

AXIS EXPLORATION

ARAPAHOE COUNTY

Sec 4-T4S-R65W

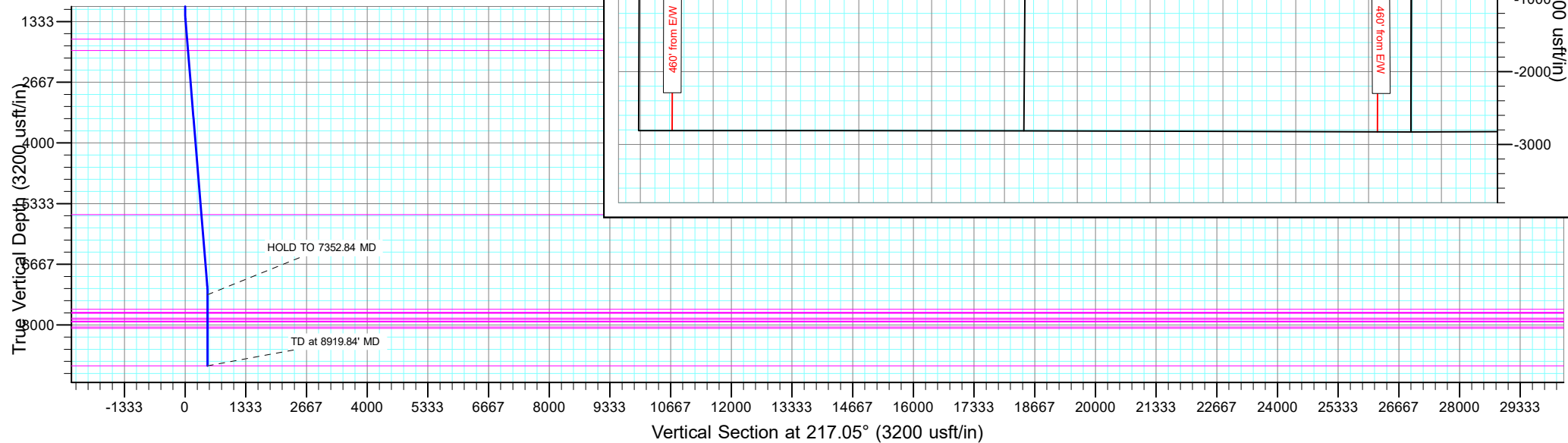
JAMASO 4-65 5-6-7

JAMASO 4-65 5-6-7 TMP

Plan: Design #1

Standard Planning Report

02 May, 2018



Planning Report

Database:	EDT_32Bit_ODBC	Local Co-ordinate Reference:	Well JAMASO 4-65 5-6-7
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 5-6-7	Survey Calculation Method:	Minimum Curvature
Wellbore:	JAMASO 4-65 5-6-7 TMP		
Design:	Design #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 5-6-7					
Well Position	+N/-S	-2,428.58 usft	Northing:	1,146,788.63 usft	Latitude:	39° 44' 0.060 N
	+E/-W	404.72 usft	Easting:	3,231,506.77 usft	Longitude:	104° 40' 36.660 W
Position Uncertainty	0.00 usft		Wellhead Elevation:		Ground Level:	5,585.00 usft

Wellbore	JAMASO 4-65 5-6-7 TMP				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/2/2018	8.01	66.31	51,947.48477017

Design	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	7,352.84
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	217.05

Plan Survey Tool Program	Date	5/2/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	7,352.84	8,919.84	Design #1 (JAMASO 4-65 5-6-7 T	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
7,352.84	0.00	0.00	7,333.00	-392.25	-296.07	0.00	0.00	0.00	0.00	
8,919.84	0.00	0.00	8,900.00	-392.25	-296.07	0.00	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 5-6-7	Survey Calculation Method:	Minimum Curvature
Wellbore:	JAMASO 4-65 5-6-7 TMP		
Design:	Design #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
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
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	2.00	217.05	1,199.98	-1.39	-1.05	1.75	2.00	2.00	0.00
1,300.00	4.00	217.05	1,299.84	-5.57	-4.20	6.98	2.00	2.00	0.00
1,334.18	4.68	217.05	1,333.91	-7.63	-5.76	9.57	2.00	2.00	0.00
1,400.00	4.68	217.05	1,399.52	-11.92	-9.00	14.94	0.00	0.00	0.00
1,500.00	4.68	217.05	1,499.19	-18.44	-13.92	23.11	0.00	0.00	0.00
1,600.00	4.68	217.05	1,598.85	-24.96	-18.84	31.27	0.00	0.00	0.00
1,700.00	4.68	217.05	1,698.52	-31.48	-23.76	39.44	0.00	0.00	0.00
1,719.55	4.68	217.05	1,718.00	-32.75	-24.72	41.03	0.00	0.00	0.00
Laramie - Fox Hills									
1,800.00	4.68	217.05	1,798.18	-37.99	-28.68	47.60	0.00	0.00	0.00
1,900.00	4.68	217.05	1,897.85	-44.51	-33.60	55.77	0.00	0.00	0.00
1,972.39	4.68	217.05	1,970.00	-49.23	-37.16	61.68	0.00	0.00	0.00
Pierre Shale (Base of Fox Hills)									
2,000.00	4.68	217.05	1,997.52	-51.03	-38.52	63.93	0.00	0.00	0.00
2,100.00	4.68	217.05	2,097.18	-57.54	-43.43	72.10	0.00	0.00	0.00
2,200.00	4.68	217.05	2,196.85	-64.06	-48.35	80.26	0.00	0.00	0.00
2,300.00	4.68	217.05	2,296.51	-70.58	-53.27	88.43	0.00	0.00	0.00
2,400.00	4.68	217.05	2,396.18	-77.10	-58.19	96.59	0.00	0.00	0.00
2,500.00	4.68	217.05	2,495.85	-83.61	-63.11	104.76	0.00	0.00	0.00
2,600.00	4.68	217.05	2,595.51	-90.13	-68.03	112.92	0.00	0.00	0.00
2,700.00	4.68	217.05	2,695.18	-96.65	-72.95	121.09	0.00	0.00	0.00
2,800.00	4.68	217.05	2,794.84	-103.16	-77.87	129.25	0.00	0.00	0.00
2,900.00	4.68	217.05	2,894.51	-109.68	-82.79	137.42	0.00	0.00	0.00
3,000.00	4.68	217.05	2,994.18	-116.20	-87.71	145.58	0.00	0.00	0.00
3,100.00	4.68	217.05	3,093.84	-122.72	-92.63	153.75	0.00	0.00	0.00
3,200.00	4.68	217.05	3,193.51	-129.23	-97.54	161.91	0.00	0.00	0.00
3,300.00	4.68	217.05	3,293.18	-135.75	-102.46	170.08	0.00	0.00	0.00
3,400.00	4.68	217.05	3,392.84	-142.27	-107.38	178.24	0.00	0.00	0.00
3,500.00	4.68	217.05	3,492.51	-148.78	-112.30	186.41	0.00	0.00	0.00
3,600.00	4.68	217.05	3,592.17	-155.30	-117.22	194.57	0.00	0.00	0.00
3,700.00	4.68	217.05	3,691.84	-161.82	-122.14	202.74	0.00	0.00	0.00
3,800.00	4.68	217.05	3,791.51	-168.33	-127.06	210.90	0.00	0.00	0.00
3,900.00	4.68	217.05	3,891.17	-174.85	-131.98	219.07	0.00	0.00	0.00
4,000.00	4.68	217.05	3,990.84	-181.37	-136.90	227.23	0.00	0.00	0.00
4,100.00	4.68	217.05	4,090.50	-187.89	-141.82	235.40	0.00	0.00	0.00
4,200.00	4.68	217.05	4,190.17	-194.40	-146.74	243.57	0.00	0.00	0.00
4,300.00	4.68	217.05	4,289.84	-200.92	-151.65	251.73	0.00	0.00	0.00
4,400.00	4.68	217.05	4,389.50	-207.44	-156.57	259.90	0.00	0.00	0.00
4,500.00	4.68	217.05	4,489.17	-213.95	-161.49	268.06	0.00	0.00	0.00
4,600.00	4.68	217.05	4,588.83	-220.47	-166.41	276.23	0.00	0.00	0.00
4,700.00	4.68	217.05	4,688.50	-226.99	-171.33	284.39	0.00	0.00	0.00
4,800.00	4.68	217.05	4,788.17	-233.51	-176.25	292.56	0.00	0.00	0.00

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Wellbore:	JAMASO 4-65 5-6-7 TMP		
Design:	Design #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)
4,900.00	4.68	217.05	4,887.83	-240.02	-181.17	300.72	0.00	0.00	0.00
5,000.00	4.68	217.05	4,987.50	-246.54	-186.09	308.89	0.00	0.00	0.00
5,100.00	4.68	217.05	5,087.17	-253.06	-191.01	317.05	0.00	0.00	0.00
5,200.00	4.68	217.05	5,186.83	-259.57	-195.93	325.22	0.00	0.00	0.00
5,300.00	4.68	217.05	5,286.50	-266.09	-200.85	333.38	0.00	0.00	0.00
5,400.00	4.68	217.05	5,386.16	-272.61	-205.76	341.55	0.00	0.00	0.00
5,500.00	4.68	217.05	5,485.83	-279.13	-210.68	349.71	0.00	0.00	0.00
5,589.47	4.68	217.05	5,575.00	-284.96	-215.08	357.02	0.00	0.00	0.00
Shannon Sandstone Member									
5,600.00	4.68	217.05	5,585.50	-285.64	-215.60	357.88	0.00	0.00	0.00
5,700.00	4.68	217.05	5,685.16	-292.16	-220.52	366.04	0.00	0.00	0.00
5,800.00	4.68	217.05	5,784.83	-298.68	-225.44	374.21	0.00	0.00	0.00
5,900.00	4.68	217.05	5,884.49	-305.19	-230.36	382.37	0.00	0.00	0.00
6,000.00	4.68	217.05	5,984.16	-311.71	-235.28	390.54	0.00	0.00	0.00
6,100.00	4.68	217.05	6,083.83	-318.23	-240.20	398.70	0.00	0.00	0.00
6,200.00	4.68	217.05	6,183.49	-324.75	-245.12	406.87	0.00	0.00	0.00
6,300.00	4.68	217.05	6,283.16	-331.26	-250.04	415.03	0.00	0.00	0.00
6,400.00	4.68	217.05	6,382.82	-337.78	-254.96	423.20	0.00	0.00	0.00
6,500.00	4.68	217.05	6,482.49	-344.30	-259.87	431.36	0.00	0.00	0.00
6,600.00	4.68	217.05	6,582.16	-350.81	-264.79	439.53	0.00	0.00	0.00
6,700.00	4.68	217.05	6,681.82	-357.33	-269.71	447.69	0.00	0.00	0.00
6,800.00	4.68	217.05	6,781.49	-363.85	-274.63	455.86	0.00	0.00	0.00
6,900.00	4.68	217.05	6,881.15	-370.36	-279.55	464.02	0.00	0.00	0.00
7,000.00	4.68	217.05	6,980.82	-376.88	-284.47	472.19	0.00	0.00	0.00
7,100.00	4.68	217.05	7,080.49	-383.40	-289.39	480.35	0.00	0.00	0.00
7,118.66	4.68	217.05	7,099.09	-384.62	-290.31	481.88	0.00	0.00	0.00
7,200.00	3.06	217.05	7,180.24	-389.00	-293.61	487.37	2.00	-2.00	0.00
7,300.00	1.06	217.05	7,280.17	-391.86	-295.78	490.96	2.00	-2.00	0.00
7,352.84	0.00	0.00	7,333.00	-392.25	-296.07	491.44	2.00	-2.00	0.00
HOLD TO 7352.84 MD									
7,400.00	0.00	0.00	7,380.16	-392.25	-296.07	491.44	0.00	0.00	0.00
7,500.00	0.00	0.00	7,480.16	-392.25	-296.07	491.44	0.00	0.00	0.00
7,600.00	0.00	0.00	7,580.16	-392.25	-296.07	491.44	0.00	0.00	0.00
7,674.84	0.00	0.00	7,655.00	-392.25	-296.07	491.44	0.00	0.00	0.00
Sharon Springs Shale									
7,700.00	0.00	0.00	7,680.16	-392.25	-296.07	491.44	0.00	0.00	0.00
7,739.84	0.00	0.00	7,720.00	-392.25	-296.07	491.44	0.00	0.00	0.00
Niobrara Formation									
7,754.84	0.00	0.00	7,735.00	-392.25	-296.07	491.44	0.00	0.00	0.00
Niobrara A Chalk									
7,764.84	0.00	0.00	7,745.00	-392.25	-296.07	491.44	0.00	0.00	0.00
Niobrara A Landing Point									
7,800.00	0.00	0.00	7,780.16	-392.25	-296.07	491.44	0.00	0.00	0.00
7,868.84	0.00	0.00	7,849.00	-392.25	-296.07	491.44	0.00	0.00	0.00
Niobrara B Chalk									
7,898.84	0.00	0.00	7,879.00	-392.25	-296.07	491.44	0.00	0.00	0.00
Niobrara B Landing Point									
7,900.00	0.00	0.00	7,880.16	-392.25	-296.07	491.44	0.00	0.00	0.00
7,935.84	0.00	0.00	7,916.00	-392.25	-296.07	491.44	0.00	0.00	0.00
Niobrara C Chalk									
7,955.84	0.00	0.00	7,936.00	-392.25	-296.07	491.44	0.00	0.00	0.00
Niobrara C Landing Point									
8,000.00	0.00	0.00	7,980.16	-392.25	-296.07	491.44	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 5-6-7	Survey Calculation Method:	Minimum Curvature
Wellbore:	JAMASO 4-65 5-6-7 TMP		
Design:	Design #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)
8,063.84	0.00	0.00	8,044.00	-392.25	-296.07	491.44	0.00	0.00	0.00
Ft Hays									
8,093.84	0.00	0.00	8,074.00	-392.25	-296.07	491.44	0.00	0.00	0.00
Carlile Shale									
8,100.00	0.00	0.00	8,080.16	-392.25	-296.07	491.44	0.00	0.00	0.00
8,200.00	0.00	0.00	8,180.16	-392.25	-296.07	491.44	0.00	0.00	0.00
8,300.00	0.00	0.00	8,280.16	-392.25	-296.07	491.44	0.00	0.00	0.00
8,400.00	0.00	0.00	8,380.16	-392.25	-296.07	491.44	0.00	0.00	0.00
8,500.00	0.00	0.00	8,480.16	-392.25	-296.07	491.44	0.00	0.00	0.00
8,600.00	0.00	0.00	8,580.16	-392.25	-296.07	491.44	0.00	0.00	0.00
8,700.00	0.00	0.00	8,680.16	-392.25	-296.07	491.44	0.00	0.00	0.00
8,800.00	0.00	0.00	8,780.16	-392.25	-296.07	491.44	0.00	0.00	0.00
8,900.00	0.00	0.00	8,880.16	-392.25	-296.07	491.44	0.00	0.00	0.00
8,919.84	0.00	0.00	8,900.00	-392.25	-296.07	491.44	0.00	0.00	0.00
TD at 8919.84' MD - GREENHORN									

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,719.55	1,718.00	Laramie - Fox Hills			
1,972.39	1,970.00	Pierre Shale (Base of Fox Hills)			
5,589.47	5,575.00	Shannon Sandstone Member			
7,674.84	7,655.00	Sharon Springs Shale			
7,739.84	7,720.00	Niobrara Formation			
7,754.84	7,735.00	Niobrara A Chalk			
7,764.84	7,745.00	Niobrara A Landing Point			
7,868.84	7,849.00	Niobrara B Chalk			
7,898.84	7,879.00	Niobrara B Landing Point			
7,935.84	7,916.00	Niobrara C Chalk			
7,955.84	7,936.00	Niobrara C Landing Point			
8,063.84	8,044.00	Ft Hays			
8,093.84	8,074.00	Carlile Shale			
8,919.84	8,900.00	GREENHORN		0.00	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,352.84	7,333.00	-392.25	-296.07	HOLD TO 7352.84 MD
8,919.84	8,900.00	-392.25	-296.07	TD at 8919.84' MD