

AXIS EXPLORATION

ARAPAHOE COUNTY

Sec 4-T4S-R65W

JAMASO 4-65 5-6-3

ORIGINAL WELLBORE

Plan: PROPOSAL 1

Standard Planning Report

12 April, 2018

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-3
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 5-6-3	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 5-6-3					
Well Position	+N/-S	-2,428.58 usft	Northing:	1,146,788.13 usft	Latitude:	39° 44' 0.060 N
	+E/-W	351.28 usft	Easting:	3,231,453.33 usft	Longitude:	104° 40' 37.344 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	52,093.12959053

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	276.60

Plan Survey Tool Program	Date	4/12/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,879.50	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	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,164.39	11.29	348.42	1,160.75	54.29	-11.12	2.00	2.00	0.00	348.42	
6,702.02	11.29	348.42	6,591.25	1,116.16	-228.65	0.00	0.00	0.00	0.00	
7,266.41	0.00	0.00	7,152.00	1,170.45	-239.77	2.00	-2.00	0.00	180.00	
7,296.41	0.00	0.00	7,182.00	1,170.45	-239.77	0.00	0.00	0.00	0.00	
8,196.48	90.00	270.25	7,755.00	1,172.97	-812.77	10.00	10.00	-9.97	270.25	JAMASO 4-65 5-6-3 -
17,879.50	90.00	270.25	7,755.00	1,215.23	-10,495.70	0.00	0.00	0.00	0.00	JAMASO 4-65 5-6-3 -

Planning Report

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Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
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Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-3	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
Start Build 2.00									
700.00	2.00	348.42	699.98	1.71	-0.35	0.54	2.00	2.00	0.00
800.00	4.00	348.42	799.84	6.84	-1.40	2.18	2.00	2.00	0.00
877.43	5.55	348.42	877.00	13.15	-2.69	4.19	2.00	2.00	0.00
Upper Arapahoe									
900.00	6.00	348.42	899.45	15.37	-3.15	4.90	2.00	2.00	0.00
1,000.00	8.00	348.42	998.70	27.31	-5.60	8.70	2.00	2.00	0.00
1,100.00	10.00	348.42	1,097.47	42.64	-8.73	13.58	2.00	2.00	0.00
1,164.39	11.29	348.42	1,160.75	54.29	-11.12	17.29	2.00	2.00	0.00
Start 5537.62 hold at 1164.39 MD									
1,168.73	11.29	348.42	1,165.00	55.12	-11.29	17.56	0.00	0.00	0.00
Lower Arapahoe									
1,200.00	11.29	348.42	1,195.67	61.12	-12.52	19.47	0.00	0.00	0.00
1,300.00	11.29	348.42	1,293.73	80.29	-16.45	25.57	0.00	0.00	0.00
1,400.00	11.29	348.42	1,391.80	99.47	-20.38	31.68	0.00	0.00	0.00
1,500.00	11.29	348.42	1,489.86	118.64	-24.30	37.79	0.00	0.00	0.00
1,600.00	11.29	348.42	1,587.93	137.82	-28.23	43.90	0.00	0.00	0.00
1,700.00	11.29	348.42	1,686.00	156.99	-32.16	50.00	0.00	0.00	0.00
1,732.64	11.29	348.42	1,718.00	163.25	-33.44	52.00	0.00	0.00	0.00
Laramie - Fox Hills									
1,800.00	11.29	348.42	1,784.06	176.17	-36.09	56.11	0.00	0.00	0.00
1,900.00	11.29	348.42	1,882.13	195.35	-40.02	62.22	0.00	0.00	0.00
1,989.61	11.29	348.42	1,970.00	212.53	-43.54	67.69	0.00	0.00	0.00
Pierre Shale (Base of Fox Hills)									
2,000.00	11.29	348.42	1,980.19	214.52	-43.95	68.33	0.00	0.00	0.00
2,100.00	11.29	348.42	2,078.26	233.70	-47.87	74.43	0.00	0.00	0.00
2,200.00	11.29	348.42	2,176.32	252.87	-51.80	80.54	0.00	0.00	0.00
2,300.00	11.29	348.42	2,274.39	272.05	-55.73	86.65	0.00	0.00	0.00
2,400.00	11.29	348.42	2,372.45	291.22	-59.66	92.76	0.00	0.00	0.00
2,500.00	11.29	348.42	2,470.52	310.40	-63.59	98.86	0.00	0.00	0.00
2,600.00	11.29	348.42	2,568.59	329.58	-67.51	104.97	0.00	0.00	0.00
2,700.00	11.29	348.42	2,666.65	348.75	-71.44	111.08	0.00	0.00	0.00
2,800.00	11.29	348.42	2,764.72	367.93	-75.37	117.19	0.00	0.00	0.00
2,900.00	11.29	348.42	2,862.78	387.10	-79.30	123.30	0.00	0.00	0.00
3,000.00	11.29	348.42	2,960.85	406.28	-83.23	129.40	0.00	0.00	0.00
3,100.00	11.29	348.42	3,058.91	425.45	-87.16	135.51	0.00	0.00	0.00
3,200.00	11.29	348.42	3,156.98	444.63	-91.08	141.62	0.00	0.00	0.00
3,300.00	11.29	348.42	3,255.05	463.80	-95.01	147.73	0.00	0.00	0.00
3,400.00	11.29	348.42	3,353.11	482.98	-98.94	153.83	0.00	0.00	0.00
3,500.00	11.29	348.42	3,451.18	502.16	-102.87	159.94	0.00	0.00	0.00
3,600.00	11.29	348.42	3,549.24	521.33	-106.80	166.05	0.00	0.00	0.00
3,700.00	11.29	348.42	3,647.31	540.51	-110.72	172.16	0.00	0.00	0.00
3,800.00	11.29	348.42	3,745.37	559.68	-114.65	178.26	0.00	0.00	0.00
3,900.00	11.29	348.42	3,843.44	578.86	-118.58	184.37	0.00	0.00	0.00

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Well:	JAMASO 4-65 5-6-3	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	11.29	348.42	3,941.50	598.03	-122.51	190.48	0.00	0.00	0.00	
4,100.00	11.29	348.42	4,039.57	617.21	-126.44	196.59	0.00	0.00	0.00	
4,200.00	11.29	348.42	4,137.64	636.38	-130.37	202.69	0.00	0.00	0.00	
4,300.00	11.29	348.42	4,235.70	655.56	-134.29	208.80	0.00	0.00	0.00	
4,400.00	11.29	348.42	4,333.77	674.74	-138.22	214.91	0.00	0.00	0.00	
4,500.00	11.29	348.42	4,431.83	693.91	-142.15	221.02	0.00	0.00	0.00	
4,600.00	11.29	348.42	4,529.90	713.09	-146.08	227.12	0.00	0.00	0.00	
4,700.00	11.29	348.42	4,627.96	732.26	-150.01	233.23	0.00	0.00	0.00	
4,800.00	11.29	348.42	4,726.03	751.44	-153.93	239.34	0.00	0.00	0.00	
4,900.00	11.29	348.42	4,824.10	770.61	-157.86	245.45	0.00	0.00	0.00	
5,000.00	11.29	348.42	4,922.16	789.79	-161.79	251.55	0.00	0.00	0.00	
5,100.00	11.29	348.42	5,020.23	808.97	-165.72	257.66	0.00	0.00	0.00	
5,200.00	11.29	348.42	5,118.29	828.14	-169.65	263.77	0.00	0.00	0.00	
5,300.00	11.29	348.42	5,216.36	847.32	-173.58	269.88	0.00	0.00	0.00	
5,400.00	11.29	348.42	5,314.42	866.49	-177.50	275.99	0.00	0.00	0.00	
5,500.00	11.29	348.42	5,412.49	885.67	-181.43	282.09	0.00	0.00	0.00	
5,600.00	11.29	348.42	5,510.55	904.84	-185.36	288.20	0.00	0.00	0.00	
5,665.72	11.29	348.42	5,575.00	917.45	-187.94	292.21	0.00	0.00	0.00	
Shannon Sandstone Member										
5,700.00	11.29	348.42	5,608.62	924.02	-189.29	294.31	0.00	0.00	0.00	
5,800.00	11.29	348.42	5,706.69	943.19	-193.22	300.42	0.00	0.00	0.00	
5,900.00	11.29	348.42	5,804.75	962.37	-197.14	306.52	0.00	0.00	0.00	
6,000.00	11.29	348.42	5,902.82	981.55	-201.07	312.63	0.00	0.00	0.00	
6,100.00	11.29	348.42	6,000.88	1,000.72	-205.00	318.74	0.00	0.00	0.00	
6,200.00	11.29	348.42	6,098.95	1,019.90	-208.93	324.85	0.00	0.00	0.00	
6,300.00	11.29	348.42	6,197.01	1,039.07	-212.86	330.95	0.00	0.00	0.00	
6,400.00	11.29	348.42	6,295.08	1,058.25	-216.79	337.06	0.00	0.00	0.00	
6,500.00	11.29	348.42	6,393.15	1,077.42	-220.71	343.17	0.00	0.00	0.00	
6,600.00	11.29	348.42	6,491.21	1,096.60	-224.64	349.28	0.00	0.00	0.00	
6,702.02	11.29	348.42	6,591.25	1,116.16	-228.65	355.51	0.00	0.00	0.00	
Start Drop -2.00										
6,800.00	9.33	348.42	6,687.65	1,133.34	-232.17	360.98	2.00	-2.00	0.00	
6,900.00	7.33	348.42	6,786.59	1,147.53	-235.07	365.50	2.00	-2.00	0.00	
7,000.00	5.33	348.42	6,885.98	1,158.32	-237.29	368.94	2.00	-2.00	0.00	
7,100.00	3.33	348.42	6,985.69	1,165.72	-238.80	371.29	2.00	-2.00	0.00	
7,200.00	1.33	348.42	7,085.60	1,169.70	-239.62	372.56	2.00	-2.00	0.00	
7,266.41	0.00	0.00	7,152.00	1,170.45	-239.77	372.80	2.00	-2.00	0.00	
Start 30.00 hold at 7266.41 MD										
7,296.41	0.00	0.00	7,182.00	1,170.45	-239.77	372.80	0.00	0.00	0.00	
Start DLS 10.00 TFO 270.25										
7,300.00	0.36	270.25	7,185.59	1,170.45	-239.78	372.81	10.00	10.00	0.00	
7,350.00	5.36	270.25	7,235.52	1,170.46	-242.27	375.29	10.00	10.00	0.00	
7,400.00	10.36	270.25	7,285.03	1,170.49	-249.11	382.08	10.00	10.00	0.00	
7,450.00	15.36	270.25	7,333.76	1,170.54	-260.23	393.14	10.00	10.00	0.00	
7,500.00	20.36	270.25	7,381.34	1,170.61	-275.56	408.37	10.00	10.00	0.00	
7,550.00	25.36	270.25	7,427.40	1,170.69	-294.98	427.67	10.00	10.00	0.00	
7,600.00	30.36	270.25	7,471.59	1,170.79	-318.33	450.88	10.00	10.00	0.00	
7,650.00	35.36	270.25	7,513.58	1,170.91	-345.45	477.83	10.00	10.00	0.00	
7,700.00	40.36	270.25	7,553.04	1,171.05	-376.12	508.32	10.00	10.00	0.00	
7,750.00	45.36	270.25	7,589.68	1,171.20	-410.12	542.11	10.00	10.00	0.00	
7,800.00	50.36	270.25	7,623.22	1,171.36	-447.18	578.94	10.00	10.00	0.00	
7,850.00	55.36	270.25	7,653.40	1,171.54	-487.03	618.54	10.00	10.00	0.00	
7,852.82	55.64	270.25	7,655.00	1,171.55	-489.35	620.85	10.00	10.00	0.00	
Sharon Springs Shale										

Planning Report

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Company:	AXIS EXPLORATION	TVD Reference:	KB 25' @ 5610.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
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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)
7,900.00	60.35	270.25	7,680.00	1,171.72	-529.35	660.60	10.00	10.00	0.00
7,950.00	65.35	270.25	7,702.80	1,171.92	-573.82	704.80	10.00	10.00	0.00
7,995.16	69.87	270.25	7,720.00	1,172.10	-615.57	746.30	10.00	10.00	0.00
Niobrara Formation									
8,000.00	70.35	270.25	7,721.65	1,172.12	-620.12	750.82	10.00	10.00	0.00
8,044.64	74.82	270.25	7,735.00	1,172.31	-662.70	793.13	10.00	10.00	0.00
Niobrara A Chalk									
8,050.00	75.35	270.25	7,736.38	1,172.33	-667.88	798.29	10.00	10.00	0.00
8,089.27	79.28	270.25	7,745.00	1,172.50	-706.18	836.35	10.00	10.00	0.00
Niobrara A Landing Point									
8,100.00	80.35	270.25	7,746.90	1,172.54	-716.75	846.85	10.00	10.00	0.00
8,150.00	85.35	270.25	7,753.12	1,172.76	-766.34	896.14	10.00	10.00	0.00
8,196.48	90.00	270.25	7,755.00	1,172.97	-812.77	942.29	10.00	10.00	0.00
Start 9683.02 hold at 8196.48 MD									
8,200.00	90.00	270.25	7,755.00	1,172.98	-816.29	945.79	0.00	0.00	0.00
8,300.00	90.00	270.25	7,755.00	1,173.42	-916.29	1,045.17	0.00	0.00	0.00
8,400.00	90.00	270.25	7,755.00	1,173.86	-1,016.29	1,144.56	0.00	0.00	0.00
8,500.00	90.00	270.25	7,755.00	1,174.30	-1,116.29	1,243.94	0.00	0.00	0.00
8,600.00	90.00	270.25	7,755.00	1,174.74	-1,216.29	1,343.33	0.00	0.00	0.00
8,700.00	90.00	270.25	7,754.99	1,175.18	-1,316.29	1,442.71	0.00	0.00	0.00
8,800.00	90.00	270.25	7,754.99	1,175.62	-1,416.29	1,542.10	0.00	0.00	0.00
8,900.00	90.00	270.25	7,754.99	1,176.06	-1,516.28	1,641.49	0.00	0.00	0.00
9,000.00	90.00	270.25	7,754.99	1,176.49	-1,616.28	1,740.87	0.00	0.00	0.00
9,100.00	90.00	270.25	7,754.99	1,176.93	-1,716.28	1,840.26	0.00	0.00	0.00
9,200.00	90.00	270.25	7,754.99	1,177.37	-1,816.28	1,939.64	0.00	0.00	0.00
9,300.00	90.00	270.25	7,754.99	1,177.81	-1,916.28	2,039.03	0.00	0.00	0.00
9,400.00	90.00	270.25	7,754.99	1,178.25	-2,016.28	2,138.42	0.00	0.00	0.00
9,500.00	90.00	270.25	7,754.98	1,178.69	-2,116.28	2,237.80	0.00	0.00	0.00
9,600.00	90.00	270.25	7,754.98	1,179.13	-2,216.28	2,337.19	0.00	0.00	0.00
9,700.00	90.00	270.25	7,754.98	1,179.57	-2,316.28	2,436.57	0.00	0.00	0.00
9,800.00	90.00	270.25	7,754.98	1,180.01	-2,416.28	2,535.96	0.00	0.00	0.00
9,900.00	90.00	270.25	7,754.98	1,180.45	-2,516.28	2,635.35	0.00	0.00	0.00
10,000.00	90.00	270.25	7,754.98	1,180.89	-2,616.27	2,734.73	0.00	0.00	0.00
10,100.00	90.00	270.25	7,754.98	1,181.32	-2,716.27	2,834.12	0.00	0.00	0.00
10,200.00	90.00	270.25	7,754.98	1,181.76	-2,816.27	2,933.50	0.00	0.00	0.00
10,300.00	90.00	270.25	7,754.98	1,182.20	-2,916.27	3,032.89	0.00	0.00	0.00
10,400.00	90.00	270.25	7,754.97	1,182.64	-3,016.27	3,132.28	0.00	0.00	0.00
10,500.00	90.00	270.25	7,754.97	1,183.08	-3,116.27	3,231.66	0.00	0.00	0.00
10,600.00	90.00	270.25	7,754.97	1,183.52	-3,216.27	3,331.05	0.00	0.00	0.00
10,700.00	90.00	270.25	7,754.97	1,183.96	-3,316.27	3,430.43	0.00	0.00	0.00
10,800.00	90.00	270.25	7,754.97	1,184.40	-3,416.27	3,529.82	0.00	0.00	0.00
10,900.00	90.00	270.25	7,754.97	1,184.84	-3,516.27	3,629.21	0.00	0.00	0.00
11,000.00	90.00	270.25	7,754.97	1,185.28	-3,616.26	3,728.59	0.00	0.00	0.00
11,100.00	90.00	270.25	7,754.97	1,185.72	-3,716.26	3,827.98	0.00	0.00	0.00
11,200.00	90.00	270.25	7,754.96	1,186.15	-3,816.26	3,927.36	0.00	0.00	0.00
11,300.00	90.00	270.25	7,754.96	1,186.59	-3,916.26	4,026.75	0.00	0.00	0.00
11,400.00	90.00	270.25	7,754.96	1,187.03	-4,016.26	4,126.13	0.00	0.00	0.00
11,500.00	90.00	270.25	7,754.96	1,187.47	-4,116.26	4,225.52	0.00	0.00	0.00
11,600.00	90.00	270.25	7,754.96	1,187.91	-4,216.26	4,324.91	0.00	0.00	0.00
11,700.00	90.00	270.25	7,754.96	1,188.35	-4,316.26	4,424.29	0.00	0.00	0.00
11,800.00	90.00	270.25	7,754.96	1,188.79	-4,416.26	4,523.68	0.00	0.00	0.00
11,900.00	90.00	270.25	7,754.96	1,189.23	-4,516.26	4,623.06	0.00	0.00	0.00
12,000.00	90.00	270.25	7,754.95	1,189.67	-4,616.26	4,722.45	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-3
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 5-6-3	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)
12,100.00	90.00	270.25	7,754.95	1,190.11	-4,716.25	4,821.84	0.00	0.00	0.00
12,200.00	90.00	270.25	7,754.95	1,190.55	-4,816.25	4,921.22	0.00	0.00	0.00
12,300.00	90.00	270.25	7,754.95	1,190.98	-4,916.25	5,020.61	0.00	0.00	0.00
12,400.00	90.00	270.25	7,754.95	1,191.42	-5,016.25	5,119.99	0.00	0.00	0.00
12,500.00	90.00	270.25	7,754.95	1,191.86	-5,116.25	5,219.38	0.00	0.00	0.00
12,600.00	90.00	270.25	7,754.95	1,192.30	-5,216.25	5,318.77	0.00	0.00	0.00
12,700.00	90.00	270.25	7,754.95	1,192.74	-5,316.25	5,418.15	0.00	0.00	0.00
12,800.00	90.00	270.25	7,754.95	1,193.18	-5,416.25	5,517.54	0.00	0.00	0.00
12,900.00	90.00	270.25	7,754.94	1,193.62	-5,516.25	5,616.92	0.00	0.00	0.00
13,000.00	90.00	270.25	7,754.94	1,194.06	-5,616.25	5,716.31	0.00	0.00	0.00
13,100.00	90.00	270.25	7,754.94	1,194.50	-5,716.24	5,815.70	0.00	0.00	0.00
13,200.00	90.00	270.25	7,754.94	1,194.94	-5,816.24	5,915.08	0.00	0.00	0.00
13,300.00	90.00	270.25	7,754.94	1,195.38	-5,916.24	6,014.47	0.00	0.00	0.00
13,400.00	90.00	270.25	7,754.94	1,195.81	-6,016.24	6,113.85	0.00	0.00	0.00
13,500.00	90.00	270.25	7,754.94	1,196.25	-6,116.24	6,213.24	0.00	0.00	0.00
13,600.00	90.00	270.25	7,754.94	1,196.69	-6,216.24	6,312.62	0.00	0.00	0.00
13,700.00	90.00	270.25	7,754.93	1,197.13	-6,316.24	6,412.01	0.00	0.00	0.00
13,800.00	90.00	270.25	7,754.93	1,197.57	-6,416.24	6,511.40	0.00	0.00	0.00
13,900.00	90.00	270.25	7,754.93	1,198.01	-6,516.24	6,610.78	0.00	0.00	0.00
14,000.00	90.00	270.25	7,754.93	1,198.45	-6,616.24	6,710.17	0.00	0.00	0.00
14,100.00	90.00	270.25	7,754.93	1,198.89	-6,716.23	6,809.55	0.00	0.00	0.00
14,200.00	90.00	270.25	7,754.93	1,199.33	-6,816.23	6,908.94	0.00	0.00	0.00
14,300.00	90.00	270.25	7,754.93	1,199.77	-6,916.23	7,008.33	0.00	0.00	0.00
14,400.00	90.00	270.25	7,754.93	1,200.21	-7,016.23	7,107.71	0.00	0.00	0.00
14,500.00	90.00	270.25	7,754.93	1,200.64	-7,116.23	7,207.10	0.00	0.00	0.00
14,600.00	90.00	270.25	7,754.92	1,201.08	-7,216.23	7,306.48	0.00	0.00	0.00
14,700.00	90.00	270.25	7,754.92	1,201.52	-7,316.23	7,405.87	0.00	0.00	0.00
14,800.00	90.00	270.25	7,754.92	1,201.96	-7,416.23	7,505.26	0.00	0.00	0.00
14,900.00	90.00	270.25	7,754.92	1,202.40	-7,516.23	7,604.64	0.00	0.00	0.00
15,000.00	90.00	270.25	7,754.92	1,202.84	-7,616.23	7,704.03	0.00	0.00	0.00
15,100.00	90.00	270.25	7,754.92	1,203.28	-7,716.23	7,803.41	0.00	0.00	0.00
15,200.00	90.00	270.25	7,754.92	1,203.72	-7,816.22	7,902.80	0.00	0.00	0.00
15,300.00	90.00	270.25	7,754.92	1,204.16	-7,916.22	8,002.19	0.00	0.00	0.00
15,400.00	90.00	270.25	7,754.91	1,204.60	-8,016.22	8,101.57	0.00	0.00	0.00
15,500.00	90.00	270.25	7,754.91	1,205.04	-8,116.22	8,200.96	0.00	0.00	0.00
15,600.00	90.00	270.25	7,754.91	1,205.47	-8,216.22	8,300.34	0.00	0.00	0.00
15,700.00	90.00	270.25	7,754.91	1,205.91	-8,316.22	8,399.73	0.00	0.00	0.00
15,800.00	90.00	270.25	7,754.91	1,206.35	-8,416.22	8,499.12	0.00	0.00	0.00
15,900.00	90.00	270.25	7,754.91	1,206.79	-8,516.22	8,598.50	0.00	0.00	0.00
16,000.00	90.00	270.25	7,754.91	1,207.23	-8,616.22	8,697.89	0.00	0.00	0.00
16,100.00	90.00	270.25	7,754.91	1,207.67	-8,716.22	8,797.27	0.00	0.00	0.00
16,200.00	90.00	270.25	7,754.90	1,208.11	-8,816.21	8,896.66	0.00	0.00	0.00
16,300.00	90.00	270.25	7,754.90	1,208.55	-8,916.21	8,996.04	0.00	0.00	0.00
16,400.00	90.00	270.25	7,754.90	1,208.99	-9,016.21	9,095.43	0.00	0.00	0.00
16,500.00	90.00	270.25	7,754.90	1,209.43	-9,116.21	9,194.82	0.00	0.00	0.00
16,600.00	90.00	270.25	7,754.90	1,209.87	-9,216.21	9,294.20	0.00	0.00	0.00
16,700.00	90.00	270.25	7,754.90	1,210.30	-9,316.21	9,393.59	0.00	0.00	0.00
16,800.00	90.00	270.25	7,754.90	1,210.74	-9,416.21	9,492.97	0.00	0.00	0.00
16,900.00	90.00	270.25	7,754.90	1,211.18	-9,516.21	9,592.36	0.00	0.00	0.00
17,000.00	90.00	270.25	7,754.90	1,211.62	-9,616.21	9,691.75	0.00	0.00	0.00
17,100.00	90.00	270.25	7,754.89	1,212.06	-9,716.21	9,791.13	0.00	0.00	0.00
17,200.00	90.00	270.25	7,754.89	1,212.50	-9,816.21	9,890.52	0.00	0.00	0.00
17,300.00	90.00	270.25	7,754.89	1,212.94	-9,916.20	9,989.90	0.00	0.00	0.00
17,400.00	90.00	270.25	7,754.89	1,213.38	-10,016.20	10,089.29	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-3
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 5-6-3	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)
17,500.00	90.00	270.25	7,754.89	1,213.82	-10,116.20	10,188.68	0.00	0.00	0.00
17,600.00	90.00	270.25	7,754.89	1,214.26	-10,216.20	10,288.06	0.00	0.00	0.00
17,700.00	90.00	270.25	7,754.89	1,214.70	-10,316.20	10,387.45	0.00	0.00	0.00
17,800.00	90.00	270.25	7,754.89	1,215.13	-10,416.20	10,486.83	0.00	0.00	0.00
17,879.50	90.00	270.25	7,755.00	1,215.23	-10,495.70	10,565.82	0.00	0.00	0.00
TD at 17879.50									

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 5-6-3 - PI - hit/miss target - Shape - Point	0.00	0.00	7,755.00	1,215.23	-10,495.70	1,147,905.90	3,220,946.81	39° 44' 12.048 N	104° 42' 51.696 W
JAMASO 4-65 5-6-3 - LF - plan hits target center - Point	0.00	0.00	7,755.00	1,172.97	-812.77	1,147,953.50	3,230,629.71	39° 44' 11.652 N	104° 40' 47.748 W

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
293.00	293.00	Denver			
877.43	877.00	Upper Arapahoe			
1,168.73	1,165.00	Lower Arapahoe			
1,732.64	1,718.00	Laramie - Fox Hills			
1,989.61	1,970.00	Pierre Shale (Base of Fox Hills)			
5,665.72	5,575.00	Shannon Sandstone Member			
7,852.82	7,655.00	Sharon Springs Shale			
7,995.16	7,720.00	Niobrara Formation			
8,044.64	7,735.00	Niobrara A Chalk			
8,089.27	7,745.00	Niobrara A Landing Point			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
600.00	600.00	0.00	0.00	Start Build 2.00
1,164.39	1,160.75	54.29	-11.12	Start 5537.62 hold at 1164.39 MD
6,702.02	6,591.25	1,116.16	-228.65	Start Drop -2.00
7,266.41	7,152.00	1,170.45	-239.77	Start 30.00 hold at 7266.41 MD
7,296.41	7,182.00	1,170.45	-239.77	Start DLS 10.00 TFO 270.25
8,196.48	7,755.00	1,172.97	-812.77	Start 9683.02 hold at 8196.48 MD
17,879.50	7,755.00	1,215.23	-10,495.70	TD at 17879.50