,748.96	611.5	3,464.0	3,490.3	0.00	0.00	0.00
11,900.0	90.00	91.37	7,746.5	-1,748.96	609.2	3,564.0	3,590.0	0.00	0.00	0.00
12,000.0	90.00	91.37	7,746.5	-1,748.96	606.8	3,664.0	3,689.8	0.00	0.00	0.00
12,100.0	90.00	91.37	7,746.5	-1,748.96	604.4	3,764.0	3,789.5	0.00	0.00	0.00
12,200.0	90.00	91.37	7,746.5	-1,748.97	602.0	3,863.9	3,889.2	0.00	0.00	0.00
12,300.0	90.00	91.37	7,746.5	-1,748.97	599.6	3,963.9	3,989.0	0.00	0.00	0.00
12,400.0	90.00	91.37	7,746.5	-1,748.97	597.2	4,063.9	4,088.7	0.00	0.00	0.00
12,500.0	90.00	91.37	7,746.5	-1,748.97	594.8	4,163.8	4,188.4	0.00	0.00	0.00
12,600.0	90.00	91.37	7,746.5	-1,748.97	592.5	4,263.8	4,288.1	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well DTH 5-64 14B-13-2
Company:	BISON EXPLORATION	TVD Reference:	KB-EST @ 5997.5usft (Original Well Elev)
Project:	ARAPAHOE COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 5997.5usft (Original Well Elev)
Site:	NW SW SEC. 14 T5S R64W 6th P.M.	North Reference:	True
Well:	DTH 5-64 14B-13-2	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)
12,700.0	90.00	91.37	7,746.5	-1,748.97	590.1	4,363.8	4,387.9	0.00	0.00	0.00
12,800.0	90.00	91.37	7,746.5	-1,748.97	587.7	4,463.8	4,487.6	0.00	0.00	0.00
12,900.0	90.00	91.37	7,746.5	-1,748.97	585.3	4,563.7	4,587.3	0.00	0.00	0.00
13,000.0	90.00	91.37	7,746.5	-1,748.97	582.9	4,663.7	4,687.0	0.00	0.00	0.00
13,100.0	90.00	91.37	7,746.5	-1,748.97	580.5	4,763.7	4,786.8	0.00	0.00	0.00
13,200.0	90.00	91.37	7,746.5	-1,748.97	578.2	4,863.6	4,886.5	0.00	0.00	0.00
13,300.0	90.00	91.37	7,746.5	-1,748.97	575.8	4,963.6	4,986.2	0.00	0.00	0.00
13,400.0	90.00	91.37	7,746.5	-1,748.97	573.4	5,063.6	5,085.9	0.00	0.00	0.00
13,500.0	90.00	91.37	7,746.5	-1,748.97	571.0	5,163.6	5,185.7	0.00	0.00	0.00
13,600.0	90.00	91.37	7,746.5	-1,748.97	568.6	5,263.5	5,285.4	0.00	0.00	0.00
13,700.0	90.00	91.37	7,746.5	-1,748.97	566.2	5,363.5	5,385.1	0.00	0.00	0.00
13,800.0	90.00	91.37	7,746.5	-1,748.97	563.8	5,463.5	5,484.9	0.00	0.00	0.00
13,900.0	90.00	91.37	7,746.5	-1,748.97	561.5	5,563.4	5,584.6	0.00	0.00	0.00
14,000.0	90.00	91.37	7,746.5	-1,748.97	559.1	5,663.4	5,684.3	0.00	0.00	0.00
14,100.0	90.00	91.37	7,746.5	-1,748.97	556.7	5,763.4	5,784.0	0.00	0.00	0.00
14,200.0	90.00	91.37	7,746.5	-1,748.97	554.3	5,863.4	5,883.8	0.00	0.00	0.00
14,300.0	90.00	91.37	7,746.5	-1,748.98	551.9	5,963.3	5,983.5	0.00	0.00	0.00
14,400.0	90.00	91.37	7,746.5	-1,748.98	549.5	6,063.3	6,083.2	0.00	0.00	0.00
14,500.0	90.00	91.37	7,746.5	-1,748.98	547.2	6,163.3	6,182.9	0.00	0.00	0.00
14,600.0	90.00	91.37	7,746.5	-1,748.98	544.8	6,263.2	6,282.7	0.00	0.00	0.00
14,700.0	90.00	91.37	7,746.5	-1,748.98	542.4	6,363.2	6,382.4	0.00	0.00	0.00
14,800.0	90.00	91.37	7,746.5	-1,748.98	540.0	6,463.2	6,482.1	0.00	0.00	0.00
14,900.0	90.00	91.37	7,746.5	-1,748.98	537.6	6,563.2	6,581.8	0.00	0.00	0.00
15,000.0	90.00	91.37	7,746.5	-1,748.98	535.2	6,663.1	6,681.6	0.00	0.00	0.00
15,100.0	90.00	91.36	7,746.5	-1,748.98	532.9	6,763.1	6,781.3	0.00	0.00	0.00
15,200.0	90.00	91.36	7,746.5	-1,748.98	530.5	6,863.1	6,881.0	0.00	0.00	0.00
15,300.0	90.00	91.36	7,746.5	-1,748.98	528.1	6,963.0	6,980.8	0.00	0.00	0.00
15,400.0	90.00	91.36	7,746.5	-1,748.98	525.7	7,063.0	7,080.5	0.00	0.00	0.00
15,500.0	90.00	91.36	7,746.5	-1,748.98	523.3	7,163.0	7,180.2	0.00	0.00	0.00
15,600.0	90.00	91.36	7,746.5	-1,748.98	521.0	7,263.0	7,279.9	0.00	0.00	0.00
15,700.0	90.00	91.36	7,746.5	-1,748.98	518.6	7,362.9	7,379.7	0.00	0.00	0.00
15,800.0	90.00	91.36	7,746.5	-1,748.98	516.2	7,462.9	7,479.4	0.00	0.00	0.00
15,900.0	90.00	91.36	7,746.5	-1,748.99	513.8	7,562.9	7,579.1	0.00	0.00	0.00
16,000.0	90.00	91.36	7,746.5	-1,748.99	511.4	7,662.8	7,678.8	0.00	0.00	0.00
16,100.0	90.00	91.36	7,746.5	-1,748.99	509.1	7,762.8	7,778.6	0.00	0.00	0.00
16,200.0	90.00	91.36	7,746.5	-1,748.99	506.7	7,862.8	7,878.3	0.00	0.00	0.00
16,300.0	90.00	91.36	7,746.5	-1,748.99	504.3	7,962.8	7,978.0	0.00	0.00	0.00
16,400.0	90.00	91.36	7,746.5	-1,748.99	501.9	8,062.7	8,077.8	0.00	0.00	0.00
16,500.0	90.00	91.36	7,746.5	-1,748.99	499.5	8,162.7	8,177.5	0.00	0.00	0.00
16,600.0	90.00	91.36	7,746.5	-1,748.99	497.1	8,262.7	8,277.2	0.00	0.00	0.00
16,700.0	90.00	91.36	7,746.5	-1,748.99	494.8	8,362.6	8,376.9	0.00	0.00	0.00
16,800.0	90.00	91.36	7,746.5	-1,748.99	492.4	8,462.6	8,476.7	0.00	0.00	0.00
16,900.0	90.00	91.36	7,746.5	-1,748.99	490.0	8,562.6	8,576.4	0.00	0.00	0.00
17,000.0	90.00	91.36	7,746.5	-1,748.99	487.6	8,662.6	8,676.1	0.00	0.00	0.00
17,100.0	90.00	91.36	7,746.5	-1,748.99	485.3	8,762.5	8,775.8	0.00	0.00	0.00
17,200.0	90.00	91.36	7,746.5	-1,749.00	482.9	8,862.5	8,875.6	0.00	0.00	0.00
17,300.0	90.00	91.36	7,746.5	-1,749.00	480.5	8,962.5	8,975.3	0.00	0.00	0.00
17,400.0	90.00	91.36	7,746.5	-1,749.00	478.1	9,062.4	9,075.0	0.00	0.00	0.00
17,500.0	90.00	91.36	7,746.5	-1,749.00	475.7	9,162.4	9,174.7	0.00	0.00	0.00
17,600.0	90.00	91.36	7,746.5	-1,749.00	473.4	9,262.4	9,274.5	0.00	0.00	0.00
17,700.0	90.00	91.36	7,746.5	-1,749.00	471.0	9,362.4	9,374.2	0.00	0.00	0.00
BHL: 2215ft FSL & 460ft FEL of Sec 13										
17,718.6	90.00	91.36	7,746.5	-1,749.00	470.5	9,380.9	9,392.7	0.00	0.00	0.00

Planning Report



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Company:	BISON EXPLORATION	TVD Reference:	KB-EST @ 5997.5usft (Original Well Elev)
Project:	ARAPAHOE COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 5997.5usft (Original Well Elev)
Site:	NW SW SEC. 14 T5S R64W 6th P.M.	North Reference:	True
Well:	DTH 5-64 14B-13-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Formations					
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
163.5	163.5	DENVER			
1,076.9	1,066.5	UPPER ARAPAHOE			
1,894.8	1,866.5	LARAMIE - FOX HILLS			
2,140.1	2,106.5	PIERRE SHALE (BASE FOX HILLS)			
5,361.5	5,259.5	SHANNON SANDSTONE MBR			
7,682.5	7,546.5	SHARON SPRINGS SHALE			
7,731.8	7,582.5	NIOBRARA FORMATION			
7,749.2	7,594.5	NIOBRARA A CHALK			
7,990.2	7,716.5	NIOBRARA B 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: 1533ft FSL & 760ft FWL of Sec 14
200.0	200.0	0.0	0.0	START NUDGE (2°/100ft BUR)
799.8	795.4	43.6	-44.8	EOB TO 12° INC
5,108.6	5,010.1	668.2	-686.6	END OF TANGENT
5,708.3	5,605.5	711.8	-731.4	EOD TO VERTICAL
7,276.3	7,173.5	711.8	-731.4	KOP (10°/100ft BUR)
8,047.3	7,732.0	701.2	-286.5	BPI: 2229ft FSL & 460ft FWL of Sec 14
8,176.3	7,746.5	698.1	-158.6	HZ LP: 2225.9ft FSL & 587.9ft FWL of Sec 14
17,718.6	7,746.5	470.5	9,380.9	BHL: 2215ft FSL & 460ft FEL of Sec 13