

AXIS EXPLORATION

ARAPAHOE COUNTY

Sec 4-T4S-R65W

JAMASO 4-65 5-6-2

ORIGINAL WELLBORE

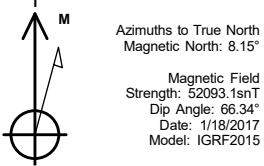
Plan: PROPOSAL 1

Standard Planning Report

12 April, 2018



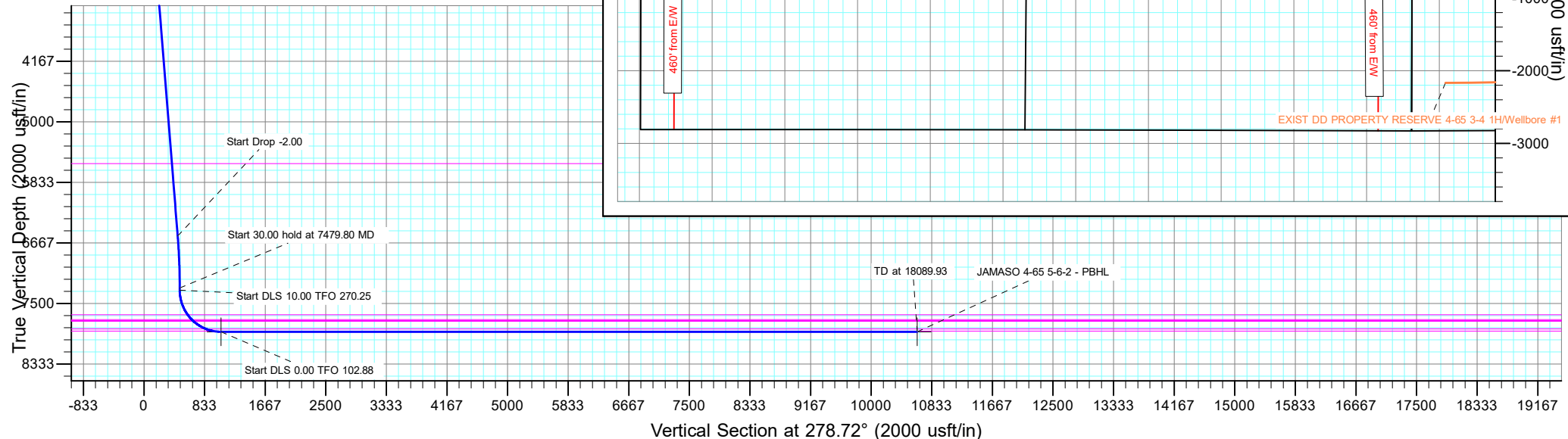
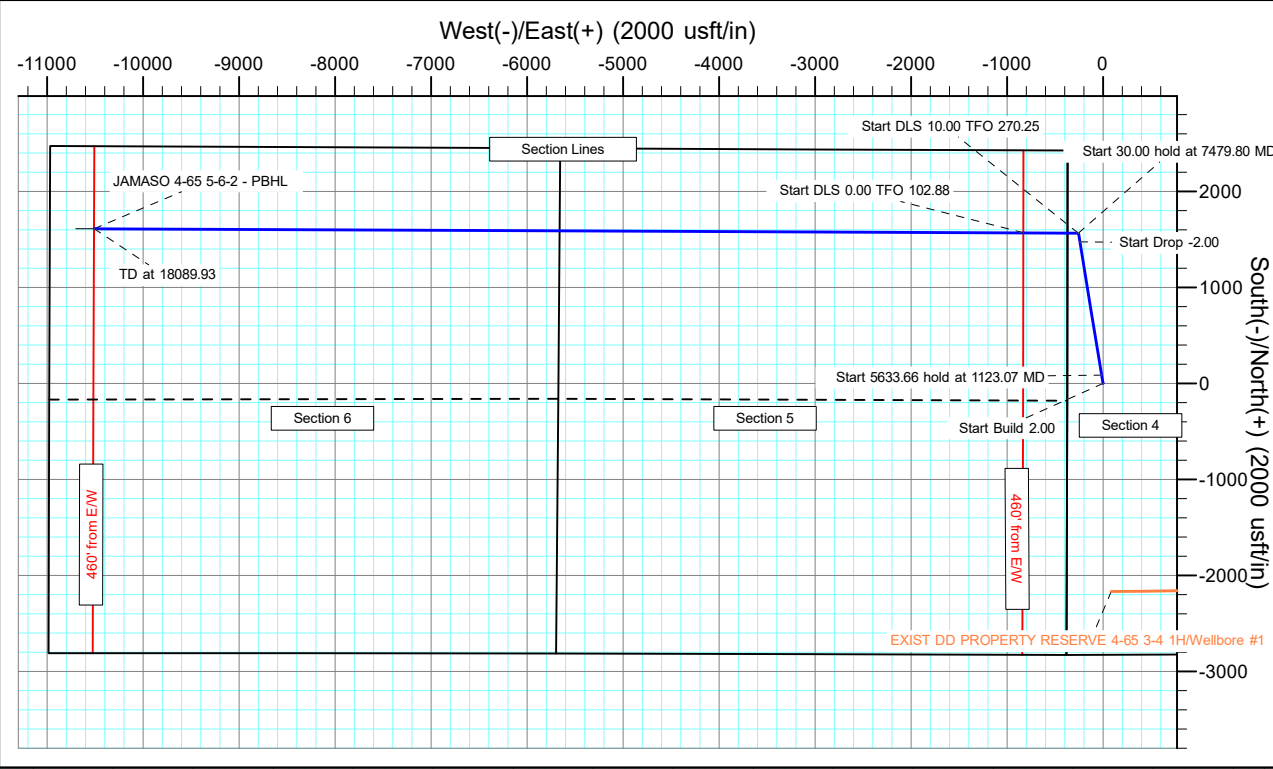
Project: ARAPAHOE COUNTY
Site: Sec 4-T4S-R65W
Well: JAMASO 4-65 5-6-2
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL 1



WELL DETAILS: JAMASO 4-65 5-6-2											ANNOTATIONS									
											MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation	
											400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	Start Build 2.00	
+N/-S	+E/-W	Northing	Easting	5585.00	Latitude	Longitude	Slot				1123.07	14.46	350.70	1115.42	89.58	-14.66	28.08	Start 5633.66 hold at 1123.07 MD		
0.00	0.00	1146788.29	3231470.21		39° 44' 0.060 N	104° 40' 37.128 W					6756.73	14.46	350.70	6570.58	1477.97	-241.97	463.28	1497.65		
SECTION DETAILS											7479.80	0.00	0.00	7286.00	1567.55	-256.63	491.36	1588.42		
											7509.80	0.00	0.00	7316.00	1567.55	-256.63	491.36	1588.42		
											8409.88	90.00	270.25	7889.00	1570.02	-829.63	1058.11	2161.43		
											18089.93	90.00	270.25	7889.00	1612.29	-10509.60	10632.55	11841.48		
											DESIGN TARGET DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target										
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
2	400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00											
3	1123.07	14.46	350.70	1115.42	89.58	-14.66	2.00	350.70	28.08											
4	6756.73	14.46	350.70	6570.58	1477.97	-241.97	0.00	0.00	463.28											
5	7479.80	0.00	0.00	7286.00	1567.55	-256.63	2.00	180.00	491.36											
6	7509.80	0.00	0.00	7316.00	1567.55	-256.63	0.00	0.00	491.36											
7	8409.88	90.00	270.25	7889.00	1570.02	-829.63	10.00	270.25	1058.11	JAMASO 4-65 5-6-2	Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
8	18089.93	90.00	270.25	7889.00	1612.29	-10509.60	0.00	102.88	10632.55	JAMASO 4-65 5-6-2	JAMASO 4-65 5-6-2 - LP	7889.00	1570.02	-829.63	1148350.54	3230626.04	39° 44'	15.576 N	104° 40' 47.748 W	Point
											- plan hits target center									

FORMATION TOP DETAILS		
TVDPATH	MDPATH	FORMATION
293.00	293.00	Denver
877.00	879.23	Upper Arapahoe
1165.00	1174.28	Lower Arapahoe
1718.00	1745.37	Laramie - Fox Hills
1970.00	2009.00	Shannon Sandstone Member
5575.00	5728.55	Sharon Springs Shale
7655.00	7872.55	Niobrara Formation
7720.00	7958.18	Niobrara A Chalk
7735.00	7979.74	Niobrara A Landing Point
7745.00	7994.61	Niobrara B Chalk
7849.00	8194.50	Niobrara B Landing Point
7879.00	8302.66	Niobrara B 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, 373' FWL	Sec 4-T4S-R65W
LP:	856' FNL, 460' FEL	Sec 5-T4S-R65W
BHL:	856' FNL, 460' FWL	Sec 6-T4S-R65W



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-2
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 5-6-2	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 5-6-2					
Well Position	+N/-S	-2,428.58 usft	Northing:	1,146,788.28 usft	Latitude:	39° 44' 0.060 N
	+E/-W	368.15 usft	Easting:	3,231,470.21 usft	Longitude:	104° 40' 37.128 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	52,093.13596916

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	278.72

Plan Survey Tool Program	Date	4/12/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,089.93	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	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,123.07	14.46	350.70	1,115.42	89.58	-14.66	2.00	2.00	0.00	350.70	
6,756.73	14.46	350.70	6,570.58	1,477.97	-241.97	0.00	0.00	0.00	0.00	
7,479.80	0.00	0.00	7,286.00	1,567.55	-256.63	2.00	-2.00	0.00	180.00	
7,509.80	0.00	0.00	7,316.00	1,567.55	-256.63	0.00	0.00	0.00	0.00	
8,409.88	90.00	270.25	7,889.00	1,570.02	-829.63	10.00	10.00	-9.97	270.25	JAMASO 4-65 5-6-2 -
18,089.93	90.00	270.25	7,889.00	1,612.29	-10,509.60	0.00	0.00	0.00	102.88	JAMASO 4-65 5-6-2 -

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-2
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 5-6-2	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
Start Build 2.00									
500.00	2.00	350.70	499.98	1.72	-0.28	0.54	2.00	2.00	0.00
600.00	4.00	350.70	599.84	6.89	-1.13	2.16	2.00	2.00	0.00
700.00	6.00	350.70	699.45	15.49	-2.54	4.85	2.00	2.00	0.00
800.00	8.00	350.70	798.70	27.51	-4.50	8.62	2.00	2.00	0.00
879.23	9.58	350.70	877.00	39.47	-6.46	12.37	2.00	2.00	0.00
Upper Arapahoe									
900.00	10.00	350.70	897.47	42.95	-7.03	13.46	2.00	2.00	0.00
1,000.00	12.00	350.70	995.62	61.78	-10.11	19.37	2.00	2.00	0.00
1,100.00	14.00	350.70	1,093.06	83.98	-13.75	26.32	2.00	2.00	0.00
1,123.07	14.46	350.70	1,115.42	89.58	-14.66	28.08	2.00	2.00	0.00
Start 5633.66 hold at 1123.07 MD									
1,174.28	14.46	350.70	1,165.00	102.19	-16.73	32.03	0.00	0.00	0.00
Lower Arapahoe									
1,200.00	14.46	350.70	1,189.91	108.53	-17.77	34.02	0.00	0.00	0.00
1,300.00	14.46	350.70	1,286.74	133.18	-21.80	41.75	0.00	0.00	0.00
1,400.00	14.46	350.70	1,383.57	157.82	-25.84	49.47	0.00	0.00	0.00
1,500.00	14.46	350.70	1,480.40	182.47	-29.87	57.20	0.00	0.00	0.00
1,600.00	14.46	350.70	1,577.24	207.11	-33.91	64.92	0.00	0.00	0.00
1,700.00	14.46	350.70	1,674.07	231.76	-37.94	72.65	0.00	0.00	0.00
1,745.37	14.46	350.70	1,718.00	242.94	-39.77	76.15	0.00	0.00	0.00
Laramie - Fox Hills									
1,800.00	14.46	350.70	1,770.90	256.40	-41.98	80.37	0.00	0.00	0.00
1,900.00	14.46	350.70	1,867.73	281.05	-46.01	88.10	0.00	0.00	0.00
2,000.00	14.46	350.70	1,964.56	305.69	-50.05	95.82	0.00	0.00	0.00
2,005.62	14.46	350.70	1,970.00	307.08	-50.27	96.26	0.00	0.00	0.00
Pierre Shale (Base of Fox Hills)									
2,100.00	14.46	350.70	2,061.39	330.34	-54.08	103.55	0.00	0.00	0.00
2,200.00	14.46	350.70	2,158.23	354.98	-58.12	111.27	0.00	0.00	0.00
2,300.00	14.46	350.70	2,255.06	379.63	-62.15	119.00	0.00	0.00	0.00
2,400.00	14.46	350.70	2,351.89	404.27	-66.18	126.72	0.00	0.00	0.00
2,500.00	14.46	350.70	2,448.72	428.92	-70.22	134.45	0.00	0.00	0.00
2,600.00	14.46	350.70	2,545.55	453.56	-74.25	142.17	0.00	0.00	0.00
2,700.00	14.46	350.70	2,642.38	478.21	-78.29	149.90	0.00	0.00	0.00
2,800.00	14.46	350.70	2,739.22	502.85	-82.32	157.62	0.00	0.00	0.00
2,900.00	14.46	350.70	2,836.05	527.49	-86.36	165.35	0.00	0.00	0.00
3,000.00	14.46	350.70	2,932.88	552.14	-90.39	173.07	0.00	0.00	0.00
3,100.00	14.46	350.70	3,029.71	576.78	-94.43	180.80	0.00	0.00	0.00
3,200.00	14.46	350.70	3,126.54	601.43	-98.46	188.52	0.00	0.00	0.00
3,300.00	14.46	350.70	3,223.37	626.07	-102.50	196.25	0.00	0.00	0.00
3,400.00	14.46	350.70	3,320.21	650.72	-106.53	203.97	0.00	0.00	0.00
3,500.00	14.46	350.70	3,417.04	675.36	-110.57	211.70	0.00	0.00	0.00
3,600.00	14.46	350.70	3,513.87	700.01	-114.60	219.42	0.00	0.00	0.00
3,700.00	14.46	350.70	3,610.70	724.65	-118.64	227.15	0.00	0.00	0.00
3,800.00	14.46	350.70	3,707.53	749.30	-122.67	234.87	0.00	0.00	0.00
3,900.00	14.46	350.70	3,804.36	773.94	-126.71	242.60	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-2
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 5-6-2	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	14.46	350.70	3,901.19	798.59	-130.74	250.32	0.00	0.00	0.00	
4,100.00	14.46	350.70	3,998.03	823.23	-134.77	258.05	0.00	0.00	0.00	
4,200.00	14.46	350.70	4,094.86	847.88	-138.81	265.77	0.00	0.00	0.00	
4,300.00	14.46	350.70	4,191.69	872.52	-142.84	273.50	0.00	0.00	0.00	
4,400.00	14.46	350.70	4,288.52	897.17	-146.88	281.22	0.00	0.00	0.00	
4,500.00	14.46	350.70	4,385.35	921.81	-150.91	288.95	0.00	0.00	0.00	
4,600.00	14.46	350.70	4,482.18	946.45	-154.95	296.67	0.00	0.00	0.00	
4,700.00	14.46	350.70	4,579.02	971.10	-158.98	304.40	0.00	0.00	0.00	
4,800.00	14.46	350.70	4,675.85	995.74	-163.02	312.12	0.00	0.00	0.00	
4,900.00	14.46	350.70	4,772.68	1,020.39	-167.05	319.85	0.00	0.00	0.00	
5,000.00	14.46	350.70	4,869.51	1,045.03	-171.09	327.57	0.00	0.00	0.00	
5,100.00	14.46	350.70	4,966.34	1,069.68	-175.12	335.30	0.00	0.00	0.00	
5,200.00	14.46	350.70	5,063.17	1,094.32	-179.16	343.02	0.00	0.00	0.00	
5,300.00	14.46	350.70	5,160.01	1,118.97	-183.19	350.75	0.00	0.00	0.00	
5,400.00	14.46	350.70	5,256.84	1,143.61	-187.23	358.47	0.00	0.00	0.00	
5,500.00	14.46	350.70	5,353.67	1,168.26	-191.26	366.20	0.00	0.00	0.00	
5,600.00	14.46	350.70	5,450.50	1,192.90	-195.29	373.92	0.00	0.00	0.00	
5,700.00	14.46	350.70	5,547.33	1,217.55	-199.33	381.65	0.00	0.00	0.00	
5,728.57	14.46	350.70	5,575.00	1,224.59	-200.48	383.86	0.00	0.00	0.00	
Shannon Sandstone Member										
5,800.00	14.46	350.70	5,644.16	1,242.19	-203.36	389.37	0.00	0.00	0.00	
5,900.00	14.46	350.70	5,741.00	1,266.84	-207.40	397.10	0.00	0.00	0.00	
6,000.00	14.46	350.70	5,837.83	1,291.48	-211.43	404.82	0.00	0.00	0.00	
6,100.00	14.46	350.70	5,934.66	1,316.12	-215.47	412.55	0.00	0.00	0.00	
6,200.00	14.46	350.70	6,031.49	1,340.77	-219.50	420.28	0.00	0.00	0.00	
6,300.00	14.46	350.70	6,128.32	1,365.41	-223.54	428.00	0.00	0.00	0.00	
6,400.00	14.46	350.70	6,225.15	1,390.06	-227.57	435.73	0.00	0.00	0.00	
6,500.00	14.46	350.70	6,321.99	1,414.70	-231.61	443.45	0.00	0.00	0.00	
6,600.00	14.46	350.70	6,418.82	1,439.35	-235.64	451.18	0.00	0.00	0.00	
6,700.00	14.46	350.70	6,515.65	1,463.99	-239.68	458.90	0.00	0.00	0.00	
6,756.73	14.46	350.70	6,570.58	1,477.97	-241.97	463.28	0.00	0.00	0.00	
Start Drop -2.00										
6,800.00	13.60	350.70	6,612.56	1,488.33	-243.66	466.53	2.00	-2.00	0.00	
6,900.00	11.60	350.70	6,710.15	1,509.85	-247.18	473.27	2.00	-2.00	0.00	
7,000.00	9.60	350.70	6,808.44	1,527.99	-250.15	478.96	2.00	-2.00	0.00	
7,100.00	7.60	350.70	6,907.31	1,542.74	-252.57	483.58	2.00	-2.00	0.00	
7,200.00	5.60	350.70	7,006.64	1,554.08	-254.42	487.14	2.00	-2.00	0.00	
7,300.00	3.60	350.70	7,106.32	1,561.98	-255.72	489.62	2.00	-2.00	0.00	
7,400.00	1.60	350.70	7,206.21	1,566.45	-256.45	491.02	2.00	-2.00	0.00	
7,479.80	0.00	0.00	7,286.00	1,567.55	-256.63	491.36	2.00	-2.00	0.00	
Start 30.00 hold at 7479.80 MD										
7,509.80	0.00	0.00	7,316.00	1,567.55	-256.63	491.36	0.00	0.00	0.00	
Start DLS 10.00 TFO 270.25										
7,550.00	4.02	270.25	7,356.16	1,567.56	-258.04	492.76	10.00	10.00	0.00	
7,600.00	9.02	270.25	7,405.83	1,567.58	-263.71	498.37	10.00	10.00	0.00	
7,650.00	14.02	270.25	7,454.80	1,567.62	-273.70	508.24	10.00	10.00	0.00	
7,700.00	19.02	270.25	7,502.72	1,567.68	-287.91	522.30	10.00	10.00	0.00	
7,750.00	24.02	270.25	7,549.22	1,567.76	-306.24	540.43	10.00	10.00	0.00	
7,800.00	29.02	270.25	7,593.95	1,567.86	-328.56	562.50	10.00	10.00	0.00	
7,850.00	34.02	270.25	7,636.56	1,567.97	-354.69	588.35	10.00	10.00	0.00	
7,872.55	36.27	270.25	7,655.00	1,568.03	-367.67	601.19	10.00	10.00	0.00	
Sharon Springs Shale										
7,900.00	39.02	270.25	7,676.73	1,568.10	-384.43	617.77	10.00	10.00	0.00	
7,950.00	44.02	270.25	7,714.16	1,568.24	-417.56	650.54	10.00	10.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-2
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 5-6-2	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)
7,958.18	44.83	270.25	7,720.00	1,568.27	-423.29	656.20	10.00	10.00	0.00
Niobrara Formation									
7,979.74	46.99	270.25	7,735.00	1,568.33	-438.77	671.52	10.00	10.00	0.00
Niobrara A Chalk									
7,994.61	48.48	270.25	7,745.00	1,568.38	-449.78	682.40	10.00	10.00	0.00
Niobrara A Landing Point									
8,000.00	49.02	270.25	7,748.55	1,568.40	-453.83	686.41	10.00	10.00	0.00
8,050.00	54.02	270.25	7,779.66	1,568.57	-492.95	725.11	10.00	10.00	0.00
8,100.00	59.02	270.25	7,807.24	1,568.75	-534.64	766.34	10.00	10.00	0.00
8,150.00	64.02	270.25	7,831.08	1,568.94	-578.58	809.79	10.00	10.00	0.00
8,194.50	68.46	270.25	7,849.00	1,569.11	-619.29	850.07	10.00	10.00	0.00
Niobrara B Chalk									
8,200.00	69.01	270.25	7,850.99	1,569.13	-624.42	855.14	10.00	10.00	0.00
8,250.00	74.01	270.25	7,866.84	1,569.34	-671.82	902.02	10.00	10.00	0.00
8,300.00	79.01	270.25	7,878.50	1,569.55	-720.43	950.10	10.00	10.00	0.00
8,302.66	79.28	270.25	7,879.00	1,569.56	-723.04	952.68	10.00	10.00	0.00
Niobrara B Landing Point									
8,350.00	84.01	270.25	7,885.88	1,569.76	-769.87	999.00	10.00	10.00	0.00
8,400.00	89.01	270.25	7,888.92	1,569.98	-819.76	1,048.34	10.00	10.00	0.00
8,409.88	90.00	270.25	7,889.00	1,570.02	-829.63	1,058.11	10.00	10.00	0.00
Start DLS 0.00 TFO 102.88									
8,500.00	90.00	270.25	7,889.00	1,570.41	-919.76	1,147.25	0.00	0.00	0.00
8,600.00	90.00	270.25	7,889.00	1,570.84	-1,019.75	1,246.16	0.00	0.00	0.00
8,700.00	90.00	270.25	7,889.00	1,571.27	-1,119.75	1,345.07	0.00	0.00	0.00
8,800.00	90.00	270.25	7,889.00	1,571.70	-1,219.75	1,443.98	0.00	0.00	0.00
8,900.00	90.00	270.25	7,888.99	1,572.13	-1,319.75	1,542.88	0.00	0.00	0.00
9,000.00	90.00	270.25	7,888.99	1,572.56	-1,419.75	1,641.79	0.00	0.00	0.00
9,100.00	90.00	270.25	7,888.99	1,573.00	-1,519.75	1,740.70	0.00	0.00	0.00
9,200.00	90.00	270.25	7,888.99	1,573.43	-1,619.75	1,839.61	0.00	0.00	0.00
9,300.00	90.00	270.25	7,888.99	1,573.86	-1,719.75	1,938.52	0.00	0.00	0.00
9,400.00	90.00	270.25	7,888.99	1,574.29	-1,819.75	2,037.42	0.00	0.00	0.00
9,500.00	90.00	270.25	7,888.99	1,574.72	-1,919.75	2,136.33	0.00	0.00	0.00
9,600.00	90.00	270.25	7,888.99	1,575.16	-2,019.75	2,235.24	0.00	0.00	0.00
9,700.00	90.00	270.25	7,888.99	1,575.59	-2,119.74	2,334.15	0.00	0.00	0.00
9,800.00	90.00	270.25	7,888.98	1,576.02	-2,219.74	2,433.06	0.00	0.00	0.00
9,900.00	90.00	270.25	7,888.98	1,576.45	-2,319.74	2,531.97	0.00	0.00	0.00
10,000.00	90.00	270.25	7,888.98	1,576.89	-2,419.74	2,630.87	0.00	0.00	0.00
10,100.00	90.00	270.25	7,888.98	1,577.32	-2,519.74	2,729.78	0.00	0.00	0.00
10,200.00	90.00	270.25	7,888.98	1,577.75	-2,619.74	2,828.69	0.00	0.00	0.00
10,300.00	90.00	270.25	7,888.98	1,578.19	-2,719.74	2,927.60	0.00	0.00	0.00
10,400.00	90.00	270.25	7,888.98	1,578.62	-2,819.74	3,026.51	0.00	0.00	0.00
10,500.00	90.00	270.25	7,888.98	1,579.05	-2,919.74	3,125.42	0.00	0.00	0.00
10,600.00	90.00	270.25	7,888.98	1,579.49	-3,019.74	3,224.32	0.00	0.00	0.00
10,700.00	90.00	270.25	7,888.98	1,579.92	-3,119.73	3,323.23	0.00	0.00	0.00
10,800.00	90.00	270.25	7,888.98	1,580.35	-3,219.73	3,422.14	0.00	0.00	0.00
10,900.00	90.00	270.25	7,888.98	1,580.79	-3,319.73	3,521.05	0.00	0.00	0.00
11,000.00	90.00	270.25	7,888.98	1,581.22	-3,419.73	3,619.96	0.00	0.00	0.00
11,100.00	90.00	270.25	7,888.97	1,581.65	-3,519.73	3,718.87	0.00	0.00	0.00
11,200.00	90.00	270.25	7,888.97	1,582.09	-3,619.73	3,817.78	0.00	0.00	0.00
11,300.00	90.00	270.25	7,888.97	1,582.52	-3,719.73	3,916.68	0.00	0.00	0.00
11,400.00	90.00	270.25	7,888.97	1,582.96	-3,819.73	4,015.59	0.00	0.00	0.00
11,500.00	90.00	270.25	7,888.97	1,583.39	-3,919.73	4,114.50	0.00	0.00	0.00
11,600.00	90.00	270.25	7,888.97	1,583.83	-4,019.73	4,213.41	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-2
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 5-6-2	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)	
11,700.00	90.00	270.25	7,888.97	1,584.26	-4,119.73	4,312.32	0.00	0.00	0.00	
11,800.00	90.00	270.25	7,888.97	1,584.70	-4,219.72	4,411.23	0.00	0.00	0.00	
11,900.00	90.00	270.25	7,888.97	1,585.13	-4,319.72	4,510.14	0.00	0.00	0.00	
12,000.00	90.00	270.25	7,888.97	1,585.57	-4,419.72	4,609.04	0.00	0.00	0.00	
12,100.00	90.00	270.25	7,888.97	1,586.00	-4,519.72	4,707.95	0.00	0.00	0.00	
12,200.00	90.00	270.25	7,888.97	1,586.44	-4,619.72	4,806.86	0.00	0.00	0.00	
12,300.00	90.00	270.25	7,888.97	1,586.87	-4,719.72	4,905.77	0.00	0.00	0.00	
12,400.00	90.00	270.25	7,888.97	1,587.31	-4,819.72	5,004.68	0.00	0.00	0.00	
12,500.00	90.00	270.25	7,888.97	1,587.74	-4,919.72	5,103.59	0.00	0.00	0.00	
12,600.00	90.00	270.25	7,888.97	1,588.18	-5,019.72	5,202.50	0.00	0.00	0.00	
12,700.00	90.00	270.25	7,888.97	1,588.62	-5,119.72	5,301.41	0.00	0.00	0.00	
12,800.00	90.00	270.25	7,888.97	1,589.05	-5,219.71	5,400.31	0.00	0.00	0.00	
12,900.00	90.00	270.25	7,888.97	1,589.49	-5,319.71	5,499.22	0.00	0.00	0.00	
13,000.00	90.00	270.25	7,888.97	1,589.92	-5,419.71	5,598.13	0.00	0.00	0.00	
13,100.00	90.00	270.25	7,888.97	1,590.36	-5,519.71	5,697.04	0.00	0.00	0.00	
13,200.00	90.00	270.25	7,888.97	1,590.80	-5,619.71	5,795.95	0.00	0.00	0.00	
13,300.00	90.00	270.25	7,888.97	1,591.23	-5,719.71	5,894.86	0.00	0.00	0.00	
13,400.00	90.00	270.25	7,888.97	1,591.67	-5,819.71	5,993.77	0.00	0.00	0.00	
13,500.00	90.00	270.25	7,888.97	1,592.11	-5,919.71	6,092.68	0.00	0.00	0.00	
13,600.00	90.00	270.25	7,888.97	1,592.54	-6,019.71	6,191.59	0.00	0.00	0.00	
13,700.00	90.00	270.25	7,888.97	1,592.98	-6,119.71	6,290.49	0.00	0.00	0.00	
13,800.00	90.00	270.25	7,888.97	1,593.42	-6,219.71	6,389.40	0.00	0.00	0.00	
13,900.00	90.00	270.25	7,888.97	1,593.86	-6,319.70	6,488.31	0.00	0.00	0.00	
14,000.00	90.00	270.25	7,888.97	1,594.29	-6,419.70	6,587.22	0.00	0.00	0.00	
14,100.00	90.00	270.25	7,888.97	1,594.73	-6,519.70	6,686.13	0.00	0.00	0.00	
14,200.00	90.00	270.25	7,888.97	1,595.17	-6,619.70	6,785.04	0.00	0.00	0.00	
14,300.00	90.00	270.25	7,888.97	1,595.61	-6,719.70	6,883.95	0.00	0.00	0.00	
14,400.00	90.00	270.25	7,888.97	1,596.04	-6,819.70	6,982.86	0.00	0.00	0.00	
14,500.00	90.00	270.25	7,888.97	1,596.48	-6,919.70	7,081.77	0.00	0.00	0.00	
14,600.00	90.00	270.25	7,888.97	1,596.92	-7,019.70	7,180.68	0.00	0.00	0.00	
14,700.00	90.00	270.25	7,888.97	1,597.36	-7,119.70	7,279.59	0.00	0.00	0.00	
14,800.00	90.00	270.25	7,888.97	1,597.80	-7,219.70	7,378.49	0.00	0.00	0.00	
14,900.00	90.00	270.25	7,888.97	1,598.24	-7,319.69	7,477.40	0.00	0.00	0.00	
15,000.00	90.00	270.25	7,888.97	1,598.68	-7,419.69	7,576.31	0.00	0.00	0.00	
15,100.00	90.00	270.25	7,888.97	1,599.11	-7,519.69	7,675.22	0.00	0.00	0.00	
15,200.00	90.00	270.25	7,888.97	1,599.55	-7,619.69	7,774.13	0.00	0.00	0.00	
15,300.00	90.00	270.25	7,888.97	1,599.99	-7,719.69	7,873.04	0.00	0.00	0.00	
15,400.00	90.00	270.25	7,888.97	1,600.43	-7,819.69	7,971.95	0.00	0.00	0.00	
15,500.00	90.00	270.25	7,888.98	1,600.87	-7,919.69	8,070.86	0.00	0.00	0.00	
15,600.00	90.00	270.25	7,888.98	1,601.31	-8,019.69	8,169.77	0.00	0.00	0.00	
15,700.00	90.00	270.25	7,888.98	1,601.75	-8,119.69	8,268.68	0.00	0.00	0.00	
15,800.00	90.00	270.25	7,888.98	1,602.19	-8,219.69	8,367.59	0.00	0.00	0.00	
15,900.00	90.00	270.25	7,888.98	1,602.63	-8,319.69	8,466.50	0.00	0.00	0.00	
16,000.00	90.00	270.25	7,888.98	1,603.07	-8,419.68	8,565.41	0.00	0.00	0.00	
16,100.00	90.00	270.25	7,888.98	1,603.51	-8,519.68	8,664.32	0.00	0.00	0.00	
16,200.00	90.00	270.25	7,888.98	1,603.95	-8,619.68	8,763.22	0.00	0.00	0.00	
16,300.00	90.00	270.25	7,888.98	1,604.39	-8,719.68	8,862.13	0.00	0.00	0.00	
16,400.00	90.00	270.25	7,888.98	1,604.83	-8,819.68	8,961.04	0.00	0.00	0.00	
16,500.00	90.00	270.25	7,888.98	1,605.27	-8,919.68	9,059.95	0.00	0.00	0.00	
16,600.00	90.00	270.25	7,888.98	1,605.71	-9,019.68	9,158.86	0.00	0.00	0.00	
16,700.00	90.00	270.25	7,888.98	1,606.15	-9,119.68	9,257.77	0.00	0.00	0.00	
16,800.00	90.00	270.25	7,888.99	1,606.59	-9,219.68	9,356.68	0.00	0.00	0.00	
16,900.00	90.00	270.25	7,888.99	1,607.03	-9,319.68	9,455.59	0.00	0.00	0.00	
17,000.00	90.00	270.25	7,888.99	1,607.47	-9,419.67	9,554.50	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-2
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 5-6-2	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)	
17,100.00	90.00	270.25	7,888.99	1,607.92	-9,519.67	9,653.41	0.00	0.00	0.00	
17,200.00	90.00	270.25	7,888.99	1,608.36	-9,619.67	9,752.32	0.00	0.00	0.00	
17,300.00	90.00	270.25	7,888.99	1,608.80	-9,719.67	9,851.23	0.00	0.00	0.00	
17,400.00	90.00	270.25	7,888.99	1,609.24	-9,819.67	9,950.14	0.00	0.00	0.00	
17,500.00	90.00	270.25	7,888.99	1,609.68	-9,919.67	10,049.05	0.00	0.00	0.00	
17,600.00	90.00	270.25	7,888.99	1,610.12	-10,019.67	10,147.96	0.00	0.00	0.00	
17,700.00	90.00	270.25	7,889.00	1,610.57	-10,119.67	10,246.87	0.00	0.00	0.00	
17,800.00	90.00	270.25	7,889.00	1,611.01	-10,219.67	10,345.78	0.00	0.00	0.00	
17,900.00	90.00	270.25	7,889.00	1,611.45	-10,319.67	10,444.69	0.00	0.00	0.00	
18,000.00	90.00	270.25	7,889.00	1,611.89	-10,419.66	10,543.60	0.00	0.00	0.00	
18,089.93	90.00	270.25	7,889.00	1,612.29	-10,509.60	10,632.55	0.00	0.00	0.00	
TD at 18089.93										

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 5-6-2 - PI - hit/miss target - Shape - Point	0.00	0.00	7,889.00	1,612.29	-10,509.60	1,148,302.96	3,220,946.10	39° 44' 15.972 N	104° 42' 51.660 W	
JAMASO 4-65 5-6-2 - LF - plan hits target center - Point	0.00	0.00	7,889.00	1,570.02	-829.63	1,148,350.53	3,230,626.04	39° 44' 15.576 N	104° 40' 47.748 W	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
293.00	293.00	Denver				
879.23	877.00	Upper Arapahoe				
1,174.28	1,165.00	Lower Arapahoe				
1,745.37	1,718.00	Laramie - Fox Hills				
2,005.62	1,970.00	Pierre Shale (Base of Fox Hills)				
5,728.57	5,575.00	Shannon Sandstone Member				
7,872.55	7,655.00	Sharon Springs Shale				
7,958.18	7,720.00	Niobrara Formation				
7,979.74	7,735.00	Niobrara A Chalk				
7,994.61	7,745.00	Niobrara A Landing Point				
8,194.50	7,849.00	Niobrara B Chalk				
8,302.66	7,879.00	Niobrara B Landing Point				

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-2
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 5-6-2	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)	
400.00	400.00	0.00	0.00	Start Build 2.00
1,123.07	1,115.42	89.58	-14.66	Start 5633.66 hold at 1123.07 MD
6,756.73	6,570.58	1,477.97	-241.97	Start Drop -2.00
7,479.80	7,286.00	1,567.55	-256.63	Start 30.00 hold at 7479.80 MD
7,509.80	7,316.00	1,567.55	-256.63	Start DLS 10.00 TFO 270.25
8,409.88	7,889.00	1,570.02	-829.63	Start DLS 0.00 TFO 102.88
18,089.93	7,889.00	1,612.29	-10,509.60	TD at 18089.93