

AXIS EXPLORATION

ARAPAHOE COUNTY

Sec 4-T4S-R65W

JAMASO 4-65 5-6-11

ORIGINAL WELLBORE

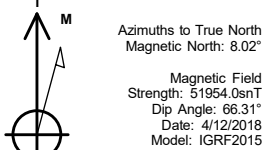
Plan: PROPOSAL 1

Standard Planning Report

18 October, 2018



Project: ARAPAHOE COUNTY
Site: Sec 4-T4S-R65W
Well: JAMASO 4-65 5-6-11
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL 1



WELL DETAILS: JAMASO 4-65 5-6-11						
	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
	0.00	0.00	1146771.15	3232330.46	39.733281°N	104.673922°W

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00
3	1337.15	20.74	210.00	1314.64	-160.81	-92.86	2.00	210.00	118.10
4	6637.44	20.74	210.00	6271.36	-1786.49	-1031.61	0.00	0.00	1311.97
5	7674.59	0.00	0.00	7286.00	-1947.30	-1124.47	2.00	180.00	1430.06
6	7704.59	0.00	0.00	7316.00	-1947.30	-1124.47	0.00	0.00	1430.06
7	8604.67	90.00	270.25	7889.00	-1944.76	-1697.47	10.00	270.25	1994.81
8	18289.47	90.00	270.25	7889.00	-1902.15	-11382.18	0.00	0.00	11540.03

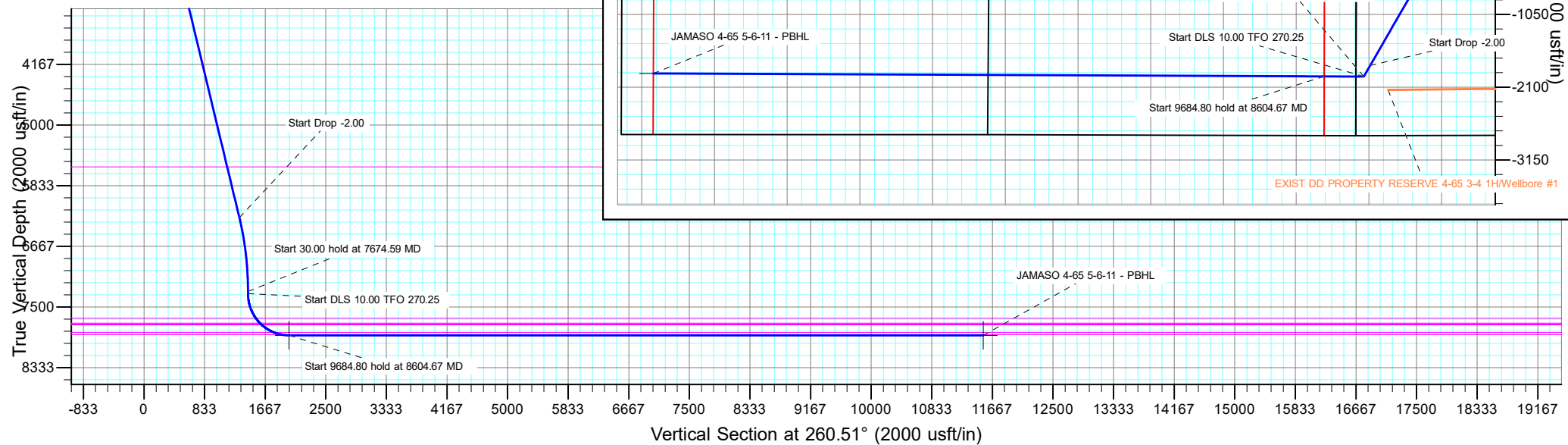
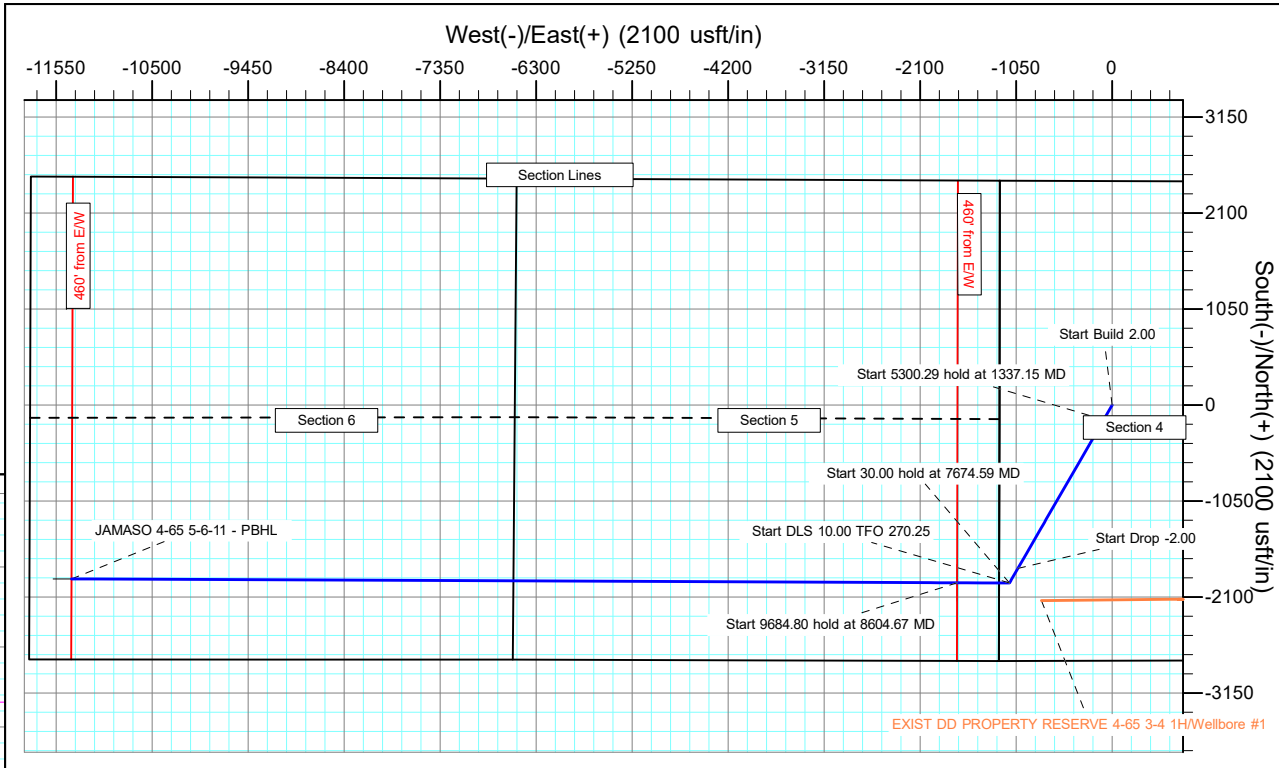
ANNOTATIONS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	Start Build 2.00	
1337.15	20.74	210.00	1314.64	-160.81	-92.86	118.10	185.70	Start 5300.29 hold at 1337.15 MD	
6637.44	20.74	210.00	6271.36	-1786.49	-1031.61	1311.97	2062.95	Start Drop -2.00	
7674.59	0.00	0.00	7286.00	-1947.30	-1124.47	1430.06	2248.65	Start 30.00 hold at 7674.59 MD	
7704.59	0.00	0.00	7316.00	-1947.30	-1124.47	1430.06	2248.65	Start DLS 10.00 TFO 270.25	
8604.67	90.00	270.25	7889.00	-1944.76	-1697.47	1994.81	2821.65	Start 9684.80 hold at 8604.67 MD	
18289.47	90.00	270.25	7888.88	-1901.87	-11382.18	11539.98	12506.46	TD at 18289.47	

DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
JAMASO 4-65 5-6-11 - LP	7889.00	-1944.76	-1697.47	1144810.66	3230651.18	39.727942°N	104.679957°W	Point	
- plan hits target center									
JAMASO 4-65 5-6-11 - PBHL	7889.00	-1902.15	-11382.18	1144763.05	3220966.49	39.728052°N	104.714389°W	Point	
- plan hits target center									

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
293.00	293.00	Denver
877.00	880.97	Upper Arapahoe
1165.00	1178.71	Lower Arapahoe
1718.00	1768.47	Laramie - Fox Hills
1970.00	2037.03	Shale (Base of Fox Hills)
5575.00	5892.52	Shannon Sandstone Member
7655.00	8067.34	Sharon Springs Shale
7720.00	8152.97	Niobrara Formation
7735.00	8174.53	Niobrara A Chalk
7745.00	8189.40	Niobrara A Landing Point
7849.00	8389.29	Niobrara B Chalk
7879.00	8497.45	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:
2449' FNL, 1233' FWL
Sec 4-T4S-R65W
LP:
856' FSL, 460' FEL
Sec 5-T4S-R65W
BHL:
881' FSL, 460' FWL
Sec 6-T4S-R65W



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-11
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 5-6-11	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:	39.740017°N
From:	Lat/Long	Easting:	3,231,079.56 usft	Longitude:	104.678289°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.53 °

Well	JAMASO 4-65 5-6-11					
Well Position	+N/-S	-2,453.69 usft	Northing:	1,146,771.15 usft	Latitude:	39.733281°N
	+E/-W	1,228.22 usft	Easting:	3,232,330.46 usft	Longitude:	104.673922°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	51,953.96851950

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	260.51

Plan Survey Tool Program	Date	10/18/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,289.08	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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,337.15	20.74	210.00	1,314.64	-160.81	-92.86	2.00	2.00	0.00	210.00	
6,637.44	20.74	210.00	6,271.36	-1,786.49	-1,031.61	0.00	0.00	0.00	0.00	
7,674.59	0.00	0.00	7,286.00	-1,947.30	-1,124.47	2.00	-2.00	0.00	180.00	
7,704.59	0.00	0.00	7,316.00	-1,947.30	-1,124.47	0.00	0.00	0.00	0.00	
8,604.67	90.00	270.25	7,889.00	-1,944.76	-1,697.47	10.00	10.00	-9.97	270.25	JAMASO 4-65 5-6-11
18,289.47	90.00	270.25	7,889.00	-1,902.15	-11,382.18	0.00	0.00	0.00	0.00	JAMASO 4-65 5-6-11

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-11
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 5-6-11	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
Start Build 2.00									
400.00	2.00	210.00	399.98	-1.51	-0.87	1.11	2.00	2.00	0.00
500.00	4.00	210.00	499.84	-6.04	-3.49	4.44	2.00	2.00	0.00
600.00	6.00	210.00	599.45	-13.59	-7.85	9.98	2.00	2.00	0.00
700.00	8.00	210.00	698.70	-24.14	-13.94	17.73	2.00	2.00	0.00
800.00	10.00	210.00	797.47	-37.69	-21.76	27.68	2.00	2.00	0.00
880.97	11.62	210.00	877.00	-50.84	-29.36	37.34	2.00	2.00	0.00
Upper Arapahoe									
900.00	12.00	210.00	895.62	-54.21	-31.31	39.81	2.00	2.00	0.00
1,000.00	14.00	210.00	993.06	-73.69	-42.55	54.12	2.00	2.00	0.00
1,100.00	16.00	210.00	1,089.64	-96.10	-55.50	70.58	2.00	2.00	0.00
1,178.71	17.57	210.00	1,165.00	-115.79	-66.86	85.04	2.00	2.00	0.00
Lower Arapahoe									
1,200.00	18.00	210.00	1,185.27	-121.42	-70.12	89.17	2.00	2.00	0.00
1,300.00	20.00	210.00	1,279.82	-149.62	-86.40	109.87	2.00	2.00	0.00
1,337.15	20.74	210.00	1,314.64	-160.81	-92.86	118.10	2.00	2.00	0.00
Start 5300.29 hold at 1337.15 MD									
1,400.00	20.74	210.00	1,373.42	-180.09	-103.99	132.26	0.00	0.00	0.00
1,500.00	20.74	210.00	1,466.94	-210.76	-121.70	154.78	0.00	0.00	0.00
1,600.00	20.74	210.00	1,560.45	-241.43	-139.42	177.30	0.00	0.00	0.00
1,700.00	20.74	210.00	1,653.97	-272.11	-157.13	199.83	0.00	0.00	0.00
1,768.47	20.74	210.00	1,718.00	-293.11	-169.25	215.25	0.00	0.00	0.00
Laramie - Fox Hills									
1,800.00	20.74	210.00	1,747.49	-302.78	-174.84	222.35	0.00	0.00	0.00
1,900.00	20.74	210.00	1,841.01	-333.45	-192.55	244.88	0.00	0.00	0.00
2,000.00	20.74	210.00	1,934.52	-364.12	-210.26	267.40	0.00	0.00	0.00
2,037.93	20.74	210.00	1,970.00	-375.75	-216.98	275.95	0.00	0.00	0.00
Pierre Shale (Base of Fox Hills)									
2,100.00	20.74	210.00	2,028.04	-394.79	-227.97	289.93	0.00	0.00	0.00
2,200.00	20.74	210.00	2,121.56	-425.46	-245.68	312.45	0.00	0.00	0.00
2,300.00	20.74	210.00	2,215.08	-456.13	-263.39	334.98	0.00	0.00	0.00
2,400.00	20.74	210.00	2,308.60	-486.80	-281.11	357.50	0.00	0.00	0.00
2,500.00	20.74	210.00	2,402.11	-517.48	-298.82	380.03	0.00	0.00	0.00
2,600.00	20.74	210.00	2,495.63	-548.15	-316.53	402.55	0.00	0.00	0.00
2,700.00	20.74	210.00	2,589.15	-578.82	-334.24	425.07	0.00	0.00	0.00
2,800.00	20.74	210.00	2,682.67	-609.49	-351.95	447.60	0.00	0.00	0.00
2,900.00	20.74	210.00	2,776.18	-640.16	-369.66	470.12	0.00	0.00	0.00
3,000.00	20.74	210.00	2,869.70	-670.83	-387.37	492.65	0.00	0.00	0.00
3,100.00	20.74	210.00	2,963.22	-701.50	-405.08	515.17	0.00	0.00	0.00
3,200.00	20.74	210.00	3,056.74	-732.18	-422.80	537.70	0.00	0.00	0.00
3,300.00	20.74	210.00	3,150.26	-762.85	-440.51	560.22	0.00	0.00	0.00
3,400.00	20.74	210.00	3,243.77	-793.52	-458.22	582.75	0.00	0.00	0.00
3,500.00	20.74	210.00	3,337.29	-824.19	-475.93	605.27	0.00	0.00	0.00
3,600.00	20.74	210.00	3,430.81	-854.86	-493.64	627.80	0.00	0.00	0.00
3,700.00	20.74	210.00	3,524.33	-885.53	-511.35	650.32	0.00	0.00	0.00
3,800.00	20.74	210.00	3,617.85	-916.20	-529.06	672.84	0.00	0.00	0.00
3,900.00	20.74	210.00	3,711.36	-946.88	-546.77	695.37	0.00	0.00	0.00

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Project:	ARAPAHOE COUNTY	MD Reference:	KB 25' @ 5610.00usft
Site:	Sec 4-T4S-R65W	North Reference:	True
Well:	JAMASO 4-65 5-6-11	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	20.74	210.00	3,804.88	-977.55	-564.49	717.89	0.00	0.00	0.00	
4,100.00	20.74	210.00	3,898.40	-1,008.22	-582.20	740.42	0.00	0.00	0.00	
4,200.00	20.74	210.00	3,991.92	-1,038.89	-599.91	762.94	0.00	0.00	0.00	
4,300.00	20.74	210.00	4,085.43	-1,069.56	-617.62	785.47	0.00	0.00	0.00	
4,400.00	20.74	210.00	4,178.95	-1,100.23	-635.33	807.99	0.00	0.00	0.00	
4,500.00	20.74	210.00	4,272.47	-1,130.90	-653.04	830.52	0.00	0.00	0.00	
4,600.00	20.74	210.00	4,365.99	-1,161.57	-670.75	853.04	0.00	0.00	0.00	
4,700.00	20.74	210.00	4,459.51	-1,192.25	-688.46	875.57	0.00	0.00	0.00	
4,800.00	20.74	210.00	4,553.02	-1,222.92	-706.17	898.09	0.00	0.00	0.00	
4,900.00	20.74	210.00	4,646.54	-1,253.59	-723.89	920.61	0.00	0.00	0.00	
5,000.00	20.74	210.00	4,740.06	-1,284.26	-741.60	943.14	0.00	0.00	0.00	
5,100.00	20.74	210.00	4,833.58	-1,314.93	-759.31	965.66	0.00	0.00	0.00	
5,200.00	20.74	210.00	4,927.09	-1,345.60	-777.02	988.19	0.00	0.00	0.00	
5,300.00	20.74	210.00	5,020.61	-1,376.27	-794.73	1,010.71	0.00	0.00	0.00	
5,400.00	20.74	210.00	5,114.13	-1,406.95	-812.44	1,033.24	0.00	0.00	0.00	
5,500.00	20.74	210.00	5,207.65	-1,437.62	-830.15	1,055.76	0.00	0.00	0.00	
5,600.00	20.74	210.00	5,301.17	-1,468.29	-847.86	1,078.29	0.00	0.00	0.00	
5,700.00	20.74	210.00	5,394.68	-1,498.96	-865.58	1,100.81	0.00	0.00	0.00	
5,800.00	20.74	210.00	5,488.20	-1,529.63	-883.29	1,123.34	0.00	0.00	0.00	
5,892.82	20.74	210.00	5,575.00	-1,558.10	-899.73	1,144.24	0.00	0.00	0.00	
Shannon Sandstone Member										
5,900.00	20.74	210.00	5,581.72	-1,560.30	-901.00	1,145.86	0.00	0.00	0.00	
6,000.00	20.74	210.00	5,675.24	-1,590.97	-918.71	1,168.38	0.00	0.00	0.00	
6,100.00	20.74	210.00	5,768.75	-1,621.65	-936.42	1,190.91	0.00	0.00	0.00	
6,200.00	20.74	210.00	5,862.27	-1,652.32	-954.13	1,213.43	0.00	0.00	0.00	
6,300.00	20.74	210.00	5,955.79	-1,682.99	-971.84	1,235.96	0.00	0.00	0.00	
6,400.00	20.74	210.00	6,049.31	-1,713.66	-989.55	1,258.48	0.00	0.00	0.00	
6,500.00	20.74	210.00	6,142.83	-1,744.33	-1,007.27	1,281.01	0.00	0.00	0.00	
6,600.00	20.74	210.00	6,236.34	-1,775.00	-1,024.98	1,303.53	0.00	0.00	0.00	
6,637.44	20.74	210.00	6,271.36	-1,786.49	-1,031.61	1,311.97	0.00	0.00	0.00	
Start Drop -2.00										
6,700.00	19.49	210.00	6,330.10	-1,805.12	-1,042.37	1,325.65	2.00	-2.00	0.00	
6,800.00	17.49	210.00	6,424.93	-1,832.58	-1,058.23	1,345.82	2.00	-2.00	0.00	
6,900.00	15.49	210.00	6,520.81	-1,857.17	-1,072.42	1,363.87	2.00	-2.00	0.00	
7,000.00	13.49	210.00	6,617.63	-1,878.84	-1,084.94	1,379.79	2.00	-2.00	0.00	
7,100.00	11.49	210.00	6,715.25	-1,897.57	-1,095.75	1,393.54	2.00	-2.00	0.00	
7,200.00	9.49	210.00	6,813.58	-1,913.33	-1,104.86	1,405.12	2.00	-2.00	0.00	
7,300.00	7.49	210.00	6,912.48	-1,926.12	-1,112.24	1,414.51	2.00	-2.00	0.00	
7,400.00	5.49	210.00	7,011.83	-1,935.91	-1,117.89	1,421.70	2.00	-2.00	0.00	
7,500.00	3.49	210.00	7,111.52	-1,942.69	-1,121.81	1,426.68	2.00	-2.00	0.00	
7,600.00	1.49	210.00	7,211.42	-1,946.46	-1,123.98	1,429.45	2.00	-2.00	0.00	
7,674.59	0.00	0.00	7,286.00	-1,947.30	-1,124.47	1,430.06	2.00	-2.00	201.09	
Start 30.00 hold at 7674.59 MD										
7,704.59	0.00	0.00	7,316.00	-1,947.30	-1,124.47	1,430.06	0.00	0.00	0.00	
Start DLS 10.00 TFO 270.25										
7,750.00	4.54	270.25	7,361.36	-1,947.29	-1,126.27	1,431.84	10.00	10.00	0.00	
7,800.00	9.54	270.25	7,410.97	-1,947.26	-1,132.39	1,437.88	10.00	10.00	0.00	
7,850.00	14.54	270.25	7,459.85	-1,947.22	-1,142.82	1,448.15	10.00	10.00	0.00	
7,900.00	19.54	270.25	7,507.64	-1,947.15	-1,157.47	1,462.59	10.00	10.00	0.00	
7,950.00	24.54	270.25	7,553.97	-1,947.07	-1,176.22	1,481.07	10.00	10.00	0.00	
8,000.00	29.54	270.25	7,598.50	-1,946.97	-1,198.95	1,503.47	10.00	10.00	0.00	
8,050.00	34.54	270.25	7,640.87	-1,946.85	-1,225.46	1,529.60	10.00	10.00	0.00	
8,067.34	36.27	270.25	7,655.00	-1,946.81	-1,235.51	1,539.50	10.00	10.00	0.00	
Sharon Springs Shale										

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-11
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 5-6-11	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	39.54	270.25	7,680.77	-1,946.72	-1,255.57	1,559.27	10.00	10.00	0.00
8,150.00	44.54	270.25	7,717.89	-1,946.57	-1,289.04	1,592.26	10.00	10.00	0.00
8,152.97	44.83	270.25	7,720.00	-1,946.56	-1,291.13	1,594.32	10.00	10.00	0.00
Niobrara Formation									
8,174.53	46.99	270.25	7,735.00	-1,946.49	-1,306.61	1,609.58	10.00	10.00	0.00
Niobrara A Chalk									
8,189.40	48.48	270.25	7,745.00	-1,946.44	-1,317.62	1,620.43	10.00	10.00	0.00
Niobrara A Landing Point									
8,200.00	49.54	270.25	7,751.95	-1,946.41	-1,325.62	1,628.31	10.00	10.00	0.00
8,250.00	54.54	270.25	7,782.70	-1,946.23	-1,365.02	1,667.15	10.00	10.00	0.00
8,300.00	59.54	270.25	7,809.90	-1,946.05	-1,406.96	1,708.49	10.00	10.00	0.00
8,350.00	64.54	270.25	7,833.34	-1,945.85	-1,451.11	1,752.00	10.00	10.00	0.00
8,389.29	68.46	270.25	7,849.00	-1,945.69	-1,487.13	1,787.50	10.00	10.00	0.00
Niobrara B Chalk									
8,400.00	69.54	270.25	7,852.84	-1,945.65	-1,497.13	1,797.36	10.00	10.00	0.00
8,450.00	74.54	270.25	7,868.25	-1,945.44	-1,544.68	1,844.22	10.00	10.00	0.00
8,497.45	79.28	270.25	7,879.00	-1,945.23	-1,590.88	1,889.76	10.00	10.00	0.00
Niobrara B Landing Point									
8,500.00	79.53	270.25	7,879.47	-1,945.22	-1,593.39	1,892.23	10.00	10.00	0.00
8,550.00	84.53	270.25	7,886.40	-1,945.00	-1,642.89	1,941.01	10.00	10.00	0.00
8,604.67	90.00	270.25	7,889.00	-1,944.76	-1,697.47	1,994.81	10.00	10.00	0.00
Start 9684.80 hold at 8604.67 MD									
8,700.00	90.00	270.25	7,889.00	-1,944.34	-1,792.81	2,088.77	0.00	0.00	0.00
8,800.00	90.00	270.25	7,889.00	-1,943.90	-1,892.80	2,187.33	0.00	0.00	0.00
8,900.00	90.00	270.25	7,889.00	-1,943.45	-1,992.80	2,285.89	0.00	0.00	0.00
9,000.00	90.00	270.25	7,889.00	-1,943.01	-2,092.80	2,384.45	0.00	0.00	0.00
9,100.00	90.00	270.25	7,888.99	-1,942.57	-2,192.80	2,483.00	0.00	0.00	0.00
9,200.00	90.00	270.25	7,888.99	-1,942.13	-2,292.80	2,581.56	0.00	0.00	0.00
9,300.00	90.00	270.25	7,888.99	-1,941.68	-2,392.80	2,680.12	0.00	0.00	0.00
9,400.00	90.00	270.25	7,888.99	-1,941.24	-2,492.80	2,778.68	0.00	0.00	0.00
9,500.00	90.00	270.25	7,888.99	-1,940.80	-2,592.80	2,877.24	0.00	0.00	0.00
9,600.00	90.00	270.25	7,888.99	-1,940.35	-2,692.80	2,975.79	0.00	0.00	0.00
9,700.00	90.00	270.25	7,888.99	-1,939.91	-2,792.80	3,074.35	0.00	0.00	0.00
9,800.00	90.00	270.25	7,888.99	-1,939.47	-2,892.79	3,172.91	0.00	0.00	0.00
9,900.00	90.00	270.25	7,888.98	-1,939.03	-2,992.79	3,271.47	0.00	0.00	0.00
10,000.00	90.00	270.25	7,888.98	-1,938.58	-3,092.79	3,370.03	0.00	0.00	0.00
10,100.00	90.00	270.25	7,888.98	-1,938.14	-3,192.79	3,468.59	0.00	0.00	0.00
10,200.00	90.00	270.25	7,888.98	-1,937.70	-3,292.79	3,567.14	0.00	0.00	0.00
10,300.00	90.00	270.25	7,888.98	-1,937.25	-3,392.79	3,665.70	0.00	0.00	0.00
10,400.00	90.00	270.25	7,888.98	-1,936.81	-3,492.79	3,764.26	0.00	0.00	0.00
10,500.00	90.00	270.25	7,888.98	-1,936.37	-3,592.79	3,862.82	0.00	0.00	0.00
10,600.00	90.00	270.25	7,888.97	-1,935.93	-3,692.79	3,961.38	0.00	0.00	0.00
10,700.00	90.00	270.25	7,888.97	-1,935.48	-3,792.79	4,059.94	0.00	0.00	0.00
10,800.00	90.00	270.25	7,888.97	-1,935.04	-3,892.79	4,158.49	0.00	0.00	0.00
10,900.00	90.00	270.25	7,888.97	-1,934.60	-3,992.78	4,257.05	0.00	0.00	0.00
11,000.00	90.00	270.25	7,888.97	-1,934.15	-4,092.78	4,355.61	0.00	0.00	0.00
11,100.00	90.00	270.25	7,888.97	-1,933.71	-4,192.78	4,454.17	0.00	0.00	0.00
11,200.00	90.00	270.25	7,888.97	-1,933.27	-4,292.78	4,552.73	0.00	0.00	0.00
11,300.00	90.00	270.25	7,888.97	-1,932.83	-4,392.78	4,651.28	0.00	0.00	0.00
11,400.00	90.00	270.25	7,888.96	-1,932.38	-4,492.78	4,749.84	0.00	0.00	0.00
11,500.00	90.00	270.25	7,888.96	-1,931.94	-4,592.78	4,848.40	0.00	0.00	0.00
11,600.00	90.00	270.25	7,888.96	-1,931.50	-4,692.78	4,946.96	0.00	0.00	0.00
11,700.00	90.00	270.25	7,888.96	-1,931.05	-4,792.78	5,045.52	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-11
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 5-6-11	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)
11,800.00	90.00	270.25	7,888.96	-1,930.61	-4,892.78	5,144.08	0.00	0.00	0.00
11,900.00	90.00	270.25	7,888.96	-1,930.17	-4,992.77	5,242.63	0.00	0.00	0.00
12,000.00	90.00	270.25	7,888.96	-1,929.73	-5,092.77	5,341.19	0.00	0.00	0.00
12,100.00	90.00	270.25	7,888.96	-1,929.28	-5,192.77	5,439.75	0.00	0.00	0.00
12,200.00	90.00	270.25	7,888.95	-1,928.84	-5,292.77	5,538.31	0.00	0.00	0.00
12,300.00	90.00	270.25	7,888.95	-1,928.40	-5,392.77	5,636.87	0.00	0.00	0.00
12,400.00	90.00	270.25	7,888.95	-1,927.95	-5,492.77	5,735.42	0.00	0.00	0.00
12,500.00	90.00	270.25	7,888.95	-1,927.51	-5,592.77	5,833.98	0.00	0.00	0.00
12,600.00	90.00	270.25	7,888.95	-1,927.07	-5,692.77	5,932.54	0.00	0.00	0.00
12,700.00	90.00	270.25	7,888.95	-1,926.63	-5,792.77	6,031.10	0.00	0.00	0.00
12,800.00	90.00	270.25	7,888.95	-1,926.18	-5,892.77	6,129.66	0.00	0.00	0.00
12,900.00	90.00	270.25	7,888.95	-1,925.74	-5,992.76	6,228.22	0.00	0.00	0.00
13,000.00	90.00	270.25	7,888.94	-1,925.30	-6,092.76	6,326.77	0.00	0.00	0.00
13,100.00	90.00	270.25	7,888.94	-1,924.85	-6,192.76	6,425.33	0.00	0.00	0.00
13,200.00	90.00	270.25	7,888.94	-1,924.41	-6,292.76	6,523.89	0.00	0.00	0.00
13,300.00	90.00	270.25	7,888.94	-1,923.97	-6,392.76	6,622.45	0.00	0.00	0.00
13,400.00	90.00	270.25	7,888.94	-1,923.53	-6,492.76	6,721.01	0.00	0.00	0.00
13,500.00	90.00	270.25	7,888.94	-1,923.08	-6,592.76	6,819.57	0.00	0.00	0.00
13,600.00	90.00	270.25	7,888.94	-1,922.64	-6,692.76	6,918.12	0.00	0.00	0.00
13,700.00	90.00	270.25	7,888.94	-1,922.20	-6,792.76	7,016.68	0.00	0.00	0.00
13,800.00	90.00	270.25	7,888.93	-1,921.75	-6,892.76	7,115.24	0.00	0.00	0.00
13,900.00	90.00	270.25	7,888.93	-1,921.31	-6,992.75	7,213.80	0.00	0.00	0.00
14,000.00	90.00	270.25	7,888.93	-1,920.87	-7,092.75	7,312.36	0.00	0.00	0.00
14,100.00	90.00	270.25	7,888.93	-1,920.42	-7,192.75	7,410.91	0.00	0.00	0.00
14,200.00	90.00	270.25	7,888.93	-1,919.98	-7,292.75	7,509.47	0.00	0.00	0.00
14,300.00	90.00	270.25	7,888.93	-1,919.54	-7,392.75	7,608.03	0.00	0.00	0.00
14,400.00	90.00	270.25	7,888.93	-1,919.10	-7,492.75	7,706.59	0.00	0.00	0.00
14,500.00	90.00	270.25	7,888.93	-1,918.65	-7,592.75	7,805.15	0.00	0.00	0.00
14,600.00	90.00	270.25	7,888.92	-1,918.21	-7,692.75	7,903.71	0.00	0.00	0.00
14,700.00	90.00	270.25	7,888.92	-1,917.77	-7,792.75	8,002.26	0.00	0.00	0.00
14,800.00	90.00	270.25	7,888.92	-1,917.32	-7,892.75	8,100.82	0.00	0.00	0.00
14,900.00	90.00	270.25	7,888.92	-1,916.88	-7,992.74	8,199.38	0.00	0.00	0.00
15,000.00	90.00	270.25	7,888.92	-1,916.44	-8,092.74	8,297.94	0.00	0.00	0.00
15,100.00	90.00	270.25	7,888.92	-1,916.00	-8,192.74	8,396.50	0.00	0.00	0.00
15,200.00	90.00	270.25	7,888.92	-1,915.55	-8,292.74	8,495.05	0.00	0.00	0.00
15,300.00	90.00	270.25	7,888.92	-1,915.11	-8,392.74	8,593.61	0.00	0.00	0.00
15,400.00	90.00	270.25	7,888.91	-1,914.67	-8,492.74	8,692.17	0.00	0.00	0.00
15,500.00	90.00	270.25	7,888.91	-1,914.22	-8,592.74	8,790.73	0.00	0.00	0.00
15,600.00	90.00	270.25	7,888.91	-1,913.78	-8,692.74	8,889.29	0.00	0.00	0.00
15,700.00	90.00	270.25	7,888.91	-1,913.34	-8,792.74	8,987.85	0.00	0.00	0.00
15,800.00	90.00	270.25	7,888.91	-1,912.90	-8,892.74	9,086.40	0.00	0.00	0.00
15,900.00	90.00	270.25	7,888.91	-1,912.45	-8,992.74	9,184.96	0.00	0.00	0.00
16,000.00	90.00	270.25	7,888.91	-1,912.01	-9,092.73	9,283.52	0.00	0.00	0.00
16,100.00	90.00	270.25	7,888.91	-1,911.57	-9,192.73	9,382.08	0.00	0.00	0.00
16,200.00	90.00	270.25	7,888.90	-1,911.12	-9,292.73	9,480.64	0.00	0.00	0.00
16,300.00	90.00	270.25	7,888.90	-1,910.68	-9,392.73	9,579.20	0.00	0.00	0.00
16,400.00	90.00	270.25	7,888.90	-1,910.24	-9,492.73	9,677.75	0.00	0.00	0.00
16,500.00	90.00	270.25	7,888.90	-1,909.80	-9,592.73	9,776.31	0.00	0.00	0.00
16,600.00	90.00	270.25	7,888.90	-1,909.35	-9,692.73	9,874.87	0.00	0.00	0.00
16,700.00	90.00	270.25	7,888.90	-1,908.91	-9,792.73	9,973.43	0.00	0.00	0.00
16,800.00	90.00	270.25	7,888.90	-1,908.47	-9,892.73	10,071.99	0.00	0.00	0.00
16,900.00	90.00	270.25	7,888.90	-1,908.02	-9,992.73	10,170.54	0.00	0.00	0.00
17,000.00	90.00	270.25	7,888.89	-1,907.58	-10,092.72	10,269.10	0.00	0.00	0.00
17,100.00	90.00	270.25	7,888.89	-1,907.14	-10,192.72	10,367.66	0.00	0.00	0.00

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-11
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 5-6-11	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)	
17,200.00	90.00	270.25	7,888.89	-1,906.70	-10,292.72	10,466.22	0.00	0.00	0.00	
17,300.00	90.00	270.25	7,888.89	-1,906.25	-10,392.72	10,564.78	0.00	0.00	0.00	
17,400.00	90.00	270.25	7,888.89	-1,905.81	-10,492.72	10,663.34	0.00	0.00	0.00	
17,500.00	90.00	270.25	7,888.89	-1,905.37	-10,592.72	10,761.89	0.00	0.00	0.00	
17,600.00	90.00	270.25	7,888.89	-1,904.92	-10,692.72	10,860.45	0.00	0.00	0.00	
17,700.00	90.00	270.25	7,888.89	-1,904.48	-10,792.72	10,959.01	0.00	0.00	0.00	
17,800.00	90.00	270.25	7,888.88	-1,904.04	-10,892.72	11,057.57	0.00	0.00	0.00	
17,900.00	90.00	270.25	7,888.88	-1,903.60	-10,992.72	11,156.13	0.00	0.00	0.00	
18,000.00	90.00	270.25	7,888.88	-1,903.15	-11,092.71	11,254.69	0.00	0.00	0.00	
18,100.00	90.00	270.25	7,888.88	-1,902.71	-11,192.71	11,353.24	0.00	0.00	0.00	
18,200.00	90.00	270.25	7,888.88	-1,902.27	-11,292.71	11,451.80	0.00	0.00	0.00	
18,289.47	90.00	270.25	7,888.88	-1,901.87	-11,382.18	11,539.98	0.00	0.00	0.00	
TD at 18289.47										

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 5-6-11 - F	0.00	0.00	7,889.00	-1,902.15	-11,382.18	1,144,763.04	3,220,966.50	39.728052°N	104.714389°W
- plan misses target center by 0.31usft at 18289.47usft MD (7888.88 TVD, -1901.87 N, -11382.18 E)									
- Point									
JAMASO 4-65 5-6-11 - L	0.00	0.00	7,889.00	-1,944.76	-1,697.47	1,144,810.65	3,230,651.18	39.727942°N	104.679957°W
- plan hits target center									
- Point									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
293.00	293.00	Denver				
880.97	877.00	Upper Arapahoe				
1,178.71	1,165.00	Lower Arapahoe				
1,768.47	1,718.00	Laramie - Fox Hills				
2,037.93	1,970.00	Pierre Shale (Base of Fox Hills)				
5,892.82	5,575.00	Shannon Sandstone Member				
8,067.34	7,655.00	Sharon Springs Shale				
8,152.97	7,720.00	Niobrara Formation				
8,174.53	7,735.00	Niobrara A Chalk				
8,189.40	7,745.00	Niobrara A Landing Point				
8,389.29	7,849.00	Niobrara B Chalk				
8,497.45	7,879.00	Niobrara B Landing Point				

Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-11
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 5-6-11	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)	
300.00	300.00	0.00	0.00	Start Build 2.00
1,337.15	1,314.64	-160.81	-92.86	Start 5300.29 hold at 1337.15 MD
6,637.44	6,271.36	-1,786.49	-1,031.61	Start Drop -2.00
7,674.59	7,286.00	-1,947.30	-1,124.47	Start 30.00 hold at 7674.59 MD
7,704.59	7,316.00	-1,947.30	-1,124.47	Start DLS 10.00 TFO 270.25
8,604.67	7,889.00	-1,944.76	-1,697.47	Start 9684.80 hold at 8604.67 MD
18,289.47	7,888.88	-1,901.87	-11,382.18	TD at 18289.47