

# **AXIS EXPLORATION**

**ARAPAHOE COUNTY**

**Sec 4-T4S-R65W**

**JAMASO 4-65 5-6-3**

**ORIGINAL WELLBORE**

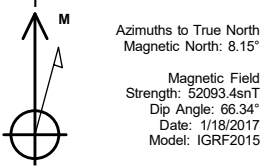
**Plan: PROPOSAL 1**

## **Standard Planning Report**

**18 October, 2018**



Project: ARAPAHOE COUNTY  
Site: Sec 4-T4S-R65W  
Well: JAMASO 4-65 5-6-3  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL 1



WELL DETAILS: JAMASO 4-65 5-6-3						
	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
	0.00	0.00	1146769.69	3232173.25	39.733281°N	104.674481°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	600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00
3	1341.88	14.84	321.37	1333.61	74.62	-59.64	2.00	321.37	67.52
4	6602.05	14.84	321.37	6418.39	1126.83	-900.66	0.00	0.00	1019.63
5	7343.92	0.00	0.00	7152.00	1201.45	-960.30	2.00	180.00	1087.15
6	7373.92	0.00	0.00	7182.00	1201.45	-960.30	0.00	0.00	1087.15
7	8273.99	90.00	270.25	7755.00	1203.96	-1533.30	10.00	270.25	1656.92
8	17954.76	90.00	270.25	7755.00	1246.51	-11213.97	0.00	0.00	11283.04

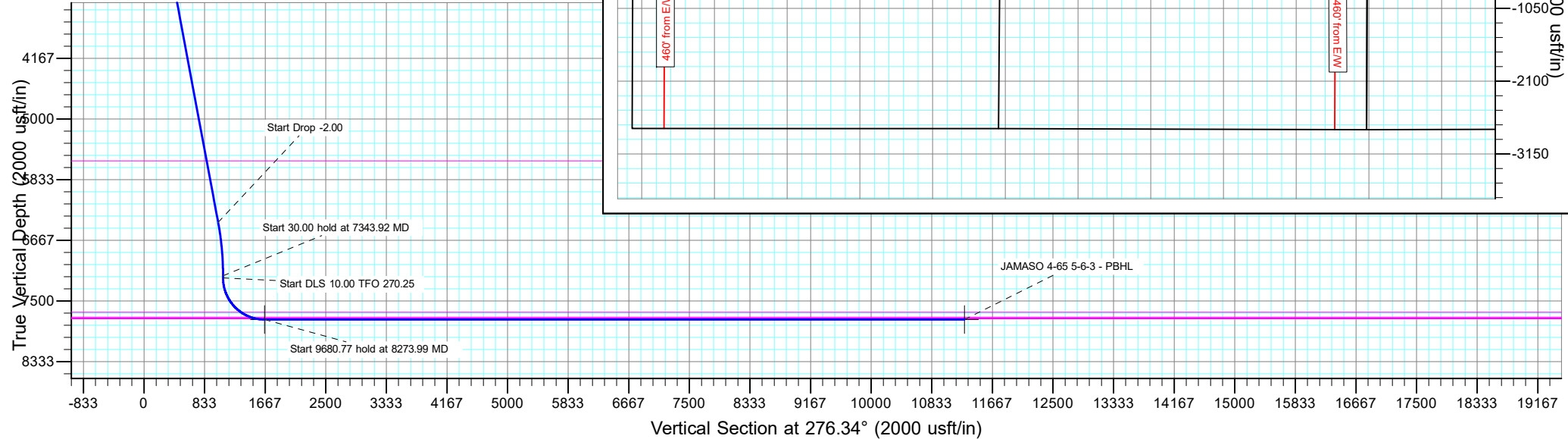
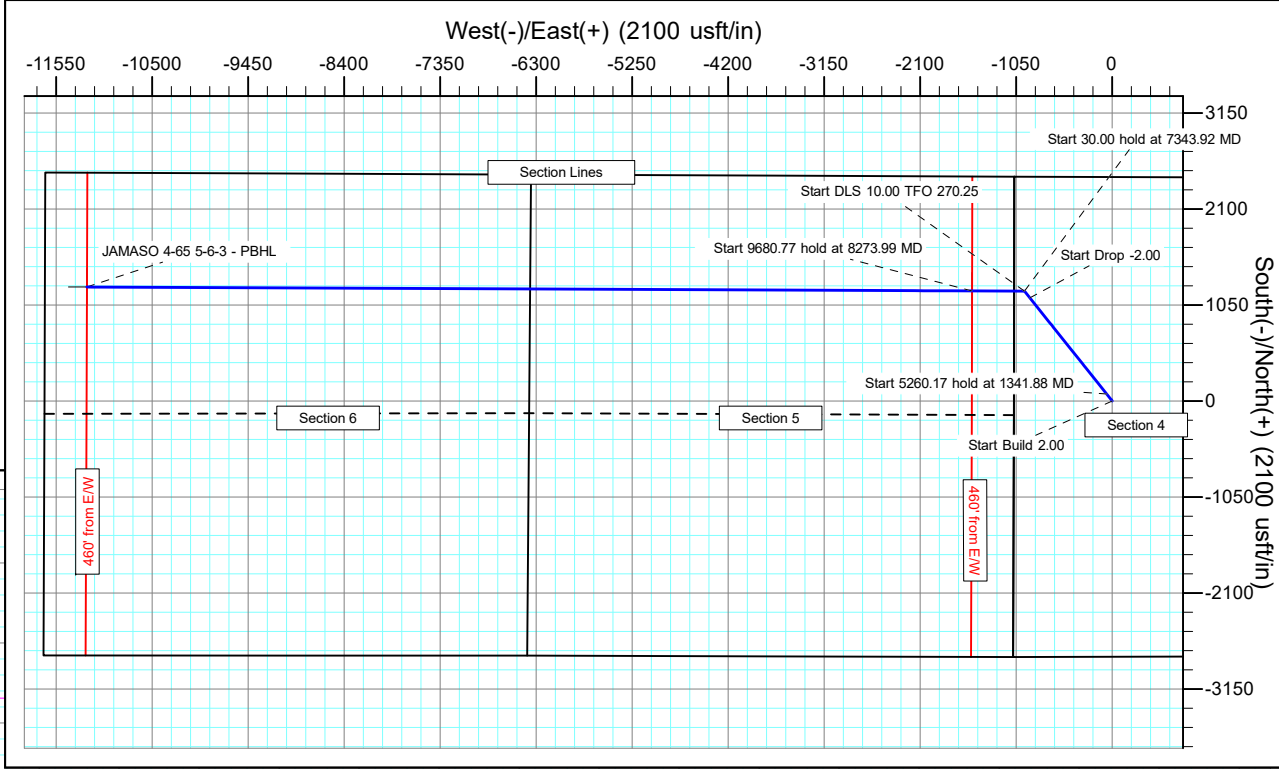
ANNOTATIONS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	Start Build 2.00	
1341.88	14.84	321.37	1333.61	74.62	-59.64	67.52	95.52	Start 5260.17 hold at 1341.88 MD	
6602.05	14.84	321.37	6418.39	1126.83	-900.66	1019.63	1442.55	Start Drop -2.00	
7343.92	0.00	0.00	7152.00	1201.45	-960.30	1087.15	1538.07	Start 30.00 hold at 7343.92 MD	
7373.92	0.00	0.00	7182.00	1201.45	-960.30	1087.15	1538.07	Start DLS 10.00 TFO 270.25	
8273.99	90.00	270.25	7755.00	1203.96	-1533.30	1656.92	2111.07	Start 9680.77 hold at 8273.99 MD	
17954.76	90.00	270.25	7754.96	1246.41	-11213.97	11283.03	11791.84	TD at 17954.76	

DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
JAMASO 4-65 5-6-3 - LP	7755.00	1203.96	-1533.30	1147959.32	3230628.81	39.736586°N	104.679933°W	Point	
- plan hits target center									
JAMASO 4-65 5-6-3 - PBHL	7755.00	1246.51	-11213.97	1147911.74	3220948.16	39.736696°N	104.714355°W	Point	
- plan hits target center									

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
293.00	293.00	Denver
877.00	877.43	Upper Arapahoe
1165.00	1168.73	Lower Arapahoe
1718.00	1739.52	Laramie - Fox Hills
1970.00	2000.22	Shale (Base of Fox Hills)
5575.00	5729.57	Shannon Sandstone Member
7655.00	7930.34	Sharon Springs Shale
7720.00	8072.68	Niobrara Formation
7735.00	8122.15	Niobrara A Chalk
7745.00	8166.78	Niobrara A 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:  
2450' FNL, 1076' FWL  
Sec 4-T4S-R65W  
LP:  
1252' FNL, 460' FEL  
Sec 5-T4S-R65W  
BHL:  
1252' FNL, 460' FWL  
Sec 6-T4S-R65W



## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well JAMASO 4-65 5-6-3
<b>Company:</b>	AXIS EXPLORATION	<b>TVD Reference:</b>	KB 25' @ 5610.00usft
<b>Project:</b>	ARAPAHOE COUNTY	<b>MD Reference:</b>	KB 25' @ 5610.00usft
<b>Site:</b>	Sec 4-T4S-R65W	<b>North Reference:</b>	True
<b>Well:</b>	JAMASO 4-65 5-6-3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

<b>Project</b>	ARAPAHOE COUNTY		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 5-6-3					
Well Position	+N/-S	-2,453.70 usft	Northing:	1,146,769.68 usft	Latitude:	39.733281°N
	+E/-W	1,071.00 usft	Easting:	3,232,173.25 usft	Longitude:	104.674481°W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	5,585.00 usft

<b>Wellbore</b>	ORIGINAL WELLBORE				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	1/18/2017	8.15	66.34	52,093.36518817

<b>Design</b>	PROPOSAL 1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	276.34

<b>Plan Survey Tool Program</b>	<b>Date</b>	10/18/2018		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	17,954.16	PROPOSAL 1 (ORIGINAL WELL	MWD OWSG
			OWSG MWD - Standard	

<b>Plan Sections</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	<b>TFO (°)</b>	<b>Target</b>
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,341.88	14.84	321.37	1,333.61	74.62	-59.64	2.00	2.00	0.00	321.37	
6,602.05	14.84	321.37	6,418.39	1,126.83	-900.66	0.00	0.00	0.00	0.00	
7,343.93	0.00	0.00	7,152.00	1,201.45	-960.30	2.00	-2.00	0.00	180.00	
7,373.93	0.00	0.00	7,182.00	1,201.45	-960.30	0.00	0.00	0.00	0.00	
8,273.99	90.00	270.25	7,755.00	1,203.96	-1,533.30	10.00	10.00	-9.97	270.25	JAMASO 4-65 5-6-3 -
17,954.76	90.00	270.25	7,755.00	1,246.51	-11,213.97	0.00	0.00	0.00	0.00	JAMASO 4-65 5-6-3 -

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well JAMASO 4-65 5-6-3
<b>Company:</b>	AXIS EXPLORATION	<b>TVD Reference:</b>	KB 25' @ 5610.00usft
<b>Project:</b>	ARAPAHOE COUNTY	<b>MD Reference:</b>	KB 25' @ 5610.00usft
<b>Site:</b>	Sec 4-T4S-R65W	<b>North Reference:</b>	True
<b>Well:</b>	JAMASO 4-65 5-6-3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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
<b>Denver</b>									
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 2.00</b>									
700.00	2.00	321.37	699.98	1.36	-1.09	1.23	2.00	2.00	0.00
800.00	4.00	321.37	799.84	5.45	-4.36	4.93	2.00	2.00	0.00
877.43	5.55	321.37	877.00	10.49	-8.38	9.49	2.00	2.00	0.00
<b>Upper Arapahoe</b>									
900.00	6.00	321.37	899.45	12.26	-9.80	11.09	2.00	2.00	0.00
1,000.00	8.00	321.37	998.70	21.78	-17.41	19.71	2.00	2.00	0.00
1,100.00	10.00	321.37	1,097.47	34.00	-27.17	30.76	2.00	2.00	0.00
1,168.73	11.37	321.37	1,165.00	43.95	-35.13	39.77	2.00	2.00	0.00
<b>Lower Arapahoe</b>									
1,200.00	12.00	321.37	1,195.62	48.90	-39.09	44.25	2.00	2.00	0.00
1,300.00	14.00	321.37	1,293.06	66.47	-53.13	60.15	2.00	2.00	0.00
1,341.88	14.84	321.37	1,333.61	74.62	-59.64	67.52	2.00	2.00	0.00
<b>Start 5260.17 hold at 1341.88 MD</b>									
1,400.00	14.84	321.37	1,389.80	86.24	-68.93	78.04	0.00	0.00	0.00
1,500.00	14.84	321.37	1,486.46	106.25	-84.92	96.14	0.00	0.00	0.00
1,600.00	14.84	321.37	1,583.13	126.25	-100.91	114.24	0.00	0.00	0.00
1,700.00	14.84	321.37	1,679.79	146.25	-116.90	132.34	0.00	0.00	0.00
1,739.52	14.84	321.37	1,718.00	154.16	-123.22	139.50	0.00	0.00	0.00
<b>Laramie - Fox Hills</b>									
1,800.00	14.84	321.37	1,776.46	166.26	-132.89	150.44	0.00	0.00	0.00
1,900.00	14.84	321.37	1,873.13	186.26	-148.88	168.54	0.00	0.00	0.00
2,000.00	14.84	321.37	1,969.79	206.27	-164.86	186.64	0.00	0.00	0.00
2,000.22	14.84	321.37	1,970.00	206.31	-164.90	186.68	0.00	0.00	0.00
<b>Pierre Shale (Base of Fox Hills)</b>									
2,100.00	14.84	321.37	2,066.46	226.27	-180.85	204.74	0.00	0.00	0.00
2,200.00	14.84	321.37	2,163.12	246.27	-196.84	222.84	0.00	0.00	0.00
2,300.00	14.84	321.37	2,259.79	266.28	-212.83	240.94	0.00	0.00	0.00
2,400.00	14.84	321.37	2,356.45	286.28	-228.82	259.04	0.00	0.00	0.00
2,500.00	14.84	321.37	2,453.12	306.28	-244.81	277.14	0.00	0.00	0.00
2,600.00	14.84	321.37	2,549.78	326.29	-260.79	295.25	0.00	0.00	0.00
2,700.00	14.84	321.37	2,646.45	346.29	-276.78	313.35	0.00	0.00	0.00
2,800.00	14.84	321.37	2,743.12	366.29	-292.77	331.45	0.00	0.00	0.00
2,900.00	14.84	321.37	2,839.78	386.30	-308.76	349.55	0.00	0.00	0.00
3,000.00	14.84	321.37	2,936.45	406.30	-324.75	367.65	0.00	0.00	0.00
3,100.00	14.84	321.37	3,033.11	426.30	-340.74	385.75	0.00	0.00	0.00
3,200.00	14.84	321.37	3,129.78	446.31	-356.73	403.85	0.00	0.00	0.00
3,300.00	14.84	321.37	3,226.44	466.31	-372.71	421.95	0.00	0.00	0.00
3,400.00	14.84	321.37	3,323.11	486.31	-388.70	440.05	0.00	0.00	0.00
3,500.00	14.84	321.37	3,419.77	506.32	-404.69	458.15	0.00	0.00	0.00
3,600.00	14.84	321.37	3,516.44	526.32	-420.68	476.25	0.00	0.00	0.00
3,700.00	14.84	321.37	3,613.11	546.32	-436.67	494.35	0.00	0.00	0.00
3,800.00	14.84	321.37	3,709.77	566.33	-452.66	512.45	0.00	0.00	0.00
3,900.00	14.84	321.37	3,806.44	586.33	-468.64	530.55	0.00	0.00	0.00

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well JAMASO 4-65 5-6-3
<b>Company:</b>	AXIS EXPLORATION	<b>TVD Reference:</b>	KB 25' @ 5610.00usft
<b>Project:</b>	ARAPAHOE COUNTY	<b>MD Reference:</b>	KB 25' @ 5610.00usft
<b>Site:</b>	Sec 4-T4S-R65W	<b>North Reference:</b>	True
<b>Well:</b>	JAMASO 4-65 5-6-3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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	14.84	321.37	3,903.10	606.33	-484.63	548.65	0.00	0.00	0.00
4,100.00	14.84	321.37	3,999.77	626.34	-500.62	566.75	0.00	0.00	0.00
4,200.00	14.84	321.37	4,096.43	646.34	-516.61	584.85	0.00	0.00	0.00
4,300.00	14.84	321.37	4,193.10	666.34	-532.60	602.95	0.00	0.00	0.00
4,400.00	14.84	321.37	4,289.77	686.35	-548.59	621.05	0.00	0.00	0.00
4,500.00	14.84	321.37	4,386.43	706.35	-564.57	639.15	0.00	0.00	0.00
4,600.00	14.84	321.37	4,483.10	726.35	-580.56	657.25	0.00	0.00	0.00
4,700.00	14.84	321.37	4,579.76	746.36	-596.55	675.35	0.00	0.00	0.00
4,800.00	14.84	321.37	4,676.43	766.36	-612.54	693.46	0.00	0.00	0.00
4,900.00	14.84	321.37	4,773.09	786.36	-628.53	711.56	0.00	0.00	0.00
5,000.00	14.84	321.37	4,869.76	806.37	-644.52	729.66	0.00	0.00	0.00
5,100.00	14.84	321.37	4,966.42	826.37	-660.51	747.76	0.00	0.00	0.00
5,200.00	14.84	321.37	5,063.09	846.37	-676.49	765.86	0.00	0.00	0.00
5,300.00	14.84	321.37	5,159.76	866.38	-692.48	783.96	0.00	0.00	0.00
5,400.00	14.84	321.37	5,256.42	886.38	-708.47	802.06	0.00	0.00	0.00
5,500.00	14.84	321.37	5,353.09	906.38	-724.46	820.16	0.00	0.00	0.00
5,600.00	14.84	321.37	5,449.75	926.39	-740.45	838.26	0.00	0.00	0.00
5,700.00	14.84	321.37	5,546.42	946.39	-756.44	856.36	0.00	0.00	0.00
5,729.57	14.84	321.37	5,575.00	952.31	-761.16	861.71	0.00	0.00	0.00
Shannon Sandstone Member									
5,800.00	14.84	321.37	5,643.08	966.40	-772.42	874.46	0.00	0.00	0.00
5,900.00	14.84	321.37	5,739.75	986.40	-788.41	892.56	0.00	0.00	0.00
6,000.00	14.84	321.37	5,836.41	1,006.40	-804.40	910.66	0.00	0.00	0.00
6,100.00	14.84	321.37	5,933.08	1,026.41	-820.39	928.76	0.00	0.00	0.00
6,200.00	14.84	321.37	6,029.75	1,046.41	-836.38	946.86	0.00	0.00	0.00
6,300.00	14.84	321.37	6,126.41	1,066.41	-852.37	964.96	0.00	0.00	0.00
6,400.00	14.84	321.37	6,223.08	1,086.42	-868.35	983.06	0.00	0.00	0.00
6,500.00	14.84	321.37	6,319.74	1,106.42	-884.34	1,001.16	0.00	0.00	0.00
6,602.05	14.84	321.37	6,418.39	1,126.83	-900.66	1,019.63	0.00	0.00	0.00
Start Drop -2.00									
6,700.00	12.88	321.37	6,513.48	1,145.16	-915.31	1,036.22	2.00	-2.00	0.00
6,800.00	10.88	321.37	6,611.34	1,161.24	-928.16	1,050.76	2.00	-2.00	0.00
6,900.00	8.88	321.37	6,709.85	1,174.64	-938.87	1,062.89	2.00	-2.00	0.00
7,000.00	6.88	321.37	6,808.90	1,185.34	-947.43	1,072.58	2.00	-2.00	0.00
7,100.00	4.88	321.37	6,908.37	1,193.34	-953.82	1,079.82	2.00	-2.00	0.00
7,200.00	2.88	321.37	7,008.14	1,198.63	-958.04	1,084.60	2.00	-2.00	0.00
7,300.00	0.88	321.37	7,108.08	1,201.19	-960.09	1,086.92	2.00	-2.00	0.00
7,343.93	0.00	0.00	7,152.00	1,201.45	-960.30	1,087.15	2.00	-2.00	0.00
Start 30.00 hold at 7343.92 MD									
7,373.93	0.00	0.00	7,182.00	1,201.45	-960.30	1,087.15	0.00	0.00	0.00
Start DLS 10.00 TFO 270.25									
7,400.00	2.61	270.25	7,208.07	1,201.45	-960.89	1,087.74	10.00	10.00	0.00
7,450.00	7.61	270.25	7,257.85	1,201.47	-965.34	1,092.17	10.00	10.00	0.00
7,500.00	12.61	270.25	7,307.06	1,201.51	-974.11	1,100.89	10.00	10.00	0.00
7,550.00	17.61	270.25	7,355.32	1,201.57	-987.14	1,113.84	10.00	10.00	0.00
7,600.00	22.61	270.25	7,402.26	1,201.64	-1,004.32	1,130.93	10.00	10.00	0.00
7,650.00	27.61	270.25	7,447.52	1,201.74	-1,025.53	1,152.02	10.00	10.00	0.00
7,700.00	32.61	270.25	7,490.76	1,201.85	-1,050.60	1,176.95	10.00	10.00	0.00
7,750.00	37.60	270.25	7,531.65	1,201.97	-1,079.35	1,205.53	10.00	10.00	0.00
7,800.00	42.60	270.25	7,569.88	1,202.11	-1,111.54	1,237.55	10.00	10.00	0.00
7,850.00	47.60	270.25	7,605.16	1,202.27	-1,146.95	1,272.75	10.00	10.00	0.00
7,900.00	52.60	270.25	7,637.22	1,202.44	-1,185.30	1,310.89	10.00	10.00	0.00
7,930.34	55.64	270.25	7,655.00	1,202.54	-1,209.88	1,335.32	10.00	10.00	0.00
Sharon Springs Shale									

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well JAMASO 4-65 5-6-3
<b>Company:</b>	AXIS EXPLORATION	<b>TVD Reference:</b>	KB 25' @ 5610.00usft
<b>Project:</b>	ARAPAHOE COUNTY	<b>MD Reference:</b>	KB 25' @ 5610.00usft
<b>Site:</b>	Sec 4-T4S-R65W	<b>North Reference:</b>	True
<b>Well:</b>	JAMASO 4-65 5-6-3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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)
7,950.00	57.60	270.25	7,665.82	1,202.62	-1,226.30	1,351.65	10.00	10.00	0.00
8,000.00	62.60	270.25	7,690.73	1,202.81	-1,269.63	1,394.74	10.00	10.00	0.00
8,050.00	67.60	270.25	7,711.77	1,203.01	-1,314.97	1,439.82	10.00	10.00	0.00
8,072.68	69.87	270.25	7,720.00	1,203.10	-1,336.10	1,460.84	10.00	10.00	0.00
<b>Niobrara Formation</b>									
8,100.00	72.60	270.25	7,728.79	1,203.21	-1,361.97	1,486.56	10.00	10.00	0.00
8,122.15	74.82	270.25	7,735.00	1,203.30	-1,383.23	1,507.70	10.00	10.00	0.00
<b>Niobrara A Chalk</b>									
8,150.00	77.60	270.25	7,741.64	1,203.42	-1,410.27	1,534.59	10.00	10.00	0.00
8,166.78	79.28	270.25	7,745.00	1,203.50	-1,426.71	1,550.94	10.00	10.00	0.00
<b>Niobrara A Landing Point</b>									
8,200.00	82.60	270.25	7,750.23	1,203.64	-1,459.51	1,583.55	10.00	10.00	0.00
8,250.00	87.60	270.25	7,754.50	1,203.86	-1,509.31	1,633.07	10.00	10.00	0.00
8,273.99	90.00	270.25	7,755.00	1,203.96	-1,533.30	1,656.92	10.00	10.00	0.00
<b>Start 9680.77 hold at 8273.99 MD</b>									
8,300.00	90.00	270.25	7,755.00	1,204.08	-1,559.30	1,682.78	0.00	0.00	0.00
8,400.00	90.00	270.25	7,755.00	1,204.52	-1,659.30	1,782.22	0.00	0.00	0.00
8,500.00	90.00	270.25	7,755.00	1,204.95	-1,759.30	1,881.65	0.00	0.00	0.00
8,600.00	90.00	270.25	7,755.00	1,205.39	-1,859.30	1,981.09	0.00	0.00	0.00
8,700.00	90.00	270.25	7,755.00	1,205.83	-1,959.30	2,080.52	0.00	0.00	0.00
8,800.00	90.00	270.25	7,755.00	1,206.27	-2,059.30	2,179.96	0.00	0.00	0.00
8,900.00	90.00	270.25	7,755.00	1,206.71	-2,159.30	2,279.39	0.00	0.00	0.00
9,000.00	90.00	270.25	7,755.00	1,207.15	-2,259.30	2,378.83	0.00	0.00	0.00
9,100.00	90.00	270.25	7,755.00	1,207.58	-2,359.30	2,478.26	0.00	0.00	0.00
9,200.00	90.00	270.25	7,755.00	1,208.02	-2,459.29	2,577.70	0.00	0.00	0.00
9,300.00	90.00	270.25	7,755.00	1,208.46	-2,559.29	2,677.13	0.00	0.00	0.00
9,400.00	90.00	270.25	7,755.00	1,208.90	-2,659.29	2,776.57	0.00	0.00	0.00
9,500.00	90.00	270.25	7,754.99	1,209.34	-2,759.29	2,876.00	0.00	0.00	0.00
9,600.00	90.00	270.25	7,754.99	1,209.78	-2,859.29	2,975.44	0.00	0.00	0.00
9,700.00	90.00	270.25	7,754.99	1,210.22	-2,959.29	3,074.88	0.00	0.00	0.00
9,800.00	90.00	270.25	7,754.99	1,210.65	-3,059.29	3,174.31	0.00	0.00	0.00
9,900.00	90.00	270.25	7,754.99	1,211.09	-3,159.29	3,273.75	0.00	0.00	0.00
10,000.00	90.00	270.25	7,754.99	1,211.53	-3,259.29	3,373.18	0.00	0.00	0.00
10,100.00	90.00	270.25	7,754.99	1,211.97	-3,359.29	3,472.62	0.00	0.00	0.00
10,200.00	90.00	270.25	7,754.99	1,212.41	-3,459.28	3,572.05	0.00	0.00	0.00
10,300.00	90.00	270.25	7,754.99	1,212.85	-3,559.28	3,671.49	0.00	0.00	0.00
10,400.00	90.00	270.25	7,754.99	1,213.29	-3,659.28	3,770.92	0.00	0.00	0.00
10,500.00	90.00	270.25	7,754.99	1,213.72	-3,759.28	3,870.36	0.00	0.00	0.00
10,600.00	90.00	270.25	7,754.99	1,214.16	-3,859.28	3,969.79	0.00	0.00	0.00
10,700.00	90.00	270.25	7,754.99	1,214.60	-3,959.28	4,069.23	0.00	0.00	0.00
10,800.00	90.00	270.25	7,754.99	1,215.04	-4,059.28	4,168.66	0.00	0.00	0.00
10,900.00	90.00	270.25	7,754.99	1,215.48	-4,159.28	4,268.10	0.00	0.00	0.00
11,000.00	90.00	270.25	7,754.99	1,215.92	-4,259.28	4,367.53	0.00	0.00	0.00
11,100.00	90.00	270.25	7,754.99	1,216.36	-4,359.28	4,466.97	0.00	0.00	0.00
11,200.00	90.00	270.25	7,754.99	1,216.79	-4,459.28	4,566.41	0.00	0.00	0.00
11,300.00	90.00	270.25	7,754.99	1,217.23	-4,559.27	4,665.84	0.00	0.00	0.00
11,400.00	90.00	270.25	7,754.99	1,217.67	-4,659.27	4,765.28	0.00	0.00	0.00
11,500.00	90.00	270.25	7,754.99	1,218.11	-4,759.27	4,864.71	0.00	0.00	0.00
11,600.00	90.00	270.25	7,754.99	1,218.55	-4,859.27	4,964.15	0.00	0.00	0.00
11,700.00	90.00	270.25	7,754.99	1,218.99	-4,959.27	5,063.58	0.00	0.00	0.00
11,800.00	90.00	270.25	7,754.99	1,219.42	-5,059.27	5,163.02	0.00	0.00	0.00
11,900.00	90.00	270.25	7,754.98	1,219.86	-5,159.27	5,262.45	0.00	0.00	0.00
12,000.00	90.00	270.25	7,754.98	1,220.30	-5,259.27	5,361.89	0.00	0.00	0.00

# Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well JAMASO 4-65 5-6-3
<b>Company:</b>	AXIS EXPLORATION	<b>TVD Reference:</b>	KB 25' @ 5610.00usft
<b>Project:</b>	ARAPAHOE COUNTY	<b>MD Reference:</b>	KB 25' @ 5610.00usft
<b>Site:</b>	Sec 4-T4S-R65W	<b>North Reference:</b>	True
<b>Well:</b>	JAMASO 4-65 5-6-3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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	7,754.98	1,220.74	-5,359.27	5,461.32	0.00	0.00	0.00
12,200.00	90.00	270.25	7,754.98	1,221.18	-5,459.27	5,560.76	0.00	0.00	0.00
12,300.00	90.00	270.25	7,754.98	1,221.62	-5,559.26	5,660.19	0.00	0.00	0.00
12,400.00	90.00	270.25	7,754.98	1,222.06	-5,659.26	5,759.63	0.00	0.00	0.00
12,500.00	90.00	270.25	7,754.98	1,222.49	-5,759.26	5,859.07	0.00	0.00	0.00
12,600.00	90.00	270.25	7,754.98	1,222.93	-5,859.26	5,958.50	0.00	0.00	0.00
12,700.00	90.00	270.25	7,754.98	1,223.37	-5,959.26	6,057.94	0.00	0.00	0.00
12,800.00	90.00	270.25	7,754.98	1,223.81	-6,059.26	6,157.37	0.00	0.00	0.00
12,900.00	90.00	270.25	7,754.98	1,224.25	-6,159.26	6,256.81	0.00	0.00	0.00
13,000.00	90.00	270.25	7,754.98	1,224.69	-6,259.26	6,356.24	0.00	0.00	0.00
13,100.00	90.00	270.25	7,754.98	1,225.13	-6,359.26	6,455.68	0.00	0.00	0.00
13,200.00	90.00	270.25	7,754.98	1,225.56	-6,459.26	6,555.11	0.00	0.00	0.00
13,300.00	90.00	270.25	7,754.98	1,226.00	-6,559.26	6,654.55	0.00	0.00	0.00
13,400.00	90.00	270.25	7,754.98	1,226.44	-6,659.25	6,753.98	0.00	0.00	0.00
13,500.00	90.00	270.25	7,754.98	1,226.88	-6,759.25	6,853.42	0.00	0.00	0.00
13,600.00	90.00	270.25	7,754.98	1,227.32	-6,859.25	6,952.85	0.00	0.00	0.00
13,700.00	90.00	270.25	7,754.98	1,227.76	-6,959.25	7,052.29	0.00	0.00	0.00
13,800.00	90.00	270.25	7,754.98	1,228.20	-7,059.25	7,151.73	0.00	0.00	0.00
13,900.00	90.00	270.25	7,754.98	1,228.63	-7,159.25	7,251.16	0.00	0.00	0.00
14,000.00	90.00	270.25	7,754.98	1,229.07	-7,259.25	7,350.60	0.00	0.00	0.00
14,100.00	90.00	270.25	7,754.98	1,229.51	-7,359.25	7,450.03	0.00	0.00	0.00
14,200.00	90.00	270.25	7,754.98	1,229.95	-7,459.25	7,549.47	0.00	0.00	0.00
14,300.00	90.00	270.25	7,754.97	1,230.39	-7,559.25	7,648.90	0.00	0.00	0.00
14,400.00	90.00	270.25	7,754.97	1,230.83	-7,659.24	7,748.34	0.00	0.00	0.00
14,500.00	90.00	270.25	7,754.97	1,231.26	-7,759.24	7,847.77	0.00	0.00	0.00
14,600.00	90.00	270.25	7,754.97	1,231.70	-7,859.24	7,947.21	0.00	0.00	0.00
14,700.00	90.00	270.25	7,754.97	1,232.14	-7,959.24	8,046.64	0.00	0.00	0.00
14,800.00	90.00	270.25	7,754.97	1,232.58	-8,059.24	8,146.08	0.00	0.00	0.00
14,900.00	90.00	270.25	7,754.97	1,233.02	-8,159.24	8,245.51	0.00	0.00	0.00
15,000.00	90.00	270.25	7,754.97	1,233.46	-8,259.24	8,344.95	0.00	0.00	0.00
15,100.00	90.00	270.25	7,754.97	1,233.90	-8,359.24	8,444.39	0.00	0.00	0.00
15,200.00	90.00	270.25	7,754.97	1,234.33	-8,459.24	8,543.82	0.00	0.00	0.00
15,300.00	90.00	270.25	7,754.97	1,234.77	-8,559.24	8,643.26	0.00	0.00	0.00
15,400.00	90.00	270.25	7,754.97	1,235.21	-8,659.23	8,742.69	0.00	0.00	0.00
15,500.00	90.00	270.25	7,754.97	1,235.65	-8,759.23	8,842.13	0.00	0.00	0.00
15,600.00	90.00	270.25	7,754.97	1,236.09	-8,859.23	8,941.56	0.00	0.00	0.00
15,700.00	90.00	270.25	7,754.97	1,236.53	-8,959.23	9,041.00	0.00	0.00	0.00
15,800.00	90.00	270.25	7,754.97	1,236.97	-9,059.23	9,140.43	0.00	0.00	0.00
15,900.00	90.00	270.25	7,754.97	1,237.40	-9,159.23	9,239.87	0.00	0.00	0.00
16,000.00	90.00	270.25	7,754.97	1,237.84	-9,259.23	9,339.30	0.00	0.00	0.00
16,100.00	90.00	270.25	7,754.97	1,238.28	-9,359.23	9,438.74	0.00	0.00	0.00
16,200.00	90.00	270.25	7,754.97	1,238.72	-9,459.23	9,538.17	0.00	0.00	0.00
16,300.00	90.00	270.25	7,754.97	1,239.16	-9,559.23	9,637.61	0.00	0.00	0.00
16,400.00	90.00	270.25	7,754.97	1,239.60	-9,659.23	9,737.04	0.00	0.00	0.00
16,500.00	90.00	270.25	7,754.97	1,240.04	-9,759.22	9,836.48	0.00	0.00	0.00
16,600.00	90.00	270.25	7,754.96	1,240.47	-9,859.22	9,935.92	0.00	0.00	0.00
16,700.00	90.00	270.25	7,754.96	1,240.91	-9,959.22	10,035.35	0.00	0.00	0.00
16,800.00	90.00	270.25	7,754.96	1,241.35	-10,059.22	10,134.79	0.00	0.00	0.00
16,900.00	90.00	270.25	7,754.96	1,241.79	-10,159.22	10,234.22	0.00	0.00	0.00
17,000.00	90.00	270.25	7,754.96	1,242.23	-10,259.22	10,333.66	0.00	0.00	0.00
17,100.00	90.00	270.25	7,754.96	1,242.67	-10,359.22	10,433.09	0.00	0.00	0.00
17,200.00	90.00	270.25	7,754.96	1,243.11	-10,459.22	10,532.53	0.00	0.00	0.00
17,300.00	90.00	270.25	7,754.96	1,243.54	-10,559.22	10,631.96	0.00	0.00	0.00
17,400.00	90.00	270.25	7,754.96	1,243.98	-10,659.22	10,731.40	0.00	0.00	0.00

## Planning Report

<b>Database:</b>	EDT_32Bit_ODBC	<b>Local Co-ordinate Reference:</b>	Well JAMASO 4-65 5-6-3
<b>Company:</b>	AXIS EXPLORATION	<b>TVD Reference:</b>	KB 25' @ 5610.00usft
<b>Project:</b>	ARAPAHOE COUNTY	<b>MD Reference:</b>	KB 25' @ 5610.00usft
<b>Site:</b>	Sec 4-T4S-R65W	<b>North Reference:</b>	True
<b>Well:</b>	JAMASO 4-65 5-6-3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	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	7,754.96	1,244.42	-10,759.21	10,830.83	0.00	0.00	0.00
17,600.00	90.00	270.25	7,754.96	1,244.86	-10,859.21	10,930.27	0.00	0.00	0.00
17,700.00	90.00	270.25	7,754.96	1,245.30	-10,959.21	11,029.70	0.00	0.00	0.00
17,800.00	90.00	270.25	7,754.96	1,245.74	-11,059.21	11,129.14	0.00	0.00	0.00
17,900.00	90.00	270.25	7,754.96	1,246.17	-11,159.21	11,228.58	0.00	0.00	0.00
17,954.76	90.00	270.25	7,754.96	1,246.41	-11,213.97	11,283.03	0.00	0.00	0.00
TD at 17954.76									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
JAMASO 4-65 5-6-3 - PI - hit/miss target - Shape - Point	0.00	0.00	7,755.00	1,246.51	-11,213.97	1,147,911.74	3,220,948.16	39.736696°N	104.714355°W
- plan misses target center by 0.10usft at 17954.76usft MD (7754.96 TVD, 1246.41 N, -11213.97 E)									
JAMASO 4-65 5-6-3 - LF - plan hits target center - Point	0.00	0.00	7,755.00	1,203.96	-1,533.30	1,147,959.32	3,230,628.81	39.736586°N	104.679933°W

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
293.00	293.00	Denver				
877.43	877.00	Upper Arapahoe				
1,168.73	1,165.00	Lower Arapahoe				
1,739.52	1,718.00	Laramie - Fox Hills				
2,000.22	1,970.00	Pierre Shale (Base of Fox Hills)				
5,729.57	5,575.00	Shannon Sandstone Member				
7,930.34	7,655.00	Sharon Springs Shale				
8,072.68	7,720.00	Niobrara Formation				
8,122.15	7,735.00	Niobrara A Chalk				
8,166.78	7,745.00	Niobrara A Landing Point				

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
600.00	600.00	0.00	0.00	Start Build 2.00
1,341.88	1,333.61	74.62	-59.64	Start 5260.17 hold at 1341.88 MD
6,602.05	6,418.39	1,126.83	-900.66	Start Drop -2.00
7,343.93	7,152.00	1,201.45	-960.30	Start 30.00 hold at 7343.92 MD
7,373.93	7,182.00	1,201.45	-960.30	Start DLS 10.00 TFO 270.25
8,273.99	7,755.00	1,203.96	-1,533.30	Start 9680.77 hold at 8273.99 MD
17,954.76	7,754.96	1,246.41	-11,213.97	TD at 17954.76