

AXIS EXPLORATION

ARAPAHOE COUNTY

Sec 4-T4S-R65W

JAMASO 4-65 5-6-11

ORIGINAL WELLBORE

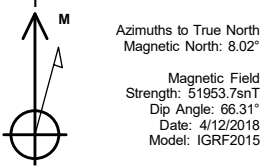
Plan: PROPOSAL 1

Standard Planning Report

12 April, 2018



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



WELL DETAILS: JAMASO 4-65 5-6-11									
	+N/-S	+E/-W	Northing	Easting	5585.00 Latitude	104° 40' 35.724 W Longitude	Slot		
	0.00	0.00	1146789.30	3231579.89	39° 44' 0.060 N	104° 40' 35.724 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	1218.17	18.36	190.66	1202.53	-143.36	-26.98	2.00	190.66	52.18
4	6677.09	18.36	190.66	6383.47	-1833.49	-345.09	0.00	0.00	667.33
5	7595.26	0.00	0.00	7286.00	-1976.85	-372.07	2.00	180.00	719.51
6	7625.26	0.00	0.00	7316.00	-1976.85	-372.07	0.00	0.00	719.51
7	8525.33	90.00	270.25	7889.00	-1974.31	-945.07	10.00	270.25	1282.82
8	18212.39	90.00	270.25	7889.00	-1931.99	-10632.04	0.00	10806.14	10806.14

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	
1218.17	18.36	190.66	1202.53	-143.36	-26.98	52.18	145.88	Start 5458.92 hold at 1218.17 MD	
6677.09	18.36	190.66	6383.47	-1833.49	-345.09	667.33	1865.68	Start Drop -2.00	
7595.26	0.00	0.00	7286.00	-1976.85	-372.07	719.51	2011.56	Start 30.00 hold at 7595.26 MD	
7625.26	0.00	0.00	7316.00	-1976.85	-372.07	719.51	2011.56	Start DLS 10.00 TFO 270.25	
8525.33	90.00	270.25	7889.00	-1974.31	-945.07	1282.82	2584.57	Start DLS 0.00 TFO -100.18	
18212.39	90.00	270.25	7889.00	-1931.99	-10632.04	10806.14	12271.62	TD at 18212.39	

DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	Point
JAMASO 4-65 5-6-11 - LP	7889.00	-1974.31	-945.07	1144806.31	3230653.19	39° 43' 40.548 N	104° 40' 47.820 W	Point	
- plan hits target center									
JAMASO 4-65 5-6-11 - PBHL	7889.00	-1931.99	-10632.04	1144758.67	3220966.25	39° 43' 40.944 N	104° 42' 51.804 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	1761.30	Laramie - Fox Hills
1970.00	2026.00	Shannon Sandstone Member
5575.00	5825.26	Sharon Springs Shale
7655.00	7988.01	Niobrara Formation
7720.00	8073.64	Niobrara A Chalk
7735.00	8095.20	Niobrara A Landing Point
7745.00	8110.07	Niobrara B Chalk
7849.00	8309.96	Niobrara B Landing Point
7879.00	8418.12	Niobrara B Landing Point

PROJECT DETAILS: ARAPAHOE COUNTY

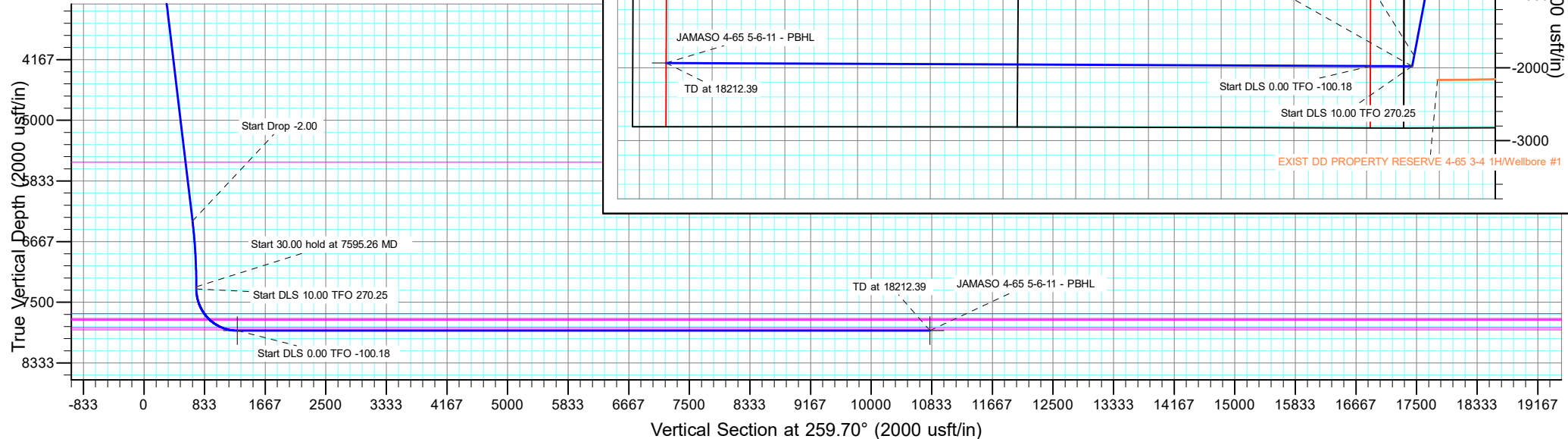
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone

System Datum: Mean Sea Level

SHL:
2427' FNL, 481' 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° 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 5-6-11					
Well Position	+N/-S	-2,428.58 usft	Northing:	1,146,789.30 usft	Latitude:	39° 44' 0.060 N
	+E/-W	477.84 usft	Easting:	3,231,579.89 usft	Longitude:	104° 40' 35.724 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	51,953.72287567

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	259.70

Plan Survey Tool Program	Date	4/12/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,212.39	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	
1,218.17	18.36	190.66	1,202.53	-143.36	-26.98	2.00	2.00	0.00	190.66	
6,677.09	18.36	190.66	6,383.47	-1,833.49	-345.09	0.00	0.00	0.00	0.00	
7,595.26	0.00	0.00	7,286.00	-1,976.85	-372.07	2.00	-2.00	0.00	180.00	
7,625.26	0.00	0.00	7,316.00	-1,976.85	-372.07	0.00	0.00	0.00	0.00	
8,525.33	90.00	270.25	7,889.00	-1,974.31	-945.07	10.00	10.00	-9.97	270.25	JAMASO 4-65 5-6-11
18,212.39	90.00	270.25	7,889.00	-1,931.99	-10,632.04	0.00	0.00	0.00	-100.18	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	190.66	399.98	-1.72	-0.32	0.62	2.00	2.00	0.00
500.00	4.00	190.66	499.84	-6.86	-1.29	2.50	2.00	2.00	0.00
600.00	6.00	190.66	599.45	-15.42	-2.90	5.61	2.00	2.00	0.00
700.00	8.00	190.66	698.70	-27.40	-5.16	9.97	2.00	2.00	0.00
800.00	10.00	190.66	797.47	-42.77	-8.05	15.57	2.00	2.00	0.00
880.97	11.62	190.66	877.00	-57.70	-10.86	21.00	2.00	2.00	0.00
Upper Arapahoe									
900.00	12.00	190.66	895.62	-61.52	-11.58	22.39	2.00	2.00	0.00
1,000.00	14.00	190.66	993.06	-83.63	-15.74	30.44	2.00	2.00	0.00
1,100.00	16.00	190.66	1,089.64	-109.06	-20.53	39.70	2.00	2.00	0.00
1,178.71	17.57	190.66	1,165.00	-131.40	-24.73	47.83	2.00	2.00	0.00
Lower Arapahoe									
1,200.00	18.00	190.66	1,185.27	-137.79	-25.93	50.15	2.00	2.00	0.00
1,218.17	18.36	190.66	1,202.53	-143.36	-26.98	52.18	2.00	2.00	0.00
Start 5458.92 hold at 1218.17 MD									
1,300.00	18.36	190.66	1,280.19	-168.70	-31.75	61.40	0.00	0.00	0.00
1,400.00	18.36	190.66	1,375.10	-199.66	-37.58	72.67	0.00	0.00	0.00
1,500.00	18.36	190.66	1,470.01	-230.62	-43.41	83.94	0.00	0.00	0.00
1,600.00	18.36	190.66	1,564.92	-261.58	-49.23	95.21	0.00	0.00	0.00
1,700.00	18.36	190.66	1,659.83	-292.54	-55.06	106.48	0.00	0.00	0.00
1,761.30	18.36	190.66	1,718.00	-311.52	-58.63	113.38	0.00	0.00	0.00
Laramie - Fox Hills									
1,800.00	18.36	190.66	1,754.73	-323.50	-60.89	117.74	0.00	0.00	0.00
1,900.00	18.36	190.66	1,849.64	-354.46	-66.72	129.01	0.00	0.00	0.00
2,000.00	18.36	190.66	1,944.55	-385.43	-72.54	140.28	0.00	0.00	0.00
2,026.82	18.36	190.66	1,970.00	-393.73	-74.10	143.30	0.00	0.00	0.00
Pierre Shale (Base of Fox Hills)									
2,100.00	18.36	190.66	2,039.46	-416.39	-78.37	151.55	0.00	0.00	0.00
2,200.00	18.36	190.66	2,134.36	-447.35	-84.20	162.82	0.00	0.00	0.00
2,300.00	18.36	190.66	2,229.27	-478.31	-90.02	174.09	0.00	0.00	0.00
2,400.00	18.36	190.66	2,324.18	-509.27	-95.85	185.36	0.00	0.00	0.00
2,500.00	18.36	190.66	2,419.09	-540.23	-101.68	196.63	0.00	0.00	0.00
2,600.00	18.36	190.66	2,513.99	-571.19	-107.51	207.89	0.00	0.00	0.00
2,700.00	18.36	190.66	2,608.90	-602.15	-113.33	219.16	0.00	0.00	0.00
2,800.00	18.36	190.66	2,703.81	-633.11	-119.16	230.43	0.00	0.00	0.00
2,900.00	18.36	190.66	2,798.72	-664.07	-124.99	241.70	0.00	0.00	0.00
3,000.00	18.36	190.66	2,893.63	-695.03	-130.81	252.97	0.00	0.00	0.00
3,100.00	18.36	190.66	2,988.53	-725.99	-136.64	264.24	0.00	0.00	0.00
3,200.00	18.36	190.66	3,083.44	-756.95	-142.47	275.51	0.00	0.00	0.00
3,300.00	18.36	190.66	3,178.35	-787.91	-148.30	286.78	0.00	0.00	0.00
3,400.00	18.36	190.66	3,273.26	-818.88	-154.12	298.04	0.00	0.00	0.00
3,500.00	18.36	190.66	3,368.16	-849.84	-159.95	309.31	0.00	0.00	0.00
3,600.00	18.36	190.66	3,463.07	-880.80	-165.78	320.58	0.00	0.00	0.00
3,700.00	18.36	190.66	3,557.98	-911.76	-171.61	331.85	0.00	0.00	0.00
3,800.00	18.36	190.66	3,652.89	-942.72	-177.43	343.12	0.00	0.00	0.00
3,900.00	18.36	190.66	3,747.80	-973.68	-183.26	354.39	0.00	0.00	0.00

Planning Report

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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)	
4,000.00	18.36	190.66	3,842.70	-1,004.64	-189.09	365.66	0.00	0.00	0.00	
4,100.00	18.36	190.66	3,937.61	-1,035.60	-194.91	376.92	0.00	0.00	0.00	
4,200.00	18.36	190.66	4,032.52	-1,066.56	-200.74	388.19	0.00	0.00	0.00	
4,300.00	18.36	190.66	4,127.43	-1,097.52	-206.57	399.46	0.00	0.00	0.00	
4,400.00	18.36	190.66	4,222.33	-1,128.48	-212.40	410.73	0.00	0.00	0.00	
4,500.00	18.36	190.66	4,317.24	-1,159.44	-218.22	422.00	0.00	0.00	0.00	
4,600.00	18.36	190.66	4,412.15	-1,190.40	-224.05	433.27	0.00	0.00	0.00	
4,700.00	18.36	190.66	4,507.06	-1,221.36	-229.88	444.54	0.00	0.00	0.00	
4,800.00	18.36	190.66	4,601.97	-1,252.32	-235.70	455.81	0.00	0.00	0.00	
4,900.00	18.36	190.66	4,696.87	-1,283.29	-241.53	467.07	0.00	0.00	0.00	
5,000.00	18.36	190.66	4,791.78	-1,314.25	-247.36	478.34	0.00	0.00	0.00	
5,100.00	18.36	190.66	4,886.69	-1,345.21	-253.19	489.61	0.00	0.00	0.00	
5,200.00	18.36	190.66	4,981.60	-1,376.17	-259.01	500.88	0.00	0.00	0.00	
5,300.00	18.36	190.66	5,076.50	-1,407.13	-264.84	512.15	0.00	0.00	0.00	
5,400.00	18.36	190.66	5,171.41	-1,438.09	-270.67	523.42	0.00	0.00	0.00	
5,500.00	18.36	190.66	5,266.32	-1,469.05	-276.50	534.69	0.00	0.00	0.00	
5,600.00	18.36	190.66	5,361.23	-1,500.01	-282.32	545.95	0.00	0.00	0.00	
5,700.00	18.36	190.66	5,456.13	-1,530.97	-288.15	557.22	0.00	0.00	0.00	
5,800.00	18.36	190.66	5,551.04	-1,561.93	-293.98	568.49	0.00	0.00	0.00	
5,825.24	18.36	190.66	5,575.00	-1,569.75	-295.45	571.34	0.00	0.00	0.00	
Shannon Sandstone Member										
5,900.00	18.36	190.66	5,645.95	-1,592.89	-299.80	579.76	0.00	0.00	0.00	
6,000.00	18.36	190.66	5,740.86	-1,623.85	-305.63	591.03	0.00	0.00	0.00	
6,100.00	18.36	190.66	5,835.77	-1,654.81	-311.46	602.30	0.00	0.00	0.00	
6,200.00	18.36	190.66	5,930.67	-1,685.77	-317.29	613.57	0.00	0.00	0.00	
6,300.00	18.36	190.66	6,025.58	-1,716.73	-323.11	624.84	0.00	0.00	0.00	
6,400.00	18.36	190.66	6,120.49	-1,747.70	-328.94	636.10	0.00	0.00	0.00	
6,500.00	18.36	190.66	6,215.40	-1,778.66	-334.77	647.37	0.00	0.00	0.00	
6,600.00	18.36	190.66	6,310.30	-1,809.62	-340.59	658.64	0.00	0.00	0.00	
6,677.09	18.36	190.66	6,383.47	-1,833.49	-345.09	667.33	0.00	0.00	0.00	
Start Drop -2.00										
6,700.00	17.91	190.66	6,405.24	-1,840.49	-346.41	669.88	2.00	-2.00	0.00	
6,800.00	15.91	190.66	6,500.91	-1,869.07	-351.78	680.28	2.00	-2.00	0.00	
6,900.00	13.91	190.66	6,597.55	-1,894.34	-356.54	689.48	2.00	-2.00	0.00	
7,000.00	11.91	190.66	6,695.01	-1,916.29	-360.67	697.47	2.00	-2.00	0.00	
7,100.00	9.91	190.66	6,793.20	-1,934.88	-364.17	704.23	2.00	-2.00	0.00	
7,200.00	7.91	190.66	6,891.99	-1,950.10	-367.03	709.77	2.00	-2.00	0.00	
7,300.00	5.91	190.66	6,991.26	-1,961.91	-369.26	714.07	2.00	-2.00	0.00	
7,400.00	3.91	190.66	7,090.89	-1,970.31	-370.84	717.13	2.00	-2.00	0.00	
7,500.00	1.91	190.66	7,190.76	-1,975.29	-371.78	718.94	2.00	-2.00	0.00	
7,595.26	0.00	0.00	7,286.00	-1,976.85	-372.07	719.51	2.00	-2.00	0.00	
Start 30.00 hold at 7595.26 MD										
7,600.00	0.00	0.00	7,290.74	-1,976.85	-372.07	719.51	0.00	0.00	0.00	
7,625.26	0.00	0.00	7,316.00	-1,976.85	-372.07	719.51	0.00	0.00	0.00	
Start DLS 10.00 TFO 270.25										
7,650.00	2.47	270.25	7,340.73	-1,976.85	-372.60	720.03	10.00	10.00	0.00	
7,700.00	7.47	270.25	7,390.53	-1,976.83	-376.94	724.29	10.00	10.00	0.00	
7,750.00	12.47	270.25	7,439.76	-1,976.79	-385.59	732.80	10.00	10.00	0.00	
7,800.00	17.47	270.25	7,488.04	-1,976.73	-398.51	745.50	10.00	10.00	0.00	
7,850.00	22.47	270.25	7,535.02	-1,976.66	-415.58	762.28	10.00	10.00	0.00	
7,900.00	27.47	270.25	7,580.33	-1,976.56	-436.68	783.03	10.00	10.00	0.00	
7,950.00	32.47	270.25	7,623.63	-1,976.45	-461.65	807.58	10.00	10.00	0.00	
7,988.01	36.27	270.25	7,655.00	-1,976.36	-483.11	828.67	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)
8,000.00	37.47	270.25	7,664.59	-1,976.33	-490.30	835.74	10.00	10.00	0.00
8,050.00	42.47	270.25	7,702.90	-1,976.18	-522.41	867.31	10.00	10.00	0.00
8,073.64	44.83	270.25	7,720.00	-1,976.11	-538.73	883.35	10.00	10.00	0.00
Niobrara Formation									
8,095.20	46.99	270.25	7,735.00	-1,976.04	-554.21	898.57	10.00	10.00	0.00
Niobrara A Chalk									
8,100.00	47.47	270.25	7,738.26	-1,976.03	-557.74	902.04	10.00	10.00	0.00
8,110.07	48.48	270.25	7,745.00	-1,975.99	-565.22	909.39	10.00	10.00	0.00
Niobrara A Landing Point									
8,150.00	52.47	270.25	7,770.41	-1,975.86	-596.01	939.66	10.00	10.00	0.00
8,200.00	57.47	270.25	7,799.10	-1,975.67	-636.94	979.90	10.00	10.00	0.00
8,250.00	62.47	270.25	7,824.12	-1,975.48	-680.21	1,022.44	10.00	10.00	0.00
8,300.00	67.47	270.25	7,845.26	-1,975.28	-725.50	1,066.97	10.00	10.00	0.00
8,309.96	68.46	270.25	7,849.00	-1,975.24	-734.73	1,076.04	10.00	10.00	0.00
Niobrara B Chalk									
8,350.00	72.47	270.25	7,862.39	-1,975.07	-772.46	1,113.13	10.00	10.00	0.00
8,400.00	77.47	270.25	7,875.35	-1,974.86	-820.74	1,160.59	10.00	10.00	0.00
8,418.12	79.28	270.25	7,879.00	-1,974.78	-838.48	1,178.04	10.00	10.00	0.00
Niobrara B Landing Point									
8,450.00	82.47	270.25	7,884.06	-1,974.64	-869.96	1,208.98	10.00	10.00	0.00
8,500.00	87.47	270.25	7,888.44	-1,974.42	-919.75	1,257.93	10.00	10.00	0.00
8,525.33	90.00	270.25	7,889.00	-1,974.31	-945.07	1,282.82	10.00	10.00	0.00
Start DLS 0.00 TFO -100.18									
8,600.00	90.00	270.25	7,889.00	-1,973.98	-1,019.74	1,356.23	0.00	0.00	0.00
8,700.00	90.00	270.25	7,889.00	-1,973.53	-1,119.74	1,454.54	0.00	0.00	0.00
8,800.00	90.00	270.25	7,889.00	-1,973.09	-1,219.74	1,552.84	0.00	0.00	0.00
8,900.00	90.00	270.25	7,889.00	-1,972.65	-1,319.73	1,651.15	0.00	0.00	0.00
9,000.00	90.00	270.25	7,888.99	-1,972.20	-1,419.73	1,749.46	0.00	0.00	0.00
9,100.00	90.00	270.25	7,888.99	-1,971.76	-1,519.73	1,847.77	0.00	0.00	0.00
9,200.00	90.00	270.25	7,888.99	-1,971.32	-1,619.73	1,946.08	0.00	0.00	0.00
9,300.00	90.00	270.25	7,888.99	-1,970.88	-1,719.73	2,044.39	0.00	0.00	0.00
9,400.00	90.00	270.25	7,888.99	-1,970.43	-1,819.73	2,142.70	0.00	0.00	0.00
9,500.00	90.00	270.25	7,888.99	-1,969.99	-1,919.73	2,241.01	0.00	0.00	0.00
9,600.00	90.00	270.25	7,888.99	-1,969.55	-2,019.73	2,339.31	0.00	0.00	0.00
9,700.00	90.00	270.25	7,888.99	-1,969.11	-2,119.73	2,437.62	0.00	0.00	0.00
9,800.00	90.00	270.25	7,888.99	-1,968.66	-2,219.73	2,535.93	0.00	0.00	0.00
9,900.00	90.00	270.25	7,888.99	-1,968.22	-2,319.72	2,634.24	0.00	0.00	0.00
10,000.00	90.00	270.25	7,888.98	-1,967.78	-2,419.72	2,732.55	0.00	0.00	0.00
10,100.00	90.00	270.25	7,888.98	-1,967.34	-2,519.72	2,830.86	0.00	0.00	0.00
10,200.00	90.00	270.25	7,888.98	-1,966.90	-2,619.72	2,929.17	0.00	0.00	0.00
10,300.00	90.00	270.25	7,888.98	-1,966.46	-2,719.72	3,027.48	0.00	0.00	0.00
10,400.00	90.00	270.25	7,888.98	-1,966.02	-2,819.72	3,125.78	0.00	0.00	0.00
10,500.00	90.00	270.25	7,888.98	-1,965.57	-2,919.72	3,224.09	0.00	0.00	0.00
10,600.00	90.00	270.25	7,888.98	-1,965.13	-3,019.72	3,322.40	0.00	0.00	0.00
10,700.00	90.00	270.25	7,888.98	-1,964.69	-3,119.72	3,420.71	0.00	0.00	0.00
10,800.00	90.00	270.25	7,888.98	-1,964.25	-3,219.72	3,519.02	0.00	0.00	0.00
10,900.00	90.00	270.25	7,888.98	-1,963.81	-3,319.71	3,617.33	0.00	0.00	0.00
11,000.00	90.00	270.25	7,888.98	-1,963.37	-3,419.71	3,715.64	0.00	0.00	0.00
11,100.00	90.00	270.25	7,888.98	-1,962.93	-3,519.71	3,813.95	0.00	0.00	0.00
11,200.00	90.00	270.25	7,888.98	-1,962.49	-3,619.71	3,912.26	0.00	0.00	0.00
11,300.00	90.00	270.25	7,888.98	-1,962.05	-3,719.71	4,010.57	0.00	0.00	0.00
11,400.00	90.00	270.25	7,888.98	-1,961.61	-3,819.71	4,108.88	0.00	0.00	0.00
11,500.00	90.00	270.25	7,888.98	-1,961.17	-3,919.71	4,207.19	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)
11,600.00	90.00	270.25	7,888.97	-1,960.73	-4,019.71	4,305.49	0.00	0.00	0.00
11,700.00	90.00	270.25	7,888.97	-1,960.29	-4,119.71	4,403.80	0.00	0.00	0.00
11,800.00	90.00	270.25	7,888.97	-1,959.86	-4,219.71	4,502.11	0.00	0.00	0.00
11,900.00	90.00	270.25	7,888.97	-1,959.42	-4,319.71	4,600.42	0.00	0.00	0.00
12,000.00	90.00	270.25	7,888.97	-1,958.98	-4,419.70	4,698.73	0.00	0.00	0.00
12,100.00	90.00	270.25	7,888.97	-1,958.54	-4,519.70	4,797.04	0.00	0.00	0.00
12,200.00	90.00	270.25	7,888.97	-1,958.10	-4,619.70	4,895.35	0.00	0.00	0.00
12,300.00	90.00	270.25	7,888.97	-1,957.66	-4,719.70	4,993.66	0.00	0.00	0.00
12,400.00	90.00	270.25	7,888.97	-1,957.22	-4,819.70	5,091.97	0.00	0.00	0.00
12,500.00	90.00	270.25	7,888.97	-1,956.79	-4,919.70	5,190.28	0.00	0.00	0.00
12,600.00	90.00	270.25	7,888.97	-1,956.35	-5,019.70	5,288.59	0.00	0.00	0.00
12,700.00	90.00	270.25	7,888.97	-1,955.91	-5,119.70	5,386.90	0.00	0.00	0.00
12,800.00	90.00	270.25	7,888.97	-1,955.47	-5,219.70	5,485.21	0.00	0.00	0.00
12,900.00	90.00	270.25	7,888.97	-1,955.03	-5,319.70	5,583.52	0.00	0.00	0.00
13,000.00	90.00	270.25	7,888.97	-1,954.60	-5,419.69	5,681.83	0.00	0.00	0.00
13,100.00	90.00	270.25	7,888.97	-1,954.16	-5,519.69	5,780.14	0.00	0.00	0.00
13,200.00	90.00	270.25	7,888.97	-1,953.72	-5,619.69	5,878.45	0.00	0.00	0.00
13,300.00	90.00	270.25	7,888.97	-1,953.29	-5,719.69	5,976.76	0.00	0.00	0.00
13,400.00	90.00	270.25	7,888.97	-1,952.85	-5,819.69	6,075.07	0.00	0.00	0.00
13,500.00	90.00	270.25	7,888.97	-1,952.41	-5,919.69	6,173.38	0.00	0.00	0.00
13,600.00	90.00	270.25	7,888.97	-1,951.98	-6,019.69	6,271.69	0.00	0.00	0.00
13,700.00	90.00	270.25	7,888.97	-1,951.54	-6,119.69	6,370.00	0.00	0.00	0.00
13,800.00	90.00	270.25	7,888.97	-1,951.10	-6,219.69	6,468.31	0.00	0.00	0.00
13,900.00	90.00	270.25	7,888.97	-1,950.67	-6,319.69	6,566.62	0.00	0.00	0.00
14,000.00	90.00	270.25	7,888.97	-1,950.23	-6,419.69	6,664.93	0.00	0.00	0.00
14,100.00	90.00	270.25	7,888.97	-1,949.79	-6,519.68	6,763.24	0.00	0.00	0.00
14,200.00	90.00	270.25	7,888.97	-1,949.36	-6,619.68	6,861.55	0.00	0.00	0.00
14,300.00	90.00	270.25	7,888.97	-1,948.92	-6,719.68	6,959.86	0.00	0.00	0.00
14,400.00	90.00	270.25	7,888.97	-1,948.49	-6,819.68	7,058.17	0.00	0.00	0.00
14,500.00	90.00	270.25	7,888.97	-1,948.05	-6,919.68	7,156.48	0.00	0.00	0.00
14,600.00	90.00	270.25	7,888.97	-1,947.62	-7,019.68	7,254.79	0.00	0.00	0.00
14,700.00	90.00	270.25	7,888.97	-1,947.18	-7,119.68	7,353.10	0.00	0.00	0.00
14,800.00	90.00	270.25	7,888.97	-1,946.75	-7,219.68	7,451.41	0.00	0.00	0.00
14,900.00	90.00	270.25	7,888.97	-1,946.31	-7,319.68	7,549.72	0.00	0.00	0.00
15,000.00	90.00	270.25	7,888.97	-1,945.88	-7,419.68	7,648.03	0.00	0.00	0.00
15,100.00	90.00	270.25	7,888.97	-1,945.44	-7,519.67	7,746.34	0.00	0.00	0.00
15,200.00	90.00	270.25	7,888.97	-1,945.01	-7,619.67	7,844.65	0.00	0.00	0.00
15,300.00	90.00	270.25	7,888.98	-1,944.57	-7,719.67	7,942.96	0.00	0.00	0.00
15,400.00	90.00	270.25	7,888.98	-1,944.14	-7,819.67	8,041.27	0.00	0.00	0.00
15,500.00	90.00	270.25	7,888.98	-1,943.71	-7,919.67	8,139.58	0.00	0.00	0.00
15,600.00	90.00	270.25	7,888.98	-1,943.27	-8,019.67	8,237.89	0.00	0.00	0.00
15,700.00	90.00	270.25	7,888.98	-1,942.84	-8,119.67	8,336.20	0.00	0.00	0.00
15,800.00	90.00	270.25	7,888.98	-1,942.41	-8,219.67	8,434.51	0.00	0.00	0.00
15,900.00	90.00	270.25	7,888.98	-1,941.97	-8,319.67	8,532.82	0.00	0.00	0.00
16,000.00	90.00	270.25	7,888.98	-1,941.54	-8,419.67	8,631.13	0.00	0.00	0.00
16,100.00	90.00	270.25	7,888.98	-1,941.11	-8,519.67	8,729.44	0.00	0.00	0.00
16,200.00	90.00	270.25	7,888.98	-1,940.67	-8,619.66	8,827.75	0.00	0.00	0.00
16,300.00	90.00	270.25	7,888.98	-1,940.24	-8,719.66	8,926.06	0.00	0.00	0.00
16,400.00	90.00	270.25	7,888.98	-1,939.81	-8,819.66	9,024.37	0.00	0.00	0.00
16,500.00	90.00	270.25	7,888.98	-1,939.38	-8,919.66	9,122.68	0.00	0.00	0.00
16,600.00	90.00	270.25	7,888.98	-1,938.94	-9,019.66	9,220.99	0.00	0.00	0.00
16,700.00	90.00	270.25	7,888.98	-1,938.51	-9,119.66	9,319.30	0.00	0.00	0.00
16,800.00	90.00	270.25	7,888.99	-1,938.08	-9,219.66	9,417.61	0.00	0.00	0.00
16,900.00	90.00	270.25	7,888.99	-1,937.65	-9,319.66	9,515.92	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)	
17,000.00	90.00	270.25	7,888.99	-1,937.21	-9,419.66	9,614.23	0.00	0.00	0.00	
17,100.00	90.00	270.25	7,888.99	-1,936.78	-9,519.66	9,712.55	0.00	0.00	0.00	
17,200.00	90.00	270.25	7,888.99	-1,936.35	-9,619.66	9,810.86	0.00	0.00	0.00	
17,300.00	90.00	270.25	7,888.99	-1,935.92	-9,719.65	9,909.17	0.00	0.00	0.00	
17,400.00	90.00	270.25	7,888.99	-1,935.49	-9,819.65	10,007.48	0.00	0.00	0.00	
17,500.00	90.00	270.25	7,888.99	-1,935.06	-9,919.65	10,105.79	0.00	0.00	0.00	
17,600.00	90.00	270.25	7,888.99	-1,934.63	-10,019.65	10,204.10	0.00	0.00	0.00	
17,700.00	90.00	270.25	7,888.99	-1,934.20	-10,119.65	10,302.41	0.00	0.00	0.00	
17,800.00	90.00	270.25	7,889.00	-1,933.76	-10,219.65	10,400.72	0.00	0.00	0.00	
17,900.00	90.00	270.25	7,889.00	-1,933.33	-10,319.65	10,499.03	0.00	0.00	0.00	
18,000.00	90.00	270.25	7,889.00	-1,932.90	-10,419.65	10,597.34	0.00	0.00	0.00	
18,100.00	90.00	270.25	7,889.00	-1,932.47	-10,519.65	10,695.65	0.00	0.00	0.00	
18,200.00	90.00	270.25	7,889.00	-1,932.04	-10,619.65	10,793.96	0.00	0.00	0.00	
18,212.39	90.00	270.25	7,889.00	-1,931.99	-10,632.04	10,806.14	0.00	0.00	0.00	
TD at 18212.39										

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	-1,931.99	-10,632.04	1,144,758.67	3,220,966.25	39° 43' 40.944 N	104° 42' 51.804 W	
- plan hits target center										
- Point										
JAMASO 4-65 5-6-11 - L	0.00	0.00	7,889.00	-1,974.31	-945.07	1,144,806.30	3,230,653.19	39° 43' 40.548 N	104° 40' 47.820 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				
1,761.30	1,718.00	Laramie - Fox Hills				
2,026.82	1,970.00	Pierre Shale (Base of Fox Hills)				
5,825.24	5,575.00	Shannon Sandstone Member				
7,988.01	7,655.00	Sharon Springs Shale				
8,073.64	7,720.00	Niobrara Formation				
8,095.20	7,735.00	Niobrara A Chalk				
8,110.07	7,745.00	Niobrara A Landing Point				
8,309.96	7,849.00	Niobrara B Chalk				
8,418.12	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
1,218.17	1,202.53	-143.36	-26.98	Start 5458.92 hold at 1218.17 MD
6,677.09	6,383.47	-1,833.49	-345.09	Start Drop -2.00
7,595.26	7,286.00	-1,976.85	-372.07	Start 30.00 hold at 7595.26 MD
7,625.26	7,316.00	-1,976.85	-372.07	Start DLS 10.00 TFO 270.25
8,525.33	7,889.00	-1,974.31	-945.07	Start DLS 0.00 TFO -100.18
18,212.39	7,889.00	-1,931.99	-10,632.04	TD at 18212.39