

AXIS EXPLORATION

ARAPAHOE COUNTY

Sec 4-T4S-R65W

JAMASO 4-65 5-6-4

ORIGINAL WELLBORE

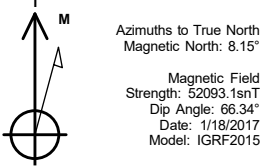
Plan: PROPOSAL 1

Standard Planning Report

12 April, 2018



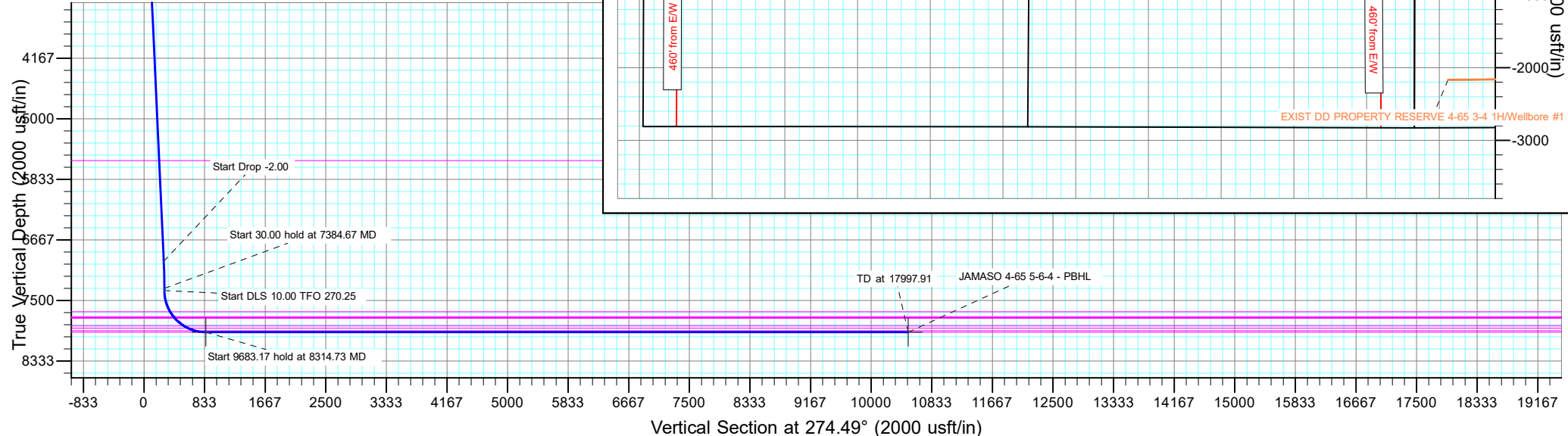
Project: ARAPAHOE COUNTY
Site: Sec 4-T4S-R65W
Well: JAMASO 4-65 5-6-4
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL 1



WELL DETAILS: JAMASO 4-65 5-6-4											ANNOTATIONS										
											MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation		
											800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	Start Build 2.00		
											1173.53	7.47	344.19	1172.47	23.40	-6.63	8.44	24.32	Start 5837.61 hold at 1173.53 MD		
											7011.14	7.47	344.19	6960.53	753.65	-213.47	271.76	783.30	Start Drop -2.00		
											7384.67	0.00	0.00	7333.00	777.05	-220.10	280.20	807.62	Start 30.00 hold at 7384.67 MD		
											7414.67	0.00	0.00	7363.00	777.05	-220.10	280.20	807.62	Start DLS 10.00 TFO 270.25		
											8314.73	90.00	270.25	7936.00	779.56	-793.10	851.63	1380.62	Start 9683.17 hold at 8314.73 MD		
											17997.91	90.00	270.25	7935.95	821.90	-10476.18	10508.37	11063.80	TD at 17997.91		
SECTION DETAILS											DESIGN TARGET DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape		
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		JAMASO 4-65 5-6-4 - LP	7936.00	779.56	-793.10	1147560.11	3230633.35	39° 44' 7.764 N	104° 40' 47.748 W	Point		
2	800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00		- plan hits target center										
3	1173.53	7.47	344.19	1172.47	23.40	-6.63	2.00	344.19	8.44		JAMASO 4-65 5-6-4 - PBHL	7936.00	821.90	-10476.18	1147512.51	3220950.29	39° 44' 8.160 N	104° 42' 51.696 W	Point		
4	7011.14	7.47	344.19	6960.53	753.65	-213.47	0.00	0.00	271.76		- plan hits target center										
5	7384.67	0.00	0.00	7333.00	777.05	-220.10	2.00	180.00	280.20												
6	7414.67	0.00	0.00	7363.00	777.05	-220.10	0.00	0.00	280.20												
7	8314.73	90.00	270.25	7936.00	779.56	-793.10	10.00	270.25	851.63	JAMASO 4-65 5-6-4											
8	17997.91	90.00	270.25	7936.00	821.81	-10476.18	0.00	0.00	10508.36	JAMASO 4-65 5-6-4											

FORMATION TOP DETAILS		
TVDPATH	MDPath	Formation
293.00	293.00	Denver
877.00	877.01	Upper Arapahoe
1165.00	1165.99	Lower Arapahoe
1718.00	1723.73	Laramie - Fox Hills
1970.00	1977.00	Piute Shale (Base of Fox Hills)
5575.00	5613.73	Shannon Sandstone Member
7655.00	7721.06	Sharon Springs Shale
7720.00	7800.08	Niobrara Formation
7735.00	7819.52	Niobrara A Chalk
7745.00	7832.80	Niobrara A Landing Point
7849.00	7994.84	Niobrara B Chalk
7879.00	8056.98	Niobrara B Landing Point
7916.00	8162.89	Niobrara C Chalk
7936.00	8314.73	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:	2427' FNL, 337' FWL	Sec 4-T4S-R65W
LP:	1648' FNL, 460' FEL	Sec 5-T4S-R65W
BHL:	1648' FNL, 460' FWL	Sec 6-T4S-R65W



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-4
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-4	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:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.53 °

Well	JAMASO 4-65 5-6-4					
Well Position	+N/-S	-2,428.58 usft	Northing:	1,146,787.94 usft	Latitude:	39° 44' 0.060 N
	+E/-W	331.59 usft	Easting:	3,231,433.65 usft	Longitude:	104° 40' 37.596 W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	5,585.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/18/2017	8.15	66.34	52,093.12214876

Design	PROPOSAL 1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	274.49

Plan Survey Tool Program	Date	4/12/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,997.91	PROPOSAL 1 (ORIGINAL WELL	MWD OWSG
			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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,173.53	7.47	344.19	1,172.47	23.40	-6.63	2.00	2.00	0.00	344.19	
7,011.14	7.47	344.19	6,960.53	753.65	-213.47	0.00	0.00	0.00	0.00	
7,384.67	0.00	0.00	7,333.00	777.05	-220.10	2.00	-2.00	0.00	180.00	
7,414.67	0.00	0.00	7,363.00	777.05	-220.10	0.00	0.00	0.00	0.00	
8,314.73	90.00	270.25	7,936.00	779.56	-793.10	10.00	10.00	-9.97	270.25	JAMASO 4-65 5-6-4 -
17,997.91	90.00	270.25	7,936.00	821.81	-10,476.18	0.00	0.00	0.00	0.00	JAMASO 4-65 5-6-4 -

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-4
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-4	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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
293.00	0.00	0.00	293.00	0.00	0.00	0.00	0.00	0.00	0.00
Denver									
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
877.01	1.54	344.19	877.00	1.00	-0.28	0.36	2.00	2.00	0.00
Upper Arapahoe									
900.00	2.00	344.19	899.98	1.68	-0.48	0.61	2.00	2.00	0.00
1,000.00	4.00	344.19	999.84	6.71	-1.90	2.42	2.00	2.00	0.00
1,100.00	6.00	344.19	1,099.45	15.10	-4.28	5.44	2.00	2.00	0.00
1,165.99	7.32	344.19	1,165.00	22.46	-6.36	8.10	2.00	2.00	0.00
Lower Arapahoe									
1,173.53	7.47	344.19	1,172.47	23.40	-6.63	8.44	2.00	2.00	0.00
Start 5837.61 hold at 1173.53 MD									
1,200.00	7.47	344.19	1,198.72	26.71	-7.57	9.63	0.00	0.00	0.00
1,300.00	7.47	344.19	1,297.87	39.22	-11.11	14.14	0.00	0.00	0.00
1,400.00	7.47	344.19	1,397.02	51.73	-14.65	18.65	0.00	0.00	0.00
1,500.00	7.47	344.19	1,496.17	64.24	-18.20	23.16	0.00	0.00	0.00
1,600.00	7.47	344.19	1,595.32	76.75	-21.74	27.67	0.00	0.00	0.00
1,700.00	7.47	344.19	1,694.47	89.26	-25.28	32.18	0.00	0.00	0.00
1,723.73	7.47	344.19	1,718.00	92.22	-26.12	33.25	0.00	0.00	0.00
Laramie - Fox Hills									
1,800.00	7.47	344.19	1,793.62	101.77	-28.83	36.70	0.00	0.00	0.00
1,900.00	7.47	344.19	1,892.78	114.27	-32.37	41.21	0.00	0.00	0.00
1,977.89	7.47	344.19	1,970.00	124.02	-35.13	44.72	0.00	0.00	0.00
Pierre Shale (Base of Fox Hills)									
2,000.00	7.47	344.19	1,991.93	126.78	-35.91	45.72	0.00	0.00	0.00
2,100.00	7.47	344.19	2,091.08	139.29	-39.46	50.23	0.00	0.00	0.00
2,200.00	7.47	344.19	2,190.23	151.80	-43.00	54.74	0.00	0.00	0.00
2,300.00	7.47	344.19	2,289.38	164.31	-46.54	59.25	0.00	0.00	0.00
2,400.00	7.47	344.19	2,388.53	176.82	-50.09	63.76	0.00	0.00	0.00
2,500.00	7.47	344.19	2,487.68	189.33	-53.63	68.27	0.00	0.00	0.00
2,600.00	7.47	344.19	2,586.83	201.84	-57.17	72.78	0.00	0.00	0.00
2,700.00	7.47	344.19	2,685.99	214.35	-60.72	77.29	0.00	0.00	0.00
2,800.00	7.47	344.19	2,785.14	226.86	-64.26	81.80	0.00	0.00	0.00
2,900.00	7.47	344.19	2,884.29	239.37	-67.80	86.31	0.00	0.00	0.00
3,000.00	7.47	344.19	2,983.44	251.88	-71.35	90.82	0.00	0.00	0.00
3,100.00	7.47	344.19	3,082.59	264.39	-74.89	95.34	0.00	0.00	0.00
3,200.00	7.47	344.19	3,181.74	276.90	-78.43	99.85	0.00	0.00	0.00
3,300.00	7.47	344.19	3,280.89	289.41	-81.98	104.36	0.00	0.00	0.00
3,400.00	7.47	344.19	3,380.04	301.92	-85.52	108.87	0.00	0.00	0.00
3,500.00	7.47	344.19	3,479.20	314.43	-89.06	113.38	0.00	0.00	0.00
3,600.00	7.47	344.19	3,578.35	326.94	-92.61	117.89	0.00	0.00	0.00
3,700.00	7.47	344.19	3,677.50	339.45	-96.15	122.40	0.00	0.00	0.00
3,800.00	7.47	344.19	3,776.65	351.96	-99.69	126.91	0.00	0.00	0.00
3,900.00	7.47	344.19	3,875.80	364.47	-103.24	131.42	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-4
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-4	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)
4,000.00	7.47	344.19	3,974.95	376.97	-106.78	135.93	0.00	0.00	0.00
4,100.00	7.47	344.19	4,074.10	389.48	-110.32	140.44	0.00	0.00	0.00
4,200.00	7.47	344.19	4,173.25	401.99	-113.87	144.95	0.00	0.00	0.00
4,300.00	7.47	344.19	4,272.40	414.50	-117.41	149.47	0.00	0.00	0.00
4,400.00	7.47	344.19	4,371.56	427.01	-120.95	153.98	0.00	0.00	0.00
4,500.00	7.47	344.19	4,470.71	439.52	-124.50	158.49	0.00	0.00	0.00
4,600.00	7.47	344.19	4,569.86	452.03	-128.04	163.00	0.00	0.00	0.00
4,700.00	7.47	344.19	4,669.01	464.54	-131.58	167.51	0.00	0.00	0.00
4,800.00	7.47	344.19	4,768.16	477.05	-135.12	172.02	0.00	0.00	0.00
4,900.00	7.47	344.19	4,867.31	489.56	-138.67	176.53	0.00	0.00	0.00
5,000.00	7.47	344.19	4,966.46	502.07	-142.21	181.04	0.00	0.00	0.00
5,100.00	7.47	344.19	5,065.61	514.58	-145.75	185.55	0.00	0.00	0.00
5,200.00	7.47	344.19	5,164.77	527.09	-149.30	190.06	0.00	0.00	0.00
5,300.00	7.47	344.19	5,263.92	539.60	-152.84	194.57	0.00	0.00	0.00
5,400.00	7.47	344.19	5,363.07	552.11	-156.38	199.08	0.00	0.00	0.00
5,500.00	7.47	344.19	5,462.22	564.62	-159.93	203.59	0.00	0.00	0.00
5,600.00	7.47	344.19	5,561.37	577.13	-163.47	208.11	0.00	0.00	0.00
5,613.75	7.47	344.19	5,575.00	578.85	-163.96	208.73	0.00	0.00	0.00
Shannon Sandstone Member									
5,700.00	7.47	344.19	5,660.52	589.64	-167.01	212.62	0.00	0.00	0.00
5,800.00	7.47	344.19	5,759.67	602.15	-170.56	217.13	0.00	0.00	0.00
5,900.00	7.47	344.19	5,858.82	614.66	-174.10	221.64	0.00	0.00	0.00
6,000.00	7.47	344.19	5,957.97	627.17	-177.64	226.15	0.00	0.00	0.00
6,100.00	7.47	344.19	6,057.13	639.67	-181.19	230.66	0.00	0.00	0.00
6,200.00	7.47	344.19	6,156.28	652.18	-184.73	235.17	0.00	0.00	0.00
6,300.00	7.47	344.19	6,255.43	664.69	-188.27	239.68	0.00	0.00	0.00
6,400.00	7.47	344.19	6,354.58	677.20	-191.82	244.19	0.00	0.00	0.00
6,500.00	7.47	344.19	6,453.73	689.71	-195.36	248.70	0.00	0.00	0.00
6,600.00	7.47	344.19	6,552.88	702.22	-198.90	253.21	0.00	0.00	0.00
6,700.00	7.47	344.19	6,652.03	714.73	-202.45	257.72	0.00	0.00	0.00
6,800.00	7.47	344.19	6,751.18	727.24	-205.99	262.24	0.00	0.00	0.00
6,900.00	7.47	344.19	6,850.34	739.75	-209.53	266.75	0.00	0.00	0.00
7,000.00	7.47	344.19	6,949.49	752.26	-213.08	271.26	0.00	0.00	0.00
7,011.14	7.47	344.19	6,960.53	753.65	-213.47	271.76	0.00	0.00	0.00
Start Drop -2.00									
7,100.00	5.69	344.19	7,048.80	763.45	-216.25	275.29	2.00	-2.00	0.00
7,200.00	3.69	344.19	7,148.46	771.33	-218.48	278.13	2.00	-2.00	0.00
7,300.00	1.69	344.19	7,248.35	775.85	-219.76	279.76	2.00	-2.00	0.00
7,384.67	0.00	0.00	7,333.00	777.05	-220.10	280.20	2.00	-2.00	0.00
Start 30.00 hold at 7384.67 MD									
7,400.00	0.00	0.00	7,348.33	777.05	-220.10	280.20	0.00	0.00	0.00
7,414.67	0.00	0.00	7,363.00	777.05	-220.10	280.20	0.00	0.00	0.00
Start DLS 10.00 TFO 270.25									
7,450.00	3.53	270.25	7,398.31	777.05	-221.19	281.28	10.00	10.00	0.00
7,500.00	8.53	270.25	7,448.02	777.08	-226.44	286.52	10.00	10.00	0.00
7,550.00	13.53	270.25	7,497.08	777.12	-236.01	296.06	10.00	10.00	0.00
7,600.00	18.53	270.25	7,545.12	777.18	-249.81	309.83	10.00	10.00	0.00
7,650.00	23.53	270.25	7,591.77	777.26	-267.75	327.72	10.00	10.00	0.00
7,700.00	28.53	270.25	7,636.69	777.35	-289.69	349.59	10.00	10.00	0.00
7,721.06	30.64	270.25	7,655.00	777.40	-300.08	359.96	10.00	10.00	0.00
Sharon Springs Shale									
7,750.00	33.53	270.25	7,679.52	777.47	-315.45	375.29	10.00	10.00	0.00
7,800.00	38.53	270.25	7,719.94	777.60	-344.85	404.61	10.00	10.00	0.00
7,800.08	38.53	270.25	7,720.00	777.60	-344.90	404.66	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-4
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-4	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										
7,819.52	40.48	270.25	7,735.00	777.65	-357.27	416.99	10.04	10.04	0.00	
Niobrara A Chalk										
7,832.80	41.81	270.25	7,745.00	777.69	-366.01	425.71	10.00	10.00	0.00	
Niobrara A Landing Point										
7,850.00	43.53	270.25	7,757.65	777.74	-377.67	437.33	10.00	10.00	0.00	
7,900.00	48.53	270.25	7,792.35	777.90	-413.64	473.21	10.00	10.00	0.00	
7,950.00	53.53	270.25	7,823.79	778.07	-452.50	511.96	10.00	10.00	0.00	
7,994.84	58.01	270.25	7,849.00	778.23	-489.56	548.93	10.00	10.00	0.00	
Niobrara B Chalk										
8,000.00	58.53	270.25	7,851.72	778.25	-493.95	553.30	10.00	10.00	0.00	
8,050.00	63.53	270.25	7,875.93	778.44	-537.68	596.91	10.00	10.00	0.00	
8,056.98	64.23	270.25	7,879.00	778.47	-543.95	603.17	10.00	10.00	0.00	
Niobrara B Landing Point										
8,100.00	68.53	270.25	7,896.23	778.64	-583.36	642.46	10.00	10.00	0.00	
8,150.00	73.53	270.25	7,912.48	778.85	-630.62	689.60	10.00	10.00	0.00	
8,162.89	74.82	270.25	7,916.00	778.90	-643.03	701.97	10.00	10.00	0.00	
Niobrara C Chalk										
8,200.00	78.53	270.25	7,924.55	779.06	-679.13	737.98	10.00	10.00	0.00	
8,250.00	83.53	270.25	7,932.35	779.27	-728.50	787.21	10.00	10.00	0.00	
8,300.00	88.53	270.25	7,935.81	779.49	-778.36	836.94	10.00	10.00	0.00	
8,314.73	90.00	270.25	7,936.00	779.56	-793.10	851.63	10.00	10.00	0.00	
Start 9683.17 hold at 8314.73 MD - Niobrara C Landing Point										
8,400.00	90.00	270.25	7,936.00	779.93	-878.36	936.67	0.00	0.00	0.00	
8,500.00	90.00	270.25	7,936.00	780.37	-978.36	1,036.39	0.00	0.00	0.00	
8,600.00	90.00	270.25	7,936.00	780.80	-1,078.36	1,136.12	0.00	0.00	0.00	
8,700.00	90.00	270.25	7,936.00	781.24	-1,178.36	1,235.85	0.00	0.00	0.00	
8,800.00	90.00	270.25	7,936.00	781.68	-1,278.36	1,335.57	0.00	0.00	0.00	
8,900.00	90.00	270.25	7,936.00	782.11	-1,378.36	1,435.30	0.00	0.00	0.00	
9,000.00	90.00	270.25	7,936.00	782.55	-1,478.36	1,535.03	0.00	0.00	0.00	
9,100.00	90.00	270.25	7,936.00	782.99	-1,578.36	1,634.76	0.00	0.00	0.00	
9,200.00	90.00	270.25	7,936.00	783.43	-1,678.35	1,734.48	0.00	0.00	0.00	
9,300.00	90.00	270.25	7,936.00	783.86	-1,778.35	1,834.21	0.00	0.00	0.00	
9,400.00	90.00	270.25	7,935.99	784.30	-1,878.35	1,933.94	0.00	0.00	0.00	
9,500.00	90.00	270.25	7,935.99	784.74	-1,978.35	2,033.66	0.00	0.00	0.00	
9,600.00	90.00	270.25	7,935.99	785.18	-2,078.35	2,133.39	0.00	0.00	0.00	
9,700.00	90.00	270.25	7,935.99	785.61	-2,178.35	2,233.12	0.00	0.00	0.00	
9,800.00	90.00	270.25	7,935.99	786.05	-2,278.35	2,332.84	0.00	0.00	0.00	
9,900.00	90.00	270.25	7,935.99	786.49	-2,378.35	2,432.57	0.00	0.00	0.00	
10,000.00	90.00	270.25	7,935.99	786.92	-2,478.35	2,532.30	0.00	0.00	0.00	
10,100.00	90.00	270.25	7,935.99	787.36	-2,578.35	2,632.02	0.00	0.00	0.00	
10,200.00	90.00	270.25	7,935.99	787.80	-2,678.34	2,731.75	0.00	0.00	0.00	
10,300.00	90.00	270.25	7,935.99	788.24	-2,778.34	2,831.48	0.00	0.00	0.00	
10,400.00	90.00	270.25	7,935.99	788.67	-2,878.34	2,931.21	0.00	0.00	0.00	
10,500.00	90.00	270.25	7,935.99	789.11	-2,978.34	3,030.93	0.00	0.00	0.00	
10,600.00	90.00	270.25	7,935.99	789.55	-3,078.34	3,130.66	0.00	0.00	0.00	
10,700.00	90.00	270.25	7,935.99	789.99	-3,178.34	3,230.39	0.00	0.00	0.00	
10,800.00	90.00	270.25	7,935.99	790.42	-3,278.34	3,330.11	0.00	0.00	0.00	
10,900.00	90.00	270.25	7,935.99	790.86	-3,378.34	3,429.84	0.00	0.00	0.00	
11,000.00	90.00	270.25	7,935.99	791.30	-3,478.34	3,529.57	0.00	0.00	0.00	
11,100.00	90.00	270.25	7,935.99	791.73	-3,578.34	3,629.29	0.00	0.00	0.00	
11,200.00	90.00	270.25	7,935.99	792.17	-3,678.34	3,729.02	0.00	0.00	0.00	
11,300.00	90.00	270.25	7,935.99	792.61	-3,778.33	3,828.75	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-4
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-4	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)	
11,400.00	90.00	270.25	7,935.99	793.05	-3,878.33	3,928.48	0.00	0.00	0.00	
11,500.00	90.00	270.25	7,935.98	793.48	-3,978.33	4,028.20	0.00	0.00	0.00	
11,600.00	90.00	270.25	7,935.98	793.92	-4,078.33	4,127.93	0.00	0.00	0.00	
11,700.00	90.00	270.25	7,935.98	794.36	-4,178.33	4,227.66	0.00	0.00	0.00	
11,800.00	90.00	270.25	7,935.98	794.80	-4,278.33	4,327.38	0.00	0.00	0.00	
11,900.00	90.00	270.25	7,935.98	795.23	-4,378.33	4,427.11	0.00	0.00	0.00	
12,000.00	90.00	270.25	7,935.98	795.67	-4,478.33	4,526.84	0.00	0.00	0.00	
12,100.00	90.00	270.25	7,935.98	796.11	-4,578.33	4,626.56	0.00	0.00	0.00	
12,200.00	90.00	270.25	7,935.98	796.54	-4,678.33	4,726.29	0.00	0.00	0.00	
12,300.00	90.00	270.25	7,935.98	796.98	-4,778.32	4,826.02	0.00	0.00	0.00	
12,400.00	90.00	270.25	7,935.98	797.42	-4,878.32	4,925.75	0.00	0.00	0.00	
12,500.00	90.00	270.25	7,935.98	797.86	-4,978.32	5,025.47	0.00	0.00	0.00	
12,600.00	90.00	270.25	7,935.98	798.29	-5,078.32	5,125.20	0.00	0.00	0.00	
12,700.00	90.00	270.25	7,935.98	798.73	-5,178.32	5,224.93	0.00	0.00	0.00	
12,800.00	90.00	270.25	7,935.98	799.17	-5,278.32	5,324.65	0.00	0.00	0.00	
12,900.00	90.00	270.25	7,935.98	799.61	-5,378.32	5,424.38	0.00	0.00	0.00	
13,000.00	90.00	270.25	7,935.98	800.04	-5,478.32	5,524.11	0.00	0.00	0.00	
13,100.00	90.00	270.25	7,935.98	800.48	-5,578.32	5,623.83	0.00	0.00	0.00	
13,200.00	90.00	270.25	7,935.98	800.92	-5,678.32	5,723.56	0.00	0.00	0.00	
13,300.00	90.00	270.25	7,935.98	801.35	-5,778.32	5,823.29	0.00	0.00	0.00	
13,400.00	90.00	270.25	7,935.98	801.79	-5,878.31	5,923.01	0.00	0.00	0.00	
13,500.00	90.00	270.25	7,935.97	802.23	-5,978.31	6,022.74	0.00	0.00	0.00	
13,600.00	90.00	270.25	7,935.97	802.67	-6,078.31	6,122.47	0.00	0.00	0.00	
13,700.00	90.00	270.25	7,935.97	803.10	-6,178.31	6,222.20	0.00	0.00	0.00	
13,800.00	90.00	270.25	7,935.97	803.54	-6,278.31	6,321.92	0.00	0.00	0.00	
13,900.00	90.00	270.25	7,935.97	803.98	-6,378.31	6,421.65	0.00	0.00	0.00	
14,000.00	90.00	270.25	7,935.97	804.42	-6,478.31	6,521.38	0.00	0.00	0.00	
14,100.00	90.00	270.25	7,935.97	804.85	-6,578.31	6,621.10	0.00	0.00	0.00	
14,200.00	90.00	270.25	7,935.97	805.29	-6,678.31	6,720.83	0.00	0.00	0.00	
14,300.00	90.00	270.25	7,935.97	805.73	-6,778.31	6,820.56	0.00	0.00	0.00	
14,400.00	90.00	270.25	7,935.97	806.16	-6,878.30	6,920.28	0.00	0.00	0.00	
14,500.00	90.00	270.25	7,935.97	806.60	-6,978.30	7,020.01	0.00	0.00	0.00	
14,600.00	90.00	270.25	7,935.97	807.04	-7,078.30	7,119.74	0.00	0.00	0.00	
14,700.00	90.00	270.25	7,935.97	807.48	-7,178.30	7,219.47	0.00	0.00	0.00	
14,800.00	90.00	270.25	7,935.97	807.91	-7,278.30	7,319.19	0.00	0.00	0.00	
14,900.00	90.00	270.25	7,935.97	808.35	-7,378.30	7,418.92	0.00	0.00	0.00	
15,000.00	90.00	270.25	7,935.97	808.79	-7,478.30	7,518.65	0.00	0.00	0.00	
15,100.00	90.00	270.25	7,935.97	809.23	-7,578.30	7,618.37	0.00	0.00	0.00	
15,200.00	90.00	270.25	7,935.97	809.66	-7,678.30	7,718.10	0.00	0.00	0.00	
15,300.00	90.00	270.25	7,935.97	810.10	-7,778.30	7,817.83	0.00	0.00	0.00	
15,400.00	90.00	270.25	7,935.97	810.54	-7,878.29	7,917.55	0.00	0.00	0.00	
15,500.00	90.00	270.25	7,935.97	810.97	-7,978.29	8,017.28	0.00	0.00	0.00	
15,600.00	90.00	270.25	7,935.96	811.41	-8,078.29	8,117.01	0.00	0.00	0.00	
15,700.00	90.00	270.25	7,935.96	811.85	-8,178.29	8,216.74	0.00	0.00	0.00	
15,800.00	90.00	270.25	7,935.96	812.29	-8,278.29	8,316.46	0.00	0.00	0.00	
15,900.00	90.00	270.25	7,935.96	812.72	-8,378.29	8,416.19	0.00	0.00	0.00	
16,000.00	90.00	270.25	7,935.96	813.16	-8,478.29	8,515.92	0.00	0.00	0.00	
16,100.00	90.00	270.25	7,935.96	813.60	-8,578.29	8,615.64	0.00	0.00	0.00	
16,200.00	90.00	270.25	7,935.96	814.04	-8,678.29	8,715.37	0.00	0.00	0.00	
16,300.00	90.00	270.25	7,935.96	814.47	-8,778.29	8,815.10	0.00	0.00	0.00	
16,400.00	90.00	270.25	7,935.96	814.91	-8,878.29	8,914.82	0.00	0.00	0.00	
16,500.00	90.00	270.25	7,935.96	815.35	-8,978.28	9,014.55	0.00	0.00	0.00	
16,600.00	90.00	270.25	7,935.96	815.78	-9,078.28	9,114.28	0.00	0.00	0.00	
16,700.00	90.00	270.25	7,935.96	816.22	-9,178.28	9,214.00	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-4
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-4	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)	
16,800.00	90.00	270.25	7,935.96	816.66	-9,278.28	9,313.73	0.00	0.00	0.00	
16,900.00	90.00	270.25	7,935.96	817.10	-9,378.28	9,413.46	0.00	0.00	0.00	
17,000.00	90.00	270.25	7,935.96	817.53	-9,478.28	9,513.19	0.00	0.00	0.00	
17,100.00	90.00	270.25	7,935.96	817.97	-9,578.28	9,612.91	0.00	0.00	0.00	
17,200.00	90.00	270.25	7,935.96	818.41	-9,678.28	9,712.64	0.00	0.00	0.00	
17,300.00	90.00	270.25	7,935.96	818.85	-9,778.28	9,812.37	0.00	0.00	0.00	
17,400.00	90.00	270.25	7,935.96	819.28	-9,878.28	9,912.09	0.00	0.00	0.00	
17,500.00	90.00	270.25	7,935.96	819.72	-9,978.27	10,011.82	0.00	0.00	0.00	
17,600.00	90.00	270.25	7,935.96	820.16	-10,078.27	10,111.55	0.00	0.00	0.00	
17,700.00	90.00	270.25	7,935.95	820.59	-10,178.27	10,211.27	0.00	0.00	0.00	
17,800.00	90.00	270.25	7,935.95	821.03	-10,278.27	10,311.00	0.00	0.00	0.00	
17,900.00	90.00	270.25	7,935.95	821.47	-10,378.27	10,410.73	0.00	0.00	0.00	
17,997.91	90.00	270.25	7,936.00	821.81	-10,476.18	10,508.36	0.00	0.00	0.00	
TD at 17997.91										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude		Longitude
- hit/miss target										
- Shape										
JAMASO 4-65 5-6-4 - LF	0.00	0.00	7,936.00	779.56	-793.10	1,147,560.10	3,230,633.35	39° 44' 7.764 N		104° 40' 47.748 W
- plan hits target center										
- Point										
JAMASO 4-65 5-6-4 - PI	0.00	0.00	7,936.00	821.81	-10,476.18	1,147,512.50	3,220,950.29	39° 44' 8.160 N		104° 42' 51.696 W
- plan hits target center										
- Point										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
293.00	293.00	Denver				
877.01	877.00	Upper Arapahoe				
1,165.99	1,165.00	Lower Arapahoe				
1,723.73	1,718.00	Laramie - Fox Hills				
1,977.89	1,970.00	Pierre Shale (Base of Fox Hills)				
5,613.75	5,575.00	Shannon Sandstone Member				
7,721.06	7,655.00	Sharon Springs Shale				
7,800.08	7,720.00	Niobrara Formation				
7,819.52	7,735.00	Niobrara A Chalk				
7,832.80	7,745.00	Niobrara A Landing Point				
7,994.84	7,849.00	Niobrara B Chalk				
8,056.98	7,879.00	Niobrara B Landing Point				
8,162.89	7,916.00	Niobrara C Chalk				
8,314.73	7,936.00	Niobrara C Landing Point				

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-4
Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-4	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)	
800.00	800.00	0.00	0.00	Start Build 2.00
1,173.53	1,172.47	23.40	-6.63	Start 5837.61 hold at 1173.53 MD
7,011.14	6,960.53	753.65	-213.47	Start Drop -2.00
7,384.67	7,333.00	777.05	-220.10	Start 30.00 hold at 7384.67 MD
7,414.67	7,363.00	777.05	-220.10	Start DLS 10.00 TFO 270.25
8,314.73	7,936.00	779.56	-793.10	Start 9683.17 hold at 8314.73 MD
17,997.91	7,936.00	821.81	-10,476.18	TD at 17997.91