

AXIS EXPLORATION

ARAPAHOE COUNTY

Sec 4-T4S-R65W

JAMASO 4-65 5-6-12

ORIGINAL WELLBORE

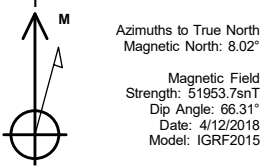
Plan: PROPOSAL 1

Standard Planning Report

12 April, 2018



Project: ARAPAHOE COUNTY
Site: Sec 4-T4S-R65W
Well: JAMASO 4-65 5-6-12
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL 1

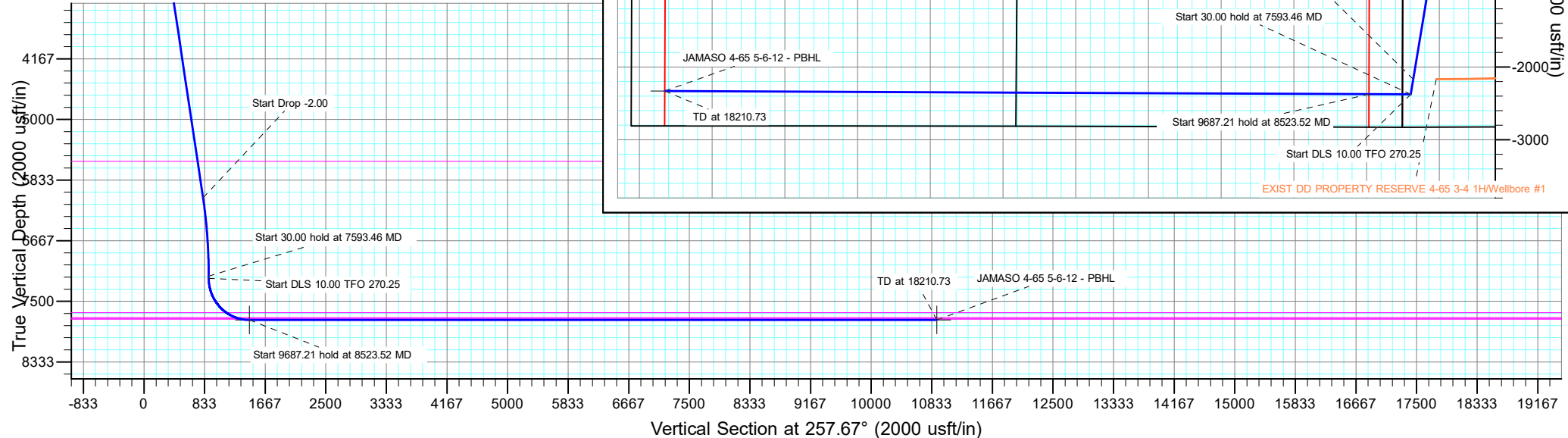
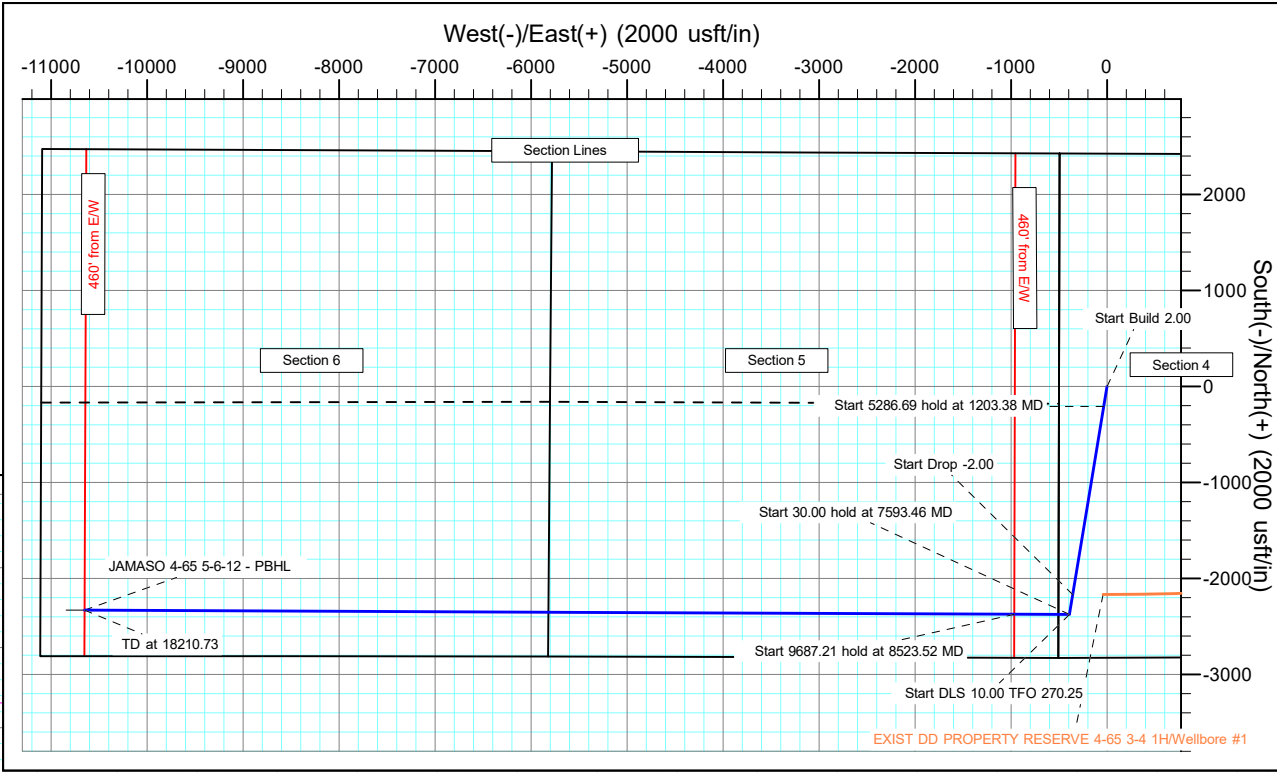


WELL DETAILS: JAMASO 4-65 5-6-12											ANNOTATIONS										
											MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation		
											100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00			
											1203.38	22.07	189.37	1176.30	-207.07	-34.17	77.62	209.87	Start Build 2.00		
											6490.07	22.07	189.37	6075.70	-2166.78	-357.61	812.18	2196.09	Start 5286.69 hold at 1203.38 MD		
											7593.46	0.00	0.00	7152.00	-2373.85	-391.78	889.80	2405.96	Start Drop -2.00		
											7623.46	0.00	0.00	7182.00	-2373.85	-391.78	889.80	2405.96	Start 30.00 hold at 7593.46 MD		
											8523.52	90.00	270.25	7755.00	-2371.36	-964.78	1449.04	2978.96	Start DLS 10.00 TFO 270.25		
											18210.73	90.00	270.25	7754.98	-2329.26	-10651.89	10903.59	12666.17	Start 9687.21 hold at 8523.52 MD		
											TD at 18210.73										
SECTION 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	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00												
3	1203.38	22.07	189.37	1176.30	-207.07	-34.17	2.00	189.37	77.62												
4	6490.07	22.07	189.37	6075.70	-2166.78	-357.61	0.00	0.00	812.18												
5	7593.46	0.00	0.00	7152.00	-2373.85	-391.78	2.00	180.00	889.80												
6	7623.46	0.00	0.00	7182.00	-2373.85	-391.78	0.00	0.00	889.80												
7	8523.52	90.00	270.25	7755.00	-2371.36	-964.78	10.00	270.25	1449.04	JAMASO 4-65 5-6-1											
8	18210.73	90.00	270.25	7755.00	-2329.03	-10651.89	0.00	0.00	10903.54	JAMASO 4-65 5-6-1											
											Name	TVD	+N/-S	+E/-W	Northing	Easting	39° 43'	Latitude	104° 40'	Longitude	Shape
											JAMASO 4-65 5-6-12 - LP	7755.00	-2371.36	-964.78	1144409.24	3230654.05	39° 43'	36.624 N	104° 40'	47.856 W	Point
											- plan hits target center										
											JAMASO 4-65 5-6-12 - PBHL	7755.00	-2329.03	-10651.89	1144361.61	3220966.96	39° 43'	37.020 N	104° 42'	51.840 W	Point
											- plan hits target center										

FORMATION TOP DETAILS		
TVDPATH	MDPath	Formation
293.00	293.15	Denver
877.00	886.86	Upper Arapahoe
1165.00	1191.20	Lower Arapahoe
1718.00	1787.90	Laramie - Fox Hills
1970.00	2059.00	Shannon Sandstone Member
5575.00	5949.80	Sharon Springs Shale
7655.00	8179.87	Niobrara Formation
7720.00	8322.21	Niobrara A Chalk
7735.00	8371.68	Niobrara A Landing Point
7745.00	8416.31	

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, 499' FWL
Sec 4-T4S-R65W
LP:
460' FSL, 460' FEL
Sec 5-T4S-R65W
BHL:
485' FSL, 460' FWL
Sec 6-T4S-R65W



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-12
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 5-6-12	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 5-6-12					
Well Position	+N/-S	-2,428.58 usft	Northing:	1,146,789.46 usft	Latitude:	39° 44' 0.060 N
	+E/-W	494.72 usft	Easting:	3,231,596.76 usft	Longitude:	104° 40' 35.508 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	4/12/2018	8.02	66.31	51,953.72921726

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	257.67

Plan Survey Tool Program	Date	4/12/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,210.73	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	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,203.38	22.07	189.37	1,176.30	-207.07	-34.17	2.00	2.00	0.00	189.37	
6,490.07	22.07	189.37	6,075.70	-2,166.78	-357.61	0.00	0.00	0.00	0.00	
7,593.46	0.00	0.00	7,152.00	-2,373.85	-391.78	2.00	-2.00	0.00	180.00	
7,623.46	0.00	0.00	7,182.00	-2,373.85	-391.78	0.00	0.00	0.00	0.00	
8,523.52	90.00	270.25	7,755.00	-2,371.36	-964.78	10.00	10.00	-9.97	270.25	JAMASO 4-65 5-6-12
18,210.73	90.00	270.25	7,755.00	-2,329.03	-10,651.89	0.00	0.00	0.00	0.00	JAMASO 4-65 5-6-12

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-12
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 5-6-12	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
Start Build 2.00									
200.00	2.00	189.37	199.98	-1.72	-0.28	0.65	2.00	2.00	0.00
293.15	3.86	189.37	293.00	-6.42	-1.06	2.41	2.00	2.00	0.00
Denver									
300.00	4.00	189.37	299.84	-6.89	-1.14	2.58	2.00	2.00	0.00
400.00	6.00	189.37	399.45	-15.48	-2.56	5.80	2.00	2.00	0.00
500.00	8.00	189.37	498.70	-27.51	-4.54	10.31	2.00	2.00	0.00
600.00	10.00	189.37	597.47	-42.94	-7.09	16.10	2.00	2.00	0.00
700.00	12.00	189.37	695.62	-61.77	-10.19	23.15	2.00	2.00	0.00
800.00	14.00	189.37	793.06	-83.96	-13.86	31.47	2.00	2.00	0.00
886.86	15.74	189.37	877.00	-105.95	-17.49	39.71	2.00	2.00	0.00
Upper Arapahoe									
900.00	16.00	189.37	889.64	-109.50	-18.07	41.04	2.00	2.00	0.00
1,000.00	18.00	189.37	985.27	-138.34	-22.83	51.86	2.00	2.00	0.00
1,100.00	20.00	189.37	1,079.82	-170.46	-28.13	63.90	2.00	2.00	0.00
1,191.20	21.82	189.37	1,165.00	-202.58	-33.43	75.93	2.00	2.00	0.00
Lower Arapahoe									
1,203.38	22.07	189.37	1,176.30	-207.07	-34.17	77.62	2.00	2.00	0.00
Start 5286.69 hold at 1203.38 MD									
1,300.00	22.07	189.37	1,265.84	-242.89	-40.09	91.04	0.00	0.00	0.00
1,400.00	22.07	189.37	1,358.52	-279.95	-46.20	104.94	0.00	0.00	0.00
1,500.00	22.07	189.37	1,451.19	-317.02	-52.32	118.83	0.00	0.00	0.00
1,600.00	22.07	189.37	1,543.87	-354.09	-58.44	132.73	0.00	0.00	0.00
1,700.00	22.07	189.37	1,636.54	-391.16	-64.56	146.62	0.00	0.00	0.00
1,787.90	22.07	189.37	1,718.00	-423.74	-69.93	158.83	0.00	0.00	0.00
Laramie - Fox Hills									
1,800.00	22.07	189.37	1,729.21	-428.23	-70.67	160.52	0.00	0.00	0.00
1,900.00	22.07	189.37	1,821.89	-465.30	-76.79	174.41	0.00	0.00	0.00
2,000.00	22.07	189.37	1,914.56	-502.37	-82.91	188.30	0.00	0.00	0.00
2,059.82	22.07	189.37	1,970.00	-524.54	-86.57	196.62	0.00	0.00	0.00
Pierre Shale (Base of Fox Hills)									
2,100.00	22.07	189.37	2,007.24	-539.44	-89.03	202.20	0.00	0.00	0.00
2,200.00	22.07	189.37	2,099.91	-576.50	-95.15	216.09	0.00	0.00	0.00
2,300.00	22.07	189.37	2,192.58	-613.57	-101.26	229.99	0.00	0.00	0.00
2,400.00	22.07	189.37	2,285.26	-650.64	-107.38	243.88	0.00	0.00	0.00
2,500.00	22.07	189.37	2,377.93	-687.71	-113.50	257.78	0.00	0.00	0.00
2,600.00	22.07	189.37	2,470.61	-724.78	-119.62	271.67	0.00	0.00	0.00
2,700.00	22.07	189.37	2,563.28	-761.85	-125.74	285.57	0.00	0.00	0.00
2,800.00	22.07	189.37	2,655.95	-798.92	-131.85	299.46	0.00	0.00	0.00
2,900.00	22.07	189.37	2,748.63	-835.99	-137.97	313.36	0.00	0.00	0.00
3,000.00	22.07	189.37	2,841.30	-873.05	-144.09	327.25	0.00	0.00	0.00
3,100.00	22.07	189.37	2,933.98	-910.12	-150.21	341.15	0.00	0.00	0.00
3,200.00	22.07	189.37	3,026.65	-947.19	-156.32	355.04	0.00	0.00	0.00
3,300.00	22.07	189.37	3,119.33	-984.26	-162.44	368.93	0.00	0.00	0.00
3,400.00	22.07	189.37	3,212.00	-1,021.33	-168.56	382.83	0.00	0.00	0.00
3,500.00	22.07	189.37	3,304.67	-1,058.40	-174.68	396.72	0.00	0.00	0.00
3,600.00	22.07	189.37	3,397.35	-1,095.47	-180.80	410.62	0.00	0.00	0.00
3,700.00	22.07	189.37	3,490.02	-1,132.53	-186.91	424.51	0.00	0.00	0.00
3,800.00	22.07	189.37	3,582.70	-1,169.60	-193.03	438.41	0.00	0.00	0.00
3,900.00	22.07	189.37	3,675.37	-1,206.67	-199.15	452.30	0.00	0.00	0.00
4,000.00	22.07	189.37	3,768.04	-1,243.74	-205.27	466.20	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-12
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 5-6-12	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)
4,100.00	22.07	189.37	3,860.72	-1,280.81	-211.38	480.09	0.00	0.00	0.00
4,200.00	22.07	189.37	3,953.39	-1,317.88	-217.50	493.99	0.00	0.00	0.00
4,300.00	22.07	189.37	4,046.07	-1,354.95	-223.62	507.88	0.00	0.00	0.00
4,400.00	22.07	189.37	4,138.74	-1,392.02	-229.74	521.78	0.00	0.00	0.00
4,500.00	22.07	189.37	4,231.41	-1,429.08	-235.86	535.67	0.00	0.00	0.00
4,600.00	22.07	189.37	4,324.09	-1,466.15	-241.97	549.56	0.00	0.00	0.00
4,700.00	22.07	189.37	4,416.76	-1,503.22	-248.09	563.46	0.00	0.00	0.00
4,800.00	22.07	189.37	4,509.44	-1,540.29	-254.21	577.35	0.00	0.00	0.00
4,900.00	22.07	189.37	4,602.11	-1,577.36	-260.33	591.25	0.00	0.00	0.00
5,000.00	22.07	189.37	4,694.78	-1,614.43	-266.45	605.14	0.00	0.00	0.00
5,100.00	22.07	189.37	4,787.46	-1,651.50	-272.56	619.04	0.00	0.00	0.00
5,200.00	22.07	189.37	4,880.13	-1,688.57	-278.68	632.93	0.00	0.00	0.00
5,300.00	22.07	189.37	4,972.81	-1,725.63	-284.80	646.83	0.00	0.00	0.00
5,400.00	22.07	189.37	5,065.48	-1,762.70	-290.92	660.72	0.00	0.00	0.00
5,500.00	22.07	189.37	5,158.15	-1,799.77	-297.03	674.62	0.00	0.00	0.00
5,600.00	22.07	189.37	5,250.83	-1,836.84	-303.15	688.51	0.00	0.00	0.00
5,700.00	22.07	189.37	5,343.50	-1,873.91	-309.27	702.41	0.00	0.00	0.00
5,800.00	22.07	189.37	5,436.18	-1,910.98	-315.39	716.30	0.00	0.00	0.00
5,900.00	22.07	189.37	5,528.85	-1,948.05	-321.51	730.19	0.00	0.00	0.00
5,949.80	22.07	189.37	5,575.00	-1,966.51	-324.55	737.11	0.00	0.00	0.00
Shannon Sandstone Member									
6,000.00	22.07	189.37	5,621.53	-1,985.12	-327.62	744.09	0.00	0.00	0.00
6,100.00	22.07	189.37	5,714.20	-2,022.18	-333.74	757.98	0.00	0.00	0.00
6,200.00	22.07	189.37	5,806.87	-2,059.25	-339.86	771.88	0.00	0.00	0.00
6,300.00	22.07	189.37	5,899.55	-2,096.32	-345.98	785.77	0.00	0.00	0.00
6,400.00	22.07	189.37	5,992.22	-2,133.39	-352.09	799.67	0.00	0.00	0.00
6,490.07	22.07	189.37	6,075.70	-2,166.78	-357.61	812.18	0.00	0.00	0.00
Start Drop -2.00									
6,500.00	21.87	189.37	6,084.90	-2,170.44	-358.21	813.56	2.00	-2.00	0.00
6,600.00	19.87	189.37	6,178.34	-2,205.59	-364.01	826.73	2.00	-2.00	0.00
6,700.00	17.87	189.37	6,272.96	-2,237.50	-369.28	838.69	2.00	-2.00	0.00
6,800.00	15.87	189.37	6,368.65	-2,266.13	-374.00	849.42	2.00	-2.00	0.00
6,900.00	13.87	189.37	6,465.30	-2,291.44	-378.18	858.91	2.00	-2.00	0.00
7,000.00	11.87	189.37	6,562.78	-2,313.42	-381.81	867.15	2.00	-2.00	0.00
7,100.00	9.87	189.37	6,660.98	-2,332.02	-384.88	874.12	2.00	-2.00	0.00
7,200.00	7.87	189.37	6,759.78	-2,347.23	-387.39	879.82	2.00	-2.00	0.00
7,300.00	5.87	189.37	6,859.06	-2,359.03	-389.33	884.25	2.00	-2.00	0.00
7,400.00	3.87	189.37	6,958.69	-2,367.41	-390.72	887.39	2.00	-2.00	0.00
7,500.00	1.87	189.37	7,058.56	-2,372.35	-391.53	889.24	2.00	-2.00	0.00
7,593.46	0.00	0.00	7,152.00	-2,373.85	-391.78	889.80	2.00	-2.00	0.00
Start 30.00 hold at 7593.46 MD									
7,600.00	0.00	0.00	7,158.54	-2,373.85	-391.78	889.80	0.00	0.00	0.00
7,623.46	0.00	0.00	7,182.00	-2,373.85	-391.78	889.80	0.00	0.00	0.00
Start DLS 10.00 TFO 270.25									
7,650.00	2.65	270.25	7,208.53	-2,373.85	-392.39	890.40	10.00	10.00	0.00
7,700.00	7.65	270.25	7,258.32	-2,373.83	-396.88	894.78	10.00	10.00	0.00
7,750.00	12.65	270.25	7,307.52	-2,373.79	-405.70	903.38	10.00	10.00	0.00
7,800.00	17.65	270.25	7,355.76	-2,373.73	-418.76	916.13	10.00	10.00	0.00
7,850.00	22.65	270.25	7,402.69	-2,373.66	-435.98	932.94	10.00	10.00	0.00
7,900.00	27.65	270.25	7,447.93	-2,373.57	-457.23	953.68	10.00	10.00	0.00
7,950.00	32.65	270.25	7,491.15	-2,373.46	-482.33	978.18	10.00	10.00	0.00
8,000.00	37.65	270.25	7,532.02	-2,373.33	-511.11	1,006.27	10.00	10.00	0.00
8,050.00	42.65	270.25	7,570.23	-2,373.19	-543.34	1,037.72	10.00	10.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-12
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 5-6-12	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)	
8,100.00	47.65	270.25	7,605.48	-2,373.04	-578.78	1,072.31	10.00	10.00	0.00	
8,150.00	52.65	270.25	7,637.51	-2,372.87	-617.15	1,109.76	10.00	10.00	0.00	
8,179.87	55.64	270.25	7,655.00	-2,372.77	-641.36	1,133.39	10.00	10.00	0.00	
Sharon Springs Shale										
8,200.00	57.65	270.25	7,666.07	-2,372.69	-658.17	1,149.80	10.00	10.00	0.00	
8,250.00	62.65	270.25	7,690.95	-2,372.50	-701.52	1,192.11	10.00	10.00	0.00	
8,300.00	67.65	270.25	7,711.95	-2,372.31	-746.88	1,236.38	10.00	10.00	0.00	
8,322.21	69.87	270.25	7,720.00	-2,372.22	-767.58	1,256.58	10.00	10.00	0.00	
Niobrara Formation										
8,350.00	72.65	270.25	7,728.93	-2,372.10	-793.89	1,282.26	10.00	10.00	0.00	
8,371.68	74.82	270.25	7,735.00	-2,372.01	-814.71	1,302.58	10.00	10.00	0.00	
Niobrara A Chalk										
8,400.00	77.65	270.25	7,741.74	-2,371.89	-842.21	1,329.41	10.00	10.00	0.00	
8,416.31	79.28	270.25	7,745.00	-2,371.82	-858.19	1,345.02	10.00	10.00	0.00	
Niobrara A Landing Point										
8,450.00	82.65	270.25	7,750.29	-2,371.68	-891.45	1,377.48	10.00	10.00	0.00	
8,500.00	87.65	270.25	7,754.52	-2,371.46	-941.26	1,426.09	10.00	10.00	0.00	
8,523.52	90.00	270.25	7,755.00	-2,371.36	-964.78	1,449.04	10.00	10.00	0.00	
Start 9687.21 hold at 8523.52 MD										
8,600.00	90.00	270.25	7,755.00	-2,371.03	-1,041.25	1,523.68	0.00	0.00	0.00	
8,700.00	90.00	270.25	7,755.00	-2,370.59	-1,141.25	1,621.28	0.00	0.00	0.00	
8,800.00	90.00	270.25	7,755.00	-2,370.16	-1,241.25	1,718.88	0.00	0.00	0.00	
8,900.00	90.00	270.25	7,755.00	-2,369.72	-1,341.25	1,816.47	0.00	0.00	0.00	
9,000.00	90.00	270.25	7,755.00	-2,369.29	-1,441.25	1,914.07	0.00	0.00	0.00	
9,100.00	90.00	270.25	7,755.00	-2,368.85	-1,541.25	2,011.67	0.00	0.00	0.00	
9,200.00	90.00	270.25	7,755.00	-2,368.42	-1,641.25	2,109.27	0.00	0.00	0.00	
9,300.00	90.00	270.25	7,755.00	-2,367.98	-1,741.25	2,206.87	0.00	0.00	0.00	
9,400.00	90.00	270.25	7,755.00	-2,367.55	-1,841.24	2,304.47	0.00	0.00	0.00	
9,500.00	90.00	270.25	7,755.00	-2,367.12	-1,941.24	2,402.06	0.00	0.00	0.00	
9,600.00	90.00	270.25	7,755.00	-2,366.68	-2,041.24	2,499.66	0.00	0.00	0.00	
9,700.00	90.00	270.25	7,755.00	-2,366.25	-2,141.24	2,597.26	0.00	0.00	0.00	
9,800.00	90.00	270.25	7,755.00	-2,365.81	-2,241.24	2,694.86	0.00	0.00	0.00	
9,900.00	90.00	270.25	7,755.00	-2,365.38	-2,341.24	2,792.46	0.00	0.00	0.00	
10,000.00	90.00	270.25	7,755.00	-2,364.94	-2,441.24	2,890.06	0.00	0.00	0.00	
10,100.00	90.00	270.25	7,755.00	-2,364.51	-2,541.24	2,987.65	0.00	0.00	0.00	
10,200.00	90.00	270.25	7,755.00	-2,364.07	-2,641.24	3,085.25	0.00	0.00	0.00	
10,300.00	90.00	270.25	7,755.00	-2,363.64	-2,741.24	3,182.85	0.00	0.00	0.00	
10,400.00	90.00	270.25	7,755.00	-2,363.20	-2,841.23	3,280.45	0.00	0.00	0.00	
10,500.00	90.00	270.25	7,755.00	-2,362.77	-2,941.23	3,378.05	0.00	0.00	0.00	
10,600.00	90.00	270.25	7,755.00	-2,362.33	-3,041.23	3,475.65	0.00	0.00	0.00	
10,700.00	90.00	270.25	7,755.00	-2,361.90	-3,141.23	3,573.24	0.00	0.00	0.00	
10,800.00	90.00	270.25	7,755.00	-2,361.47	-3,241.23	3,670.84	0.00	0.00	0.00	
10,900.00	90.00	270.25	7,755.00	-2,361.03	-3,341.23	3,768.44	0.00	0.00	0.00	
11,000.00	90.00	270.25	7,755.00	-2,360.60	-3,441.23	3,866.04	0.00	0.00	0.00	
11,100.00	90.00	270.25	7,755.00	-2,360.16	-3,541.23	3,963.64	0.00	0.00	0.00	
11,200.00	90.00	270.25	7,754.99	-2,359.73	-3,641.23	4,061.24	0.00	0.00	0.00	
11,300.00	90.00	270.25	7,754.99	-2,359.29	-3,741.23	4,158.83	0.00	0.00	0.00	
11,400.00	90.00	270.25	7,754.99	-2,358.86	-3,841.23	4,256.43	0.00	0.00	0.00	
11,500.00	90.00	270.25	7,754.99	-2,358.42	-3,941.22	4,354.03	0.00	0.00	0.00	
11,600.00	90.00	270.25	7,754.99	-2,357.99	-4,041.22	4,451.63	0.00	0.00	0.00	
11,700.00	90.00	270.25	7,754.99	-2,357.55	-4,141.22	4,549.23	0.00	0.00	0.00	
11,800.00	90.00	270.25	7,754.99	-2,357.12	-4,241.22	4,646.82	0.00	0.00	0.00	
11,900.00	90.00	270.25	7,754.99	-2,356.68	-4,341.22	4,744.42	0.00	0.00	0.00	
12,000.00	90.00	270.25	7,754.99	-2,356.25	-4,441.22	4,842.02	0.00	0.00	0.00	

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-12
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 5-6-12	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	7,754.99	-2,355.82	-4,541.22	4,939.62	0.00	0.00	0.00
12,200.00	90.00	270.25	7,754.99	-2,355.38	-4,641.22	5,037.22	0.00	0.00	0.00
12,300.00	90.00	270.25	7,754.99	-2,354.95	-4,741.22	5,134.82	0.00	0.00	0.00
12,400.00	90.00	270.25	7,754.99	-2,354.51	-4,841.22	5,232.41	0.00	0.00	0.00
12,500.00	90.00	270.25	7,754.99	-2,354.08	-4,941.21	5,330.01	0.00	0.00	0.00
12,600.00	90.00	270.25	7,754.99	-2,353.64	-5,041.21	5,427.61	0.00	0.00	0.00
12,700.00	90.00	270.25	7,754.99	-2,353.21	-5,141.21	5,525.21	0.00	0.00	0.00
12,800.00	90.00	270.25	7,754.99	-2,352.77	-5,241.21	5,622.81	0.00	0.00	0.00
12,900.00	90.00	270.25	7,754.99	-2,352.34	-5,341.21	5,720.41	0.00	0.00	0.00
13,000.00	90.00	270.25	7,754.99	-2,351.90	-5,441.21	5,818.00	0.00	0.00	0.00
13,100.00	90.00	270.25	7,754.99	-2,351.47	-5,541.21	5,915.60	0.00	0.00	0.00
13,200.00	90.00	270.25	7,754.99	-2,351.03	-5,641.21	6,013.20	0.00	0.00	0.00
13,300.00	90.00	270.25	7,754.99	-2,350.60	-5,741.21	6,110.80	0.00	0.00	0.00
13,400.00	90.00	270.25	7,754.99	-2,350.17	-5,841.21	6,208.40	0.00	0.00	0.00
13,500.00	90.00	270.25	7,754.99	-2,349.73	-5,941.21	6,306.00	0.00	0.00	0.00
13,600.00	90.00	270.25	7,754.99	-2,349.30	-6,041.20	6,403.59	0.00	0.00	0.00
13,700.00	90.00	270.25	7,754.99	-2,348.86	-6,141.20	6,501.19	0.00	0.00	0.00
13,800.00	90.00	270.25	7,754.99	-2,348.43	-6,241.20	6,598.79	0.00	0.00	0.00
13,900.00	90.00	270.25	7,754.99	-2,347.99	-6,341.20	6,696.39	0.00	0.00	0.00
14,000.00	90.00	270.25	7,754.99	-2,347.56	-6,441.20	6,793.99	0.00	0.00	0.00
14,100.00	90.00	270.25	7,754.99	-2,347.12	-6,541.20	6,891.59	0.00	0.00	0.00
14,200.00	90.00	270.25	7,754.99	-2,346.69	-6,641.20	6,989.18	0.00	0.00	0.00
14,300.00	90.00	270.25	7,754.99	-2,346.25	-6,741.20	7,086.78	0.00	0.00	0.00
14,400.00	90.00	270.25	7,754.99	-2,345.82	-6,841.20	7,184.38	0.00	0.00	0.00
14,500.00	90.00	270.25	7,754.99	-2,345.38	-6,941.20	7,281.98	0.00	0.00	0.00
14,600.00	90.00	270.25	7,754.99	-2,344.95	-7,041.20	7,379.58	0.00	0.00	0.00
14,700.00	90.00	270.25	7,754.99	-2,344.52	-7,141.19	7,477.18	0.00	0.00	0.00
14,800.00	90.00	270.25	7,754.99	-2,344.08	-7,241.19	7,574.77	0.00	0.00	0.00
14,900.00	90.00	270.25	7,754.99	-2,343.65	-7,341.19	7,672.37	0.00	0.00	0.00
15,000.00	90.00	270.25	7,754.99	-2,343.21	-7,441.19	7,769.97	0.00	0.00	0.00
15,100.00	90.00	270.25	7,754.99	-2,342.78	-7,541.19	7,867.57	0.00	0.00	0.00
15,200.00	90.00	270.25	7,754.99	-2,342.34	-7,641.19	7,965.17	0.00	0.00	0.00
15,300.00	90.00	270.25	7,754.99	-2,341.91	-7,741.19	8,062.77	0.00	0.00	0.00
15,400.00	90.00	270.25	7,754.99	-2,341.47	-7,841.19	8,160.36	0.00	0.00	0.00
15,500.00	90.00	270.25	7,754.99	-2,341.04	-7,941.19	8,257.96	0.00	0.00	0.00
15,600.00	90.00	270.25	7,754.99	-2,340.60	-8,041.19	8,355.56	0.00	0.00	0.00
15,700.00	90.00	270.25	7,754.99	-2,340.17	-8,141.18	8,453.16	0.00	0.00	0.00
15,800.00	90.00	270.25	7,754.99	-2,339.73	-8,241.18	8,550.76	0.00	0.00	0.00
15,900.00	90.00	270.25	7,754.99	-2,339.30	-8,341.18	8,648.35	0.00	0.00	0.00
16,000.00	90.00	270.25	7,754.99	-2,338.87	-8,441.18	8,745.95	0.00	0.00	0.00
16,100.00	90.00	270.25	7,754.99	-2,338.43	-8,541.18	8,843.55	0.00	0.00	0.00
16,200.00	90.00	270.25	7,754.99	-2,338.00	-8,641.18	8,941.15	0.00	0.00	0.00
16,300.00	90.00	270.25	7,754.99	-2,337.56	-8,741.18	9,038.75	0.00	0.00	0.00
16,400.00	90.00	270.25	7,754.98	-2,337.13	-8,841.18	9,136.35	0.00	0.00	0.00
16,500.00	90.00	270.25	7,754.98	-2,336.69	-8,941.18	9,233.94	0.00	0.00	0.00
16,600.00	90.00	270.25	7,754.98	-2,336.26	-9,041.18	9,331.54	0.00	0.00	0.00
16,700.00	90.00	270.25	7,754.98	-2,335.82	-9,141.18	9,429.14	0.00	0.00	0.00
16,800.00	90.00	270.25	7,754.98	-2,335.39	-9,241.17	9,526.74	0.00	0.00	0.00
16,900.00	90.00	270.25	7,754.98	-2,334.95	-9,341.17	9,624.34	0.00	0.00	0.00
17,000.00	90.00	270.25	7,754.98	-2,334.52	-9,441.17	9,721.94	0.00	0.00	0.00
17,100.00	90.00	270.25	7,754.98	-2,334.08	-9,541.17	9,819.53	0.00	0.00	0.00
17,200.00	90.00	270.25	7,754.98	-2,333.65	-9,641.17	9,917.13	0.00	0.00	0.00
17,300.00	90.00	270.25	7,754.98	-2,333.22	-9,741.17	10,014.73	0.00	0.00	0.00
17,400.00	90.00	270.25	7,754.98	-2,332.78	-9,841.17	10,112.33	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-12
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 5-6-12	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	7,754.98	-2,332.35	-9,941.17	10,209.93	0.00	0.00	0.00	
17,600.00	90.00	270.25	7,754.98	-2,331.91	-10,041.17	10,307.53	0.00	0.00	0.00	
17,700.00	90.00	270.25	7,754.98	-2,331.48	-10,141.17	10,405.12	0.00	0.00	0.00	
17,800.00	90.00	270.25	7,754.98	-2,331.04	-10,241.17	10,502.72	0.00	0.00	0.00	
17,900.00	90.00	270.25	7,754.98	-2,330.61	-10,341.16	10,600.32	0.00	0.00	0.00	
18,000.00	90.00	270.25	7,754.98	-2,330.17	-10,441.16	10,697.92	0.00	0.00	0.00	
18,100.00	90.00	270.25	7,754.98	-2,329.74	-10,541.16	10,795.52	0.00	0.00	0.00	
18,200.00	90.00	270.25	7,754.98	-2,329.30	-10,641.16	10,893.12	0.00	0.00	0.00	
18,210.73	90.00	270.25	7,754.98	-2,329.26	-10,651.90	10,903.59	0.00	0.00	0.00	
TD at 18210.73										

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 5-6-12 - F	0.00	0.00	7,755.00	-2,329.03	-10,651.89	1,144,361.61	3,220,966.96	39° 43' 37.020 N	104° 42' 51.840 W	
- hit/miss target										
- plan misses target center by 0.22usft at 18210.73usft MD (7754.98 TVD, -2329.26 N, -10651.89 E)										
- Shape										
- Point										
JAMASO 4-65 5-6-12 - L	0.00	0.00	7,755.00	-2,371.36	-964.78	1,144,409.24	3,230,654.05	39° 43' 36.624 N	104° 40' 47.856 W	
- plan hits target center										
- Point										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
293.15	293.00	Denver				
886.86	877.00	Upper Arapahoe				
1,191.20	1,165.00	Lower Arapahoe				
1,787.90	1,718.00	Laramie - Fox Hills				
2,059.82	1,970.00	Pierre Shale (Base of Fox Hills)				
5,949.80	5,575.00	Shannon Sandstone Member				
8,179.87	7,655.00	Sharon Springs Shale				
8,322.21	7,720.00	Niobrara Formation				
8,371.68	7,735.00	Niobrara A Chalk				
8,416.31	7,745.00	Niobrara A Landing Point				

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-12
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 5-6-12	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)	
100.00	100.00	0.00	0.00	Start Build 2.00
1,203.38	1,176.30	-207.07	-34.17	Start 5286.69 hold at 1203.38 MD
6,490.07	6,075.70	-2,166.78	-357.61	Start Drop -2.00
7,593.46	7,152.00	-2,373.85	-391.78	Start 30.00 hold at 7593.46 MD
7,623.46	7,182.00	-2,373.85	-391.78	Start DLS 10.00 TFO 270.25
8,523.52	7,755.00	-2,371.36	-964.78	Start 9687.21 hold at 8523.52 MD
18,210.73	7,754.98	-2,329.26	-10,651.90	TD at 18210.73