

BISON EXPLORATION

**Arapahoe County
Sec 4-T4S-R65W
JAMASO 4-65 5-6-7**

Original Wellbore

Plan: Proposal 1

Standard Planning Report

20 January, 2017



Project: Arapahoe County
Site: Sec 4-T4S-R65W
Well: JAMASO 4-65 5-6-7
Wellbore: Original Wellbore
Design: Proposal 1



Azimuths to True North
Magnetic North: 8.15°
Magnetic Field
Strength: 52093.1nT
Dip Angle: 66.34°
Date: 1/18/2017
Model: IGRF2015

WELL DETAILS: JAMASO 4-65 5-6-7

	+N/-S	+E/-W	Northing	Easting	5585.0	Latitude	Longitude	Slot
	0.0	0.0	1146788.63	3231506.77	39° 44' 0.060 N	104° 40' 36.660 W		

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1550.0	0.00	0.00	1550.0	0.0	0.0	0.00	0.00	0.0	
3	1753.8	4.08	304.46	1753.7	4.1	-6.0	2.00	304.46	6.1	
4	7068.4	4.08	304.46	7054.8	217.9	-317.5	0.00	0.00	322.9	
5	7272.3	0.00	0.00	7258.5	222.0	-323.5	2.00	180.00	329.0	
6	7404.3	0.00	0.00	7390.5	222.0	-323.5	0.00	0.00	329.0	
7	8261.2	90.00	270.25	7936.0	224.4	-869.0	10.50	270.25	874.4	
8	18043.7	90.00	270.25	7936.0	267.4	-10651.4	0.00	0.00	10654.8	JAMASO 4-65 5-6-7

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
1550.0	0.00	0.00	1550.0	0.0	0.0	0.0	0.0	Start Build 2.00
1753.8	4.08	304.46	1753.7	4.1	-6.0	6.1	7.2	Start 5314.6 hold at 1753.8 MD
7068.4	4.08	304.46	7054.8	217.9	-317.5	322.9	385.1	Start Drop -2.00
7272.3	0.00	0.00	7258.5	222.0	-323.5	329.0	392.3	Start 132.0 hold at 7272.3 MD
7404.3	0.00	0.00	7390.5	222.0	-323.5	329.0	392.3	Start Build 10.50
8261.2	90.00	270.25	7936.0	224.4	-869.0	874.4	937.8	Start 9782.5 hold at 8261.2 MD
18043.7	90.00	270.25	7936.0	267.4	-10651.4	10654.8	10720.4	TD at 18043.7

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
JAMASO 4-65 5-6-7 PBHL - plan hits target center	7936.0	267.4	-10651.4	1146957.13	3220853.33	39° 44' 2.680 N	104° 42' 53.000 W	Point

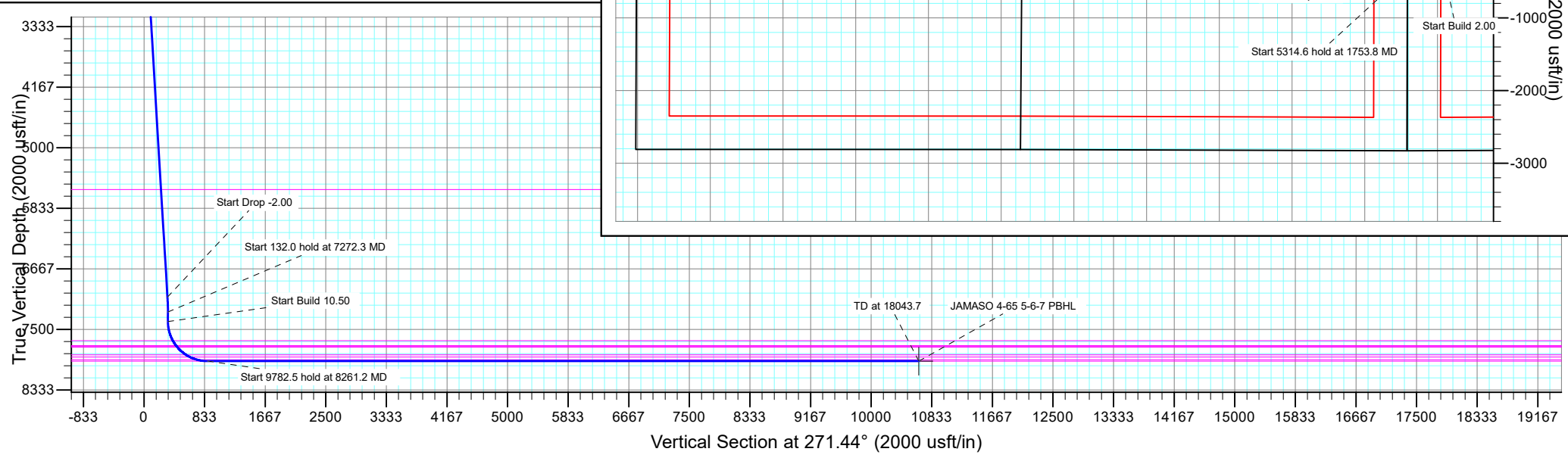
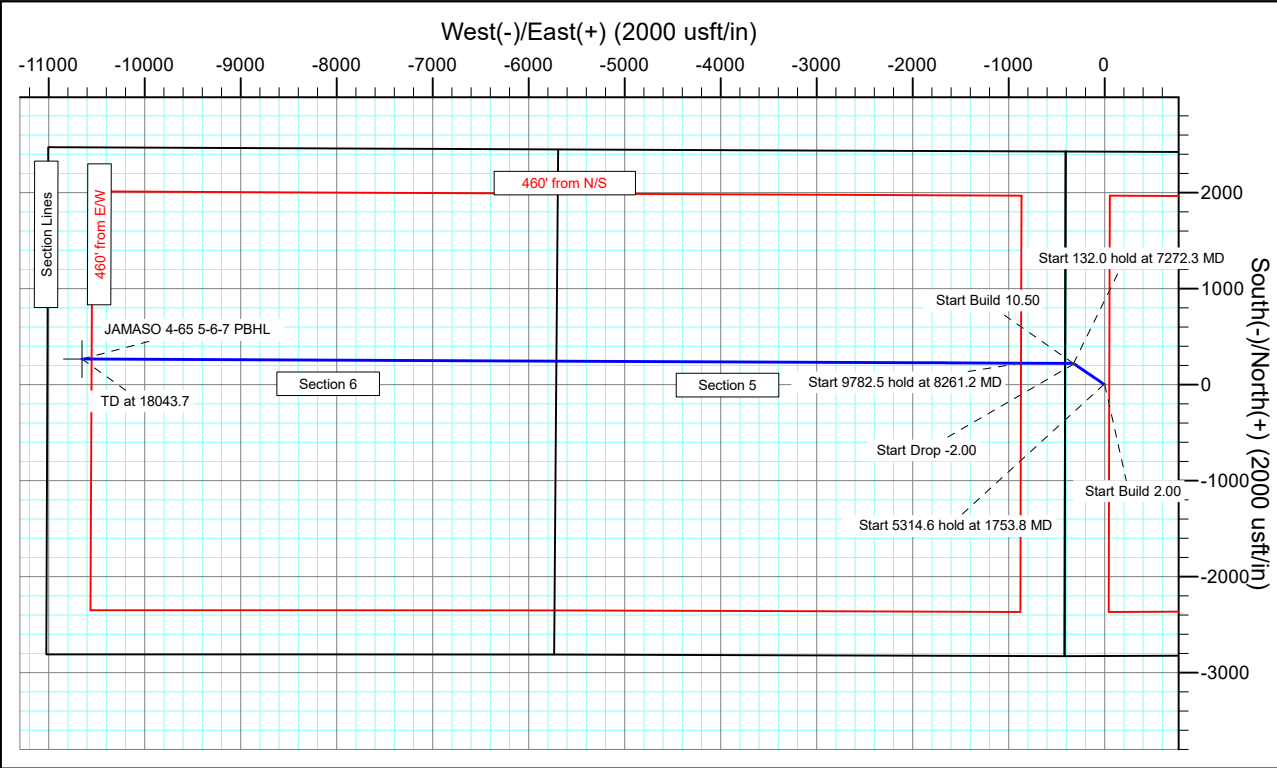
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
293.0	293.0	Denver
877.0	877.0	Upper Arapahoe
1165.0	1165.0	Lower Arapahoe
1718.0	1718.1	Laramie - Fox Hills
1970.0	1970.0	Shannon Sandstone Member
5575.0	5584.0	Sharon Springs Shale
7655.0	7680.4	Niobrara Formation
7720.0	7758.1	Niobrara A Chalk
7735.0	7777.2	Niobrara A Landing Point
7745.0	7790.2	Niobrara B Chalk
7849.0	7948.8	Niobrara B Landing Point
7879.0	8009.6	Niobrara C Chalk
7916.0	8113.0	Niobrara C Landing Point
7936.0	8261.2	Niobrara C Landing Point

PROJECT DETAILS: Arapahoe County

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

SHL:
2428' FNL, 309' FWL
Sec 4-T4S-R65W
BHL:
2206' FNL, 360' FWL
Sec 6-T4S-R65W
LP:
2204' FNL, 460' FEL
Sec 5-T4S-R65W



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-7
Company:	BISON EXPLORATION	TVD Reference:	KB 25' @ 5610.0usft
Project:	Arapahoe County	MD Reference:	KB 25' @ 5610.0usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-7	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	Proposal 1		

Project	Arapahoe County		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		Sec 4-T4S-R65W			
Site Position:		Northing:	1,149,213.35 usft	Latitude:	39° 44' 24.061 N
From:	Lat/Long	Easting:	3,231,079.56 usft	Longitude:	104° 40' 41.840 W
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:	0.53

Well	JAMASO 4-65 5-6-7					
Well Position	+N/-S	-2,428.6 usft	Northing:	1,146,788.62 usft	Latitude:	39° 44' 0.060 N
	+E/-W	404.7 usft	Easting:	3,231,506.77 usft	Longitude:	104° 40' 36.660 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	5,585.0 usft

Wellbore	Original Wellbore				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/18/2017	8.15	66.34	52,093.14978320

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	271.44

Plan Survey Tool Program	Date	1/20/2017		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	18,043.7	Proposal 1 (Original Wellbore)	MWD
				OWSG MWD - Standard

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,550.0	0.00	0.00	1,550.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,753.8	4.08	304.46	1,753.7	4.1	-6.0	2.00	2.00	0.00	304.46	
7,068.4	4.08	304.46	7,054.8	217.9	-317.5	0.00	0.00	0.00	0.00	
7,272.3	0.00	0.00	7,258.5	222.0	-323.5	2.00	-2.00	0.00	180.00	
7,404.3	0.00	0.00	7,390.5	222.0	-323.5	0.00	0.00	0.00	0.00	
8,261.2	90.00	270.25	7,936.0	224.4	-869.0	10.50	10.50	0.00	270.25	
18,043.7	90.00	270.25	7,936.0	267.4	-10,651.4	0.00	0.00	0.00	0.00	JAMASO 4-65 5-6-7 F

Planning Report

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Company:	BISON EXPLORATION	TVD Reference:	KB 25' @ 5610.0usft
Project:	Arapahoe County	MD Reference:	KB 25' @ 5610.0usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-7	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	Proposal 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
293.0	0.00	0.00	293.0	0.0	0.0	0.0	0.00	0.00	0.00
Denver									
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
877.0	0.00	0.00	877.0	0.0	0.0	0.0	0.00	0.00	0.00
Upper Arapahoe									
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,165.0	0.00	0.00	1,165.0	0.0	0.0	0.0	0.00	0.00	0.00
Lower Arapahoe									
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,550.0	0.00	0.00	1,550.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 2.00									
1,600.0	1.00	304.46	1,600.0	0.2	-0.4	0.4	2.00	2.00	0.00
1,700.0	3.00	304.46	1,699.9	2.2	-3.2	3.3	2.00	2.00	0.00
1,718.1	3.36	304.46	1,718.0	2.8	-4.1	4.1	2.00	2.00	0.00
Laramie - Fox Hills									
1,753.8	4.08	304.46	1,753.7	4.1	-6.0	6.1	2.00	2.00	0.00
Start 5314.6 hold at 1753.8 MD									
1,800.0	4.08	304.46	1,799.7	6.0	-8.7	8.8	0.00	0.00	0.00
1,900.0	4.08	304.46	1,899.5	10.0	-14.5	14.8	0.00	0.00	0.00
1,970.7	4.08	304.46	1,970.0	12.8	-18.7	19.0	0.00	0.00	0.00
Pierre Shale (Base of Fox Hills)									
2,000.0	4.08	304.46	1,999.2	14.0	-20.4	20.8	0.00	0.00	0.00
2,100.0	4.08	304.46	2,099.0	18.0	-26.3	26.7	0.00	0.00	0.00
2,200.0	4.08	304.46	2,198.7	22.0	-32.1	32.7	0.00	0.00	0.00
2,300.0	4.08	304.46	2,298.4	26.1	-38.0	38.6	0.00	0.00	0.00
2,400.0	4.08	304.46	2,398.2	30.1	-43.9	44.6	0.00	0.00	0.00
2,500.0	4.08	304.46	2,497.9	34.1	-49.7	50.6	0.00	0.00	0.00
2,600.0	4.08	304.46	2,597.7	38.1	-55.6	56.5	0.00	0.00	0.00
2,700.0	4.08	304.46	2,697.4	42.2	-61.4	62.5	0.00	0.00	0.00
2,800.0	4.08	304.46	2,797.2	46.2	-67.3	68.4	0.00	0.00	0.00
2,900.0	4.08	304.46	2,896.9	50.2	-73.2	74.4	0.00	0.00	0.00
3,000.0	4.08	304.46	2,996.7	54.2	-79.0	80.4	0.00	0.00	0.00
3,100.0	4.08	304.46	3,096.4	58.3	-84.9	86.3	0.00	0.00	0.00
3,200.0	4.08	304.46	3,196.2	62.3	-90.8	92.3	0.00	0.00	0.00
3,300.0	4.08	304.46	3,295.9	66.3	-96.6	98.2	0.00	0.00	0.00
3,400.0	4.08	304.46	3,395.7	70.3	-102.5	104.2	0.00	0.00	0.00
3,500.0	4.08	304.46	3,495.4	74.3	-108.3	110.2	0.00	0.00	0.00
3,600.0	4.08	304.46	3,595.2	78.4	-114.2	116.1	0.00	0.00	0.00
3,700.0	4.08	304.46	3,694.9	82.4	-120.1	122.1	0.00	0.00	0.00
3,800.0	4.08	304.46	3,794.7	86.4	-125.9	128.1	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-7
Company:	BISON EXPLORATION	TVD Reference:	KB 25' @ 5610.0usft
Project:	Arapahoe County	MD Reference:	KB 25' @ 5610.0usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-7	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	Proposal 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,900.0	4.08	304.46	3,894.4	90.4	-131.8	134.0	0.00	0.00	0.00
4,000.0	4.08	304.46	3,994.1	94.5	-137.6	140.0	0.00	0.00	0.00
4,100.0	4.08	304.46	4,093.9	98.5	-143.5	145.9	0.00	0.00	0.00
4,200.0	4.08	304.46	4,193.6	102.5	-149.4	151.9	0.00	0.00	0.00
4,300.0	4.08	304.46	4,293.4	106.5	-155.2	157.9	0.00	0.00	0.00
4,400.0	4.08	304.46	4,393.1	110.6	-161.1	163.8	0.00	0.00	0.00
4,500.0	4.08	304.46	4,492.9	114.6	-167.0	169.8	0.00	0.00	0.00
4,600.0	4.08	304.46	4,592.6	118.6	-172.8	175.7	0.00	0.00	0.00
4,700.0	4.08	304.46	4,692.4	122.6	-178.7	181.7	0.00	0.00	0.00
4,800.0	4.08	304.46	4,792.1	126.6	-184.5	187.7	0.00	0.00	0.00
4,900.0	4.08	304.46	4,891.9	130.7	-190.4	193.6	0.00	0.00	0.00
5,000.0	4.08	304.46	4,991.6	134.7	-196.3	199.6	0.00	0.00	0.00
5,100.0	4.08	304.46	5,091.4	138.7	-202.1	205.5	0.00	0.00	0.00
5,200.0	4.08	304.46	5,191.1	142.7	-208.0	211.5	0.00	0.00	0.00
5,300.0	4.08	304.46	5,290.9	146.8	-213.9	217.5	0.00	0.00	0.00
5,400.0	4.08	304.46	5,390.6	150.8	-219.7	223.4	0.00	0.00	0.00
5,500.0	4.08	304.46	5,490.3	154.8	-225.6	229.4	0.00	0.00	0.00
5,584.9	4.08	304.46	5,575.0	158.2	-230.6	234.5	0.00	0.00	0.00
Shannon Sandstone Member									
5,600.0	4.08	304.46	5,590.1	158.8	-231.4	235.4	0.00	0.00	0.00
5,700.0	4.08	304.46	5,689.8	162.8	-237.3	241.3	0.00	0.00	0.00
5,800.0	4.08	304.46	5,789.6	166.9	-243.2	247.3	0.00	0.00	0.00
5,900.0	4.08	304.46	5,889.3	170.9	-249.0	253.2	0.00	0.00	0.00
6,000.0	4.08	304.46	5,989.1	174.9	-254.9	259.2	0.00	0.00	0.00
6,100.0	4.08	304.46	6,088.8	178.9	-260.8	265.2	0.00	0.00	0.00
6,200.0	4.08	304.46	6,188.6	183.0	-266.6	271.1	0.00	0.00	0.00
6,300.0	4.08	304.46	6,288.3	187.0	-272.5	277.1	0.00	0.00	0.00
6,400.0	4.08	304.46	6,388.1	191.0	-278.3	283.0	0.00	0.00	0.00
6,500.0	4.08	304.46	6,487.8	195.0	-284.2	289.0	0.00	0.00	0.00
6,600.0	4.08	304.46	6,587.6	199.1	-290.1	295.0	0.00	0.00	0.00
6,700.0	4.08	304.46	6,687.3	203.1	-295.9	300.9	0.00	0.00	0.00
6,800.0	4.08	304.46	6,787.1	207.1	-301.8	306.9	0.00	0.00	0.00
6,900.0	4.08	304.46	6,886.8	211.1	-307.6	312.8	0.00	0.00	0.00
7,000.0	4.08	304.46	6,986.6	215.1	-313.5	318.8	0.00	0.00	0.00
7,068.4	4.08	304.46	7,054.8	217.9	-317.5	322.9	0.00	0.00	0.00
Start Drop -2.00									
7,100.0	3.45	304.46	7,086.3	219.1	-319.2	324.6	2.00	-2.00	0.00
7,200.0	1.45	304.46	7,186.2	221.5	-322.7	328.2	2.00	-2.00	0.00
7,272.3	0.00	0.00	7,258.5	222.0	-323.5	329.0	2.00	-2.00	0.00
Start 132.0 hold at 7272.3 MD									
7,300.0	0.00	0.00	7,286.2	222.0	-323.5	329.0	0.00	0.00	0.00
7,404.3	0.00	0.00	7,390.5	222.0	-323.5	329.0	0.00	0.00	0.00
Start Build 10.50									
7,450.0	4.80	270.25	7,436.2	222.0	-325.4	330.9	10.50	10.50	0.00
7,500.0	10.05	270.25	7,485.7	222.0	-331.9	337.3	10.50	10.50	0.00
7,550.0	15.30	270.25	7,534.5	222.1	-342.8	348.3	10.50	10.50	0.00
7,600.0	20.56	270.25	7,582.0	222.2	-358.2	363.7	10.50	10.50	0.00
7,650.0	25.81	270.25	7,628.0	222.2	-377.9	383.4	10.50	10.50	0.00
7,680.4	29.00	270.25	7,655.0	222.3	-391.9	397.4	10.50	10.50	0.00
Sharon Springs Shale									
7,700.0	31.06	270.25	7,671.9	222.3	-401.7	407.2	10.50	10.50	0.00
7,750.0	36.31	270.25	7,713.5	222.5	-429.4	434.9	10.50	10.50	0.00
7,758.1	37.16	270.25	7,720.0	222.5	-434.3	439.7	10.50	10.50	0.00

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Company:	BISON EXPLORATION	TVD Reference:	KB 25' @ 5610.0usft
Project:	Arapahoe County	MD Reference:	KB 25' @ 5610.0usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-7	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	Proposal 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
Niobrara Formation										
7,777.2	39.16	270.25	7,735.0	222.5	-446.0	451.5	10.50	10.50	0.00	
Niobrara A Chalk										
7,790.2	40.53	270.25	7,745.0	222.6	-454.4	459.8	10.50	10.50	0.00	
Niobrara A Landing Point										
7,800.0	41.56	270.25	7,752.4	222.6	-460.8	466.3	10.50	10.50	0.00	
7,850.0	46.81	270.25	7,788.2	222.8	-495.7	501.1	10.50	10.50	0.00	
7,900.0	52.07	270.25	7,820.7	222.9	-533.6	539.1	10.50	10.50	0.00	
7,948.8	57.19	270.25	7,849.0	223.1	-573.5	578.9	10.50	10.50	0.00	
Niobrara B Chalk										
7,950.0	57.32	270.25	7,849.6	223.1	-574.4	579.9	10.50	10.50	0.00	
8,000.0	62.57	270.25	7,874.7	223.3	-617.7	623.1	10.50	10.50	0.00	
8,009.6	63.57	270.25	7,879.0	223.3	-626.2	631.6	10.50	10.50	0.00	
Niobrara B Landing Point										
8,050.0	67.82	270.25	7,895.6	223.5	-663.1	668.5	10.50	10.50	0.00	
8,100.0	73.07	270.25	7,912.4	223.7	-710.2	715.6	10.50	10.50	0.00	
8,113.0	74.44	270.25	7,916.0	223.8	-722.6	728.0	10.50	10.50	0.00	
Niobrara C Chalk										
8,150.0	78.32	270.25	7,924.7	223.9	-758.6	764.0	10.50	10.50	0.00	
8,200.0	83.58	270.25	7,932.6	224.1	-808.0	813.3	10.50	10.50	0.00	
8,250.0	88.83	270.25	7,935.9	224.3	-857.8	863.2	10.50	10.50	0.00	
8,261.2	90.00	270.25	7,936.0	224.4	-869.0	874.4	10.50	10.50	0.00	
Start 9782.5 hold at 8261.2 MD - Niobrara C Landing Point										
8,300.0	90.00	270.25	7,936.0	224.6	-907.8	913.2	0.00	0.00	0.00	
8,400.0	90.00	270.25	7,936.0	225.0	-1,007.8	1,013.2	0.00	0.00	0.00	
8,500.0	90.00	270.25	7,936.0	225.4	-1,107.8	1,113.1	0.00	0.00	0.00	
8,600.0	90.00	270.25	7,936.0	225.9	-1,207.8	1,213.1	0.00	0.00	0.00	
8,700.0	90.00	270.25	7,936.0	226.3	-1,307.8	1,313.1	0.00	0.00	0.00	
8,800.0	90.00	270.25	7,936.0	226.8	-1,407.8	1,413.1	0.00	0.00	0.00	
8,900.0	90.00	270.25	7,936.0	227.2	-1,507.8	1,513.1	0.00	0.00	0.00	
9,000.0	90.00	270.25	7,936.0	227.6	-1,607.8	1,613.0	0.00	0.00	0.00	
9,100.0	90.00	270.25	7,936.0	228.1	-1,707.8	1,713.0	0.00	0.00	0.00	
9,200.0	90.00	270.25	7,936.0	228.5	-1,807.8	1,813.0	0.00	0.00	0.00	
9,300.0	90.00	270.25	7,936.0	229.0	-1,907.8	1,913.0	0.00	0.00	0.00	
9,400.0	90.00	270.25	7,936.0	229.4	-2,007.8	2,012.9	0.00	0.00	0.00	
9,500.0	90.00	270.25	7,936.0	229.8	-2,107.8	2,112.9	0.00	0.00	0.00	
9,600.0	90.00	270.25	7,936.0	230.3	-2,207.8	2,212.9	0.00	0.00	0.00	
9,700.0	90.00	270.25	7,936.0	230.7	-2,307.8	2,312.9	0.00	0.00	0.00	
9,800.0	90.00	270.25	7,936.0	231.2	-2,407.8	2,412.9	0.00	0.00	0.00	
9,900.0	90.00	270.25	7,936.0	231.6	-2,507.8	2,512.8	0.00	0.00	0.00	
10,000.0	90.00	270.25	7,936.0	232.0	-2,607.8	2,612.8	0.00	0.00	0.00	
10,100.0	90.00	270.25	7,936.0	232.5	-2,707.8	2,712.8	0.00	0.00	0.00	
10,200.0	90.00	270.25	7,936.0	232.9	-2,807.8	2,812.8	0.00	0.00	0.00	
10,300.0	90.00	270.25	7,936.0	233.4	-2,907.8	2,912.8	0.00	0.00	0.00	
10,400.0	90.00	270.25	7,936.0	233.8	-3,007.8	3,012.7	0.00	0.00	0.00	
10,500.0	90.00	270.25	7,936.0	234.2	-3,107.8	3,112.7	0.00	0.00	0.00	
10,600.0	90.00	270.25	7,936.0	234.7	-3,207.8	3,212.7	0.00	0.00	0.00	
10,700.0	90.00	270.25	7,936.0	235.1	-3,307.8	3,312.7	0.00	0.00	0.00	
10,800.0	90.00	270.25	7,936.0	235.6	-3,407.8	3,412.6	0.00	0.00	0.00	
10,900.0	90.00	270.25	7,936.0	236.0	-3,507.8	3,512.6	0.00	0.00	0.00	
11,000.0	90.00	270.25	7,936.0	236.4	-3,607.8	3,612.6	0.00	0.00	0.00	
11,100.0	90.00	270.25	7,936.0	236.9	-3,707.8	3,712.6	0.00	0.00	0.00	
11,200.0	90.00	270.25	7,936.0	237.3	-3,807.8	3,812.6	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-7
Company:	BISON EXPLORATION	TVD Reference:	KB 25' @ 5610.0usft
Project:	Arapahoe County	MD Reference:	KB 25' @ 5610.0usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-7	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	Proposal 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
11,300.0	90.00	270.25	7,936.0	237.8	-3,907.8	3,912.5	0.00	0.00	0.00	
11,400.0	90.00	270.25	7,936.0	238.2	-4,007.8	4,012.5	0.00	0.00	0.00	
11,500.0	90.00	270.25	7,936.0	238.6	-4,107.8	4,112.5	0.00	0.00	0.00	
11,600.0	90.00	270.25	7,936.0	239.1	-4,207.8	4,212.5	0.00	0.00	0.00	
11,700.0	90.00	270.25	7,936.0	239.5	-4,307.8	4,312.5	0.00	0.00	0.00	
11,800.0	90.00	270.25	7,936.0	239.9	-4,407.8	4,412.4	0.00	0.00	0.00	
11,900.0	90.00	270.25	7,936.0	240.4	-4,507.8	4,512.4	0.00	0.00	0.00	
12,000.0	90.00	270.25	7,936.0	240.8	-4,607.8	4,612.4	0.00	0.00	0.00	
12,100.0	90.00	270.25	7,936.0	241.3	-4,707.8	4,712.4	0.00	0.00	0.00	
12,200.0	90.00	270.25	7,936.0	241.7	-4,807.8	4,812.3	0.00	0.00	0.00	
12,300.0	90.00	270.25	7,936.0	242.1	-4,907.8	4,912.3	0.00	0.00	0.00	
12,400.0	90.00	270.25	7,936.0	242.6	-5,007.8	5,012.3	0.00	0.00	0.00	
12,500.0	90.00	270.25	7,936.0	243.0	-5,107.8	5,112.3	0.00	0.00	0.00	
12,600.0	90.00	270.25	7,936.0	243.5	-5,207.8	5,212.3	0.00	0.00	0.00	
12,700.0	90.00	270.25	7,936.0	243.9	-5,307.8	5,312.2	0.00	0.00	0.00	
18,043.7	90.00	270.25	7,936.0	267.4	-10,651.4	10,654.8	0.00	0.00	0.00	
TD at 18043.7 - JAMASO 4-65 5-6-7 PBHL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
JAMASO 4-65 5-6-7 PBI	0.00	0.00	7,936.0	267.4	-10,651.4	1,146,957.13	3,220,853.34	39° 44' 2.680 N	104° 42' 53.000 W	
- hit/miss target										
- Shape										
- plan hits target center										
- Point										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
293.0	293.0	Denver				
877.0	877.0	Upper Arapahoe				
1,165.0	1,165.0	Lower Arapahoe				
1,718.1	1,718.0	Laramie - Fox Hills				
1,970.7	1,970.0	Pierre Shale (Base of Fox Hills)				
5,584.9	5,575.0	Shannon Sandstone Member				
7,680.4	7,655.0	Sharon Springs Shale				
7,758.1	7,720.0	Niobrara Formation				
7,777.2	7,735.0	Niobrara A Chalk				
7,790.2	7,745.0	Niobrara A Landing Point				
7,948.8	7,849.0	Niobrara B Chalk				
8,009.6	7,879.0	Niobrara B Landing Point				
8,113.0	7,916.0	Niobrara C Chalk				
8,261.2	7,936.0	Niobrara C Landing Point				

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-7
Company:	BISON EXPLORATION	TVD Reference:	KB 25' @ 5610.0usft
Project:	Arapahoe County	MD Reference:	KB 25' @ 5610.0usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-7	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Wellbore		
Design:	Proposal 1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,550.0	1,550.0	0.0	0.0	Start Build 2.00
1,753.8	1,753.7	4.1	-6.0	Start 5314.6 hold at 1753.8 MD
7,068.4	7,054.8	217.9	-317.5	Start Drop -2.00
7,272.3	7,258.5	222.0	-323.5	Start 132.0 hold at 7272.3 MD
7,404.3	7,390.5	222.0	-323.5	Start Build 10.50
8,261.2	7,936.0	224.4	-869.0	Start 9782.5 hold at 8261.2 MD
18,043.7	7,936.0	267.4	-10,651.4	TD at 18043.7