

Axis Exploration

Weld County, CO (NAD83)

Sec 04-T04S-R65W Jamaso Pad

Jamaso 4-65 5-6-09

Wellbore #1

Design: Wellbore #1

Standard Survey Report

15 August, 2019

Survey Report

Company:	Axis Exploration	Local Co-ordinate Reference:	Well Jamaso 4-65 5-6-09
Project:	Weld County, CO (NAD83)	TVD Reference:	KB @ 5616.00usft (Patterson 340)
Site:	Sec 04-T04S-R65W Jamaso Pad	MD Reference:	KB @ 5616.00usft (Patterson 340)
Well:	Jamaso 4-65 5-6-09	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Project	Weld County, CO (NAD83),		
Map System:	US State Plane 1983	System Datum:	Ground Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		Sec 04-T04S-R65W Jamaso Pad						
Site Position:		Northing:	1,149,214.44	usft	Latitude:	39.740020		
From:	Map	Easting:	3,231,079.27	usft	Longitude:	-104.678290		
Position Uncertainty:	0.00	usft	Slot Radius:	13-3/16	"	Grid Convergence:	0.53	°

Well	Jamaso 4-65 5-6-09					
Well Position	+N/-S	0.00 usft	Northing:	1,146,770.71 usft	Latitude:	39.733281
	+E/-W	0.00 usft	Easting:	3,232,285.75 usft	Longitude:	-104.674081
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,591.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/5/2019	7.89	66.28	51,774.59307340

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	264.30	

Survey Program	Date	8/8/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
135.00	2,578.00	Surface Surveys (Wellbore #1)	MWD	MWD - Standard	
2,700.00	18,055.00	Atlas MWD Surveys (Wellbore #1)	MWD	MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
135.00	0.48	64.93	135.00	0.24	0.51	-0.53	0.36	0.36	0.00	
223.00	0.48	65.28	223.00	0.55	1.18	-1.23	0.00	0.00	0.40	
310.00	0.66	44.10	309.99	1.06	1.86	-1.96	0.32	0.21	-24.34	
397.00	0.53	46.12	396.99	1.70	2.50	-2.66	0.15	-0.15	2.32	
484.00	0.83	34.17	483.98	2.50	3.14	-3.38	0.38	0.34	-13.74	
572.00	0.44	214.26	571.98	2.75	3.31	-3.57	1.44	-0.44	-204.44	
659.00	0.70	209.51	658.97	2.01	2.86	-3.05	0.30	0.30	-5.46	
746.00	1.14	210.21	745.96	0.80	2.16	-2.23	0.51	0.51	0.80	
833.00	2.33	215.05	832.92	-1.40	0.71	-0.57	1.38	1.37	5.56	

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Site:	Sec 04-T04S-R65W Jamaso Pad	MD Reference:	KB @ 5616.00usft (Patterson 340)
Well:	Jamaso 4-65 5-6-09	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
921.00	3.21	217.25	920.82	-4.82	-1.81	2.28	1.01	1.00	2.50
1,008.00	6.06	222.61	1,007.52	-10.14	-6.39	7.37	3.31	3.28	6.16
1,095.00	8.52	222.52	1,093.81	-18.27	-13.86	15.60	2.83	2.83	-0.10
1,182.00	10.06	221.99	1,179.67	-28.67	-23.30	26.03	1.77	1.77	-0.61
1,270.00	11.47	222.70	1,266.12	-40.81	-34.37	38.26	1.61	1.60	0.81
1,357.00	12.70	228.58	1,351.19	-53.50	-47.41	52.49	2.00	1.41	6.76
1,444.00	15.21	224.45	1,435.62	-67.98	-62.58	69.02	3.10	2.89	-4.75
1,531.00	16.22	224.19	1,519.37	-84.84	-79.04	87.08	1.16	1.16	-0.30
1,619.00	16.13	222.78	1,603.88	-102.62	-95.91	105.63	0.46	-0.10	-1.60
1,706.00	16.52	224.80	1,687.38	-120.27	-112.83	124.22	0.79	0.45	2.32
1,793.00	17.49	225.42	1,770.57	-138.22	-130.86	143.95	1.13	1.11	0.71
1,880.00	16.87	223.49	1,853.69	-156.56	-148.86	163.68	0.97	-0.71	-2.22
1,968.00	16.57	221.46	1,937.97	-175.22	-165.96	182.55	0.75	-0.34	-2.31
2,055.00	15.16	224.72	2,021.66	-192.60	-182.18	200.41	1.92	-1.62	3.75
2,142.00	14.59	223.84	2,105.74	-208.59	-197.77	217.52	0.70	-0.66	-1.01
2,229.00	14.33	224.01	2,189.99	-224.24	-212.84	234.07	0.30	-0.30	0.20
2,317.00	14.15	222.96	2,275.28	-239.94	-227.74	250.45	0.36	-0.20	-1.19
2,404.00	14.55	220.50	2,359.57	-256.04	-242.08	266.33	0.84	0.46	-2.83
2,491.00	15.82	223.22	2,443.53	-272.99	-257.30	283.16	1.67	1.46	3.13
2,578.00	16.30	227.70	2,527.14	-289.85	-274.45	301.90	1.53	0.55	5.15
Tie into Surface Surveys									
2,700.00	16.75	226.64	2,644.10	-313.44	-299.90	329.56	0.44	0.37	-0.87
First MWD Survey @ 2700' MD									
2,795.00	16.08	225.63	2,735.23	-332.04	-319.26	350.67	0.77	-0.71	-1.06
2,890.00	15.07	224.26	2,826.74	-350.09	-337.28	370.40	1.13	-1.06	-1.44
2,985.00	16.57	222.76	2,918.14	-368.88	-355.10	390.00	1.64	1.58	-1.58
3,081.00	15.47	222.01	3,010.41	-388.44	-372.96	409.72	1.17	-1.15	-0.78
3,176.00	14.49	221.00	3,102.18	-406.83	-389.24	427.74	1.07	-1.03	-1.06
3,271.00	14.54	225.58	3,194.15	-424.14	-405.55	445.69	1.21	0.05	4.82
3,366.00	16.35	222.37	3,285.71	-442.37	-423.08	464.95	2.11	1.91	-3.38
3,461.00	15.16	221.70	3,377.14	-461.52	-440.36	484.04	1.27	-1.25	-0.71
3,556.00	16.92	222.19	3,468.44	-481.04	-457.91	503.45	1.86	1.85	0.52
3,651.00	15.42	221.09	3,559.68	-500.81	-475.49	522.91	1.61	-1.58	-1.16
3,746.00	15.95	222.94	3,651.14	-519.88	-492.69	541.91	0.77	0.56	1.95
3,841.00	14.14	222.50	3,742.88	-537.99	-509.42	560.36	1.91	-1.91	-0.46
3,936.00	16.26	221.31	3,834.56	-556.54	-526.04	578.74	2.26	2.23	-1.25
4,031.00	14.32	220.96	3,926.19	-575.40	-542.52	597.02	2.04	-2.04	-0.37
4,127.00	15.82	222.67	4,018.88	-593.99	-559.18	615.44	1.63	1.56	1.78
4,222.00	13.48	221.75	4,110.79	-611.78	-575.33	633.28	2.48	-2.46	-0.97
4,317.00	16.35	224.53	4,202.58	-629.57	-592.08	651.72	3.11	3.02	2.93
4,412.00	13.96	222.10	4,294.27	-647.61	-609.14	670.49	2.60	-2.52	-2.56
4,507.00	15.91	217.39	4,386.06	-666.46	-624.74	687.87	2.42	2.05	-4.96
4,602.00	13.88	214.17	4,477.87	-686.24	-639.04	704.08	2.31	-2.14	-3.39

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Survey									
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4,696.00	15.86	215.62	4,568.71	-706.01	-652.86	719.79	2.14	2.11	1.54
4,792.00	15.11	218.75	4,661.23	-726.43	-668.33	737.21	1.17	-0.78	3.26
4,886.00	16.22	220.38	4,751.74	-745.99	-684.51	755.25	1.27	1.18	1.73
4,980.00	13.74	219.28	4,842.54	-764.63	-700.08	772.60	2.66	-2.64	-1.17
5,076.00	13.65	224.57	4,935.81	-781.53	-715.25	789.37	1.31	-0.09	5.51
5,171.00	16.84	224.79	5,027.46	-799.28	-732.81	808.62	3.36	3.36	0.23
5,267.00	15.07	225.10	5,119.75	-817.96	-751.45	829.02	1.85	-1.84	0.32
5,362.00	16.53	220.21	5,211.17	-837.00	-768.93	848.30	2.08	1.54	-5.15
5,457.00	14.27	218.27	5,302.75	-856.52	-784.91	866.14	2.44	-2.38	-2.04
5,552.00	16.48	225.63	5,394.35	-875.14	-801.79	884.79	3.10	2.33	7.75
5,647.00	15.29	225.32	5,485.72	-893.37	-820.33	905.05	1.26	-1.25	-0.33
5,742.00	17.85	223.64	5,576.77	-912.72	-839.29	925.84	2.74	2.69	-1.77
5,837.00	16.04	223.07	5,667.64	-932.84	-858.30	946.76	1.91	-1.91	-0.60
5,954.00	13.48	220.38	5,780.77	-955.04	-878.18	968.74	2.26	-2.19	-2.30
6,049.00	15.07	226.73	5,872.84	-971.95	-894.35	986.51	2.35	1.67	6.68
6,144.00	15.25	221.26	5,964.54	-989.80	-911.58	1,005.43	1.52	0.19	-5.76
6,238.00	14.67	220.29	6,055.36	-1,008.18	-927.43	1,023.03	0.67	-0.62	-1.03
6,333.00	16.31	221.13	6,146.90	-1,027.40	-943.99	1,041.41	1.74	1.73	0.88
6,429.00	14.67	219.15	6,239.41	-1,046.98	-960.53	1,059.82	1.79	-1.71	-2.06
6,524.00	16.39	214.70	6,330.94	-1,067.33	-975.75	1,076.99	2.20	1.81	-4.68
6,619.00	14.58	214.21	6,422.49	-1,088.24	-990.11	1,093.35	1.91	-1.91	-0.52
6,713.00	11.67	214.43	6,514.03	-1,105.87	-1,002.14	1,107.08	3.10	-3.10	0.23
6,809.00	12.28	221.26	6,607.94	-1,121.56	-1,014.36	1,120.80	1.61	0.64	7.11
6,903.00	10.38	217.21	6,700.11	-1,135.82	-1,026.08	1,133.87	2.19	-2.02	-4.31
6,999.00	7.73	227.57	6,794.91	-1,147.06	-1,036.07	1,144.94	3.23	-2.76	10.79
7,094.00	4.82	224.61	6,889.33	-1,154.22	-1,043.59	1,153.13	3.08	-3.06	-3.12
7,189.00	2.12	175.39	6,984.16	-1,158.81	-1,046.26	1,156.24	3.99	-2.84	-51.81
7,284.00	0.84	132.60	7,079.13	-1,161.03	-1,045.60	1,155.81	1.69	-1.35	-45.04
7,379.00	1.37	134.72	7,174.11	-1,162.30	-1,044.28	1,154.62	0.56	0.56	2.23
7,474.00	0.88	217.03	7,269.10	-1,163.69	-1,043.92	1,154.39	1.61	-0.52	86.64
7,569.00	13.74	273.79	7,363.16	-1,163.52	-1,055.67	1,166.07	13.98	13.54	59.75
7,664.00	20.99	280.84	7,453.78	-1,159.57	-1,083.67	1,193.54	7.93	7.63	7.42
7,759.00	27.80	270.49	7,540.28	-1,156.18	-1,122.60	1,231.94	8.44	7.17	-10.89
7,783.02	30.00	270.81	7,561.31	-1,156.04	-1,134.21	1,243.48	9.18	9.15	1.33
30° Inclination @ 7783.02' MD									
7,854.00	36.50	271.55	7,620.64	-1,155.22	-1,173.10	1,282.09	9.18	9.16	1.04
7,885.26	37.97	271.39	7,645.53	-1,154.74	-1,192.00	1,300.86	4.70	4.69	-0.51
Cross @ 7885.26' MD									
7,949.00	40.96	271.10	7,694.73	-1,153.86	-1,232.50	1,341.07	4.70	4.70	-0.46
8,044.00	48.17	270.27	7,762.37	-1,153.09	-1,299.11	1,407.28	7.61	7.59	-0.87
8,139.00	59.35	271.10	7,818.44	-1,152.14	-1,375.61	1,483.30	11.79	11.77	0.87
8,205.96	70.00	270.98	7,847.04	-1,151.05	-1,436.04	1,543.32	15.91	15.91	-0.18
70° Inclination @ 8205.96' MD									
8,234.00	74.46	270.93	7,855.60	-1,150.60	-1,462.73	1,569.83	15.91	15.91	-0.17

Survey Report

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Site:	Sec 04-T04S-R65W Jamaso Pad	MD Reference:	KB @ 5616.00usft (Patterson 340)
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8,330.00	85.20	272.21	7,872.53	-1,148.00	-1,557.04	1,663.42	11.26	11.19	1.33
8,425.00	89.09	271.37	7,877.26	-1,145.04	-1,651.86	1,757.47	4.19	4.09	-0.88
8,520.00	90.81	271.06	7,877.34	-1,143.02	-1,746.84	1,851.78	1.84	1.81	-0.33
8,615.00	89.48	270.62	7,877.10	-1,141.63	-1,841.82	1,946.16	1.47	-1.40	-0.46
8,710.00	89.62	269.91	7,877.85	-1,141.19	-1,936.82	2,040.64	0.76	0.15	-0.75
8,805.00	89.17	270.00	7,878.85	-1,141.27	-2,031.81	2,135.17	0.48	-0.47	0.09
8,901.00	88.42	269.30	7,880.87	-1,141.85	-2,127.79	2,230.73	1.07	-0.78	-0.73
8,996.00	89.31	269.39	7,882.75	-1,142.94	-2,222.76	2,325.34	0.94	0.94	0.09
9,091.00	88.91	269.30	7,884.22	-1,144.02	-2,317.74	2,419.96	0.43	-0.42	-0.09
9,185.00	90.85	270.53	7,884.42	-1,144.16	-2,411.74	2,513.50	2.44	2.06	1.31
9,281.00	90.37	270.88	7,883.40	-1,142.98	-2,507.72	2,608.90	0.62	-0.50	0.36
9,376.00	89.66	270.00	7,883.37	-1,142.25	-2,602.72	2,703.35	1.19	-0.75	-0.93
9,471.00	90.54	270.31	7,883.21	-1,141.99	-2,697.72	2,797.85	0.98	0.93	0.33
9,566.00	89.66	270.58	7,883.04	-1,141.26	-2,792.71	2,892.30	0.97	-0.93	0.28
9,661.00	90.68	271.28	7,882.76	-1,139.72	-2,887.70	2,986.67	1.30	1.07	0.74
9,756.00	90.41	271.06	7,881.86	-1,137.78	-2,982.68	3,080.98	0.37	-0.28	-0.23
9,851.00	91.07	271.02	7,880.63	-1,136.05	-3,077.65	3,175.31	0.70	0.69	-0.04
9,946.00	89.26	270.14	7,880.36	-1,135.09	-3,172.64	3,269.74	2.12	-1.91	-0.93
10,041.00	89.04	270.22	7,881.77	-1,134.79	-3,267.63	3,364.23	0.25	-0.23	0.08
10,136.00	88.25	269.30	7,884.01	-1,135.19	-3,362.60	3,458.77	1.28	-0.83	-0.97
10,231.00	90.90	269.43	7,884.72	-1,136.24	-3,457.58	3,553.38	2.79	2.79	0.14
10,326.00	90.68	268.55	7,883.41	-1,137.92	-3,552.56	3,648.06	0.95	-0.23	-0.93
10,421.00	89.31	270.18	7,883.42	-1,138.97	-3,647.55	3,742.68	2.24	-1.44	1.72
10,515.00	89.70	270.44	7,884.23	-1,138.46	-3,741.54	3,836.16	0.50	0.41	0.28
10,610.00	90.23	270.31	7,884.29	-1,137.84	-3,836.54	3,930.62	0.57	0.56	-0.14
10,705.00	89.31	269.65	7,884.67	-1,137.87	-3,931.54	4,025.15	1.19	-0.97	-0.69
10,800.00	90.01	269.08	7,885.23	-1,138.92	-4,026.53	4,119.78	0.95	0.74	-0.60
10,895.00	90.72	268.77	7,884.63	-1,140.71	-4,121.51	4,214.47	0.82	0.75	-0.33
10,991.00	87.80	269.39	7,885.87	-1,142.25	-4,217.48	4,310.12	3.11	-3.04	0.65
11,086.00	88.07	268.64	7,889.29	-1,143.88	-4,312.40	4,404.73	0.84	0.28	-0.79
11,181.00	88.51	268.15	7,892.12	-1,146.54	-4,407.32	4,499.45	0.69	0.46	-0.52
11,276.00	88.86	267.80	7,894.30	-1,149.90	-4,502.24	4,594.22	0.52	0.37	-0.37
11,371.00	87.36	270.18	7,897.44	-1,151.57	-4,597.16	4,688.84	2.96	-1.58	2.51
11,466.00	87.63	269.69	7,901.59	-1,151.68	-4,692.07	4,783.29	0.59	0.28	-0.52
11,561.00	87.72	268.95	7,905.44	-1,152.80	-4,786.99	4,877.85	0.78	0.09	-0.78
11,656.00	88.64	272.07	7,908.46	-1,151.96	-4,881.92	4,972.23	3.42	0.97	3.28
11,751.00	89.97	272.38	7,909.61	-1,148.27	-4,976.84	5,066.32	1.44	1.40	0.33
11,846.00	87.67	271.32	7,911.57	-1,145.20	-5,071.76	5,160.46	2.67	-2.42	-1.12
11,941.00	88.11	272.07	7,915.07	-1,142.40	-5,166.66	5,254.61	0.91	0.46	0.79
12,036.00	88.82	271.68	7,917.61	-1,139.29	-5,261.57	5,348.74	0.85	0.75	-0.41
12,132.00	89.13	271.37	7,919.33	-1,136.73	-5,357.52	5,443.97	0.46	0.32	-0.32
12,227.00	89.13	270.00	7,920.77	-1,135.60	-5,452.50	5,538.36	1.44	0.00	-1.44
12,322.00	89.75	270.80	7,921.70	-1,134.94	-5,547.49	5,632.82	1.07	0.65	0.84

Survey Report

Company:	Axis Exploration	Local Co-ordinate Reference:	Well Jamaso 4-65 5-6-09
Project:	Weld County, CO (NAD83)	TVD Reference:	KB @ 5616.00usft (Patterson 340)
Site:	Sec 04-T04S-R65W Jamaso Pad	MD Reference:	KB @ 5616.00usft (Patterson 340)
Well:	Jamaso 4-65 5-6-09	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,417.00	89.75	270.31	7,922.12	-1,134.02	-5,642.49	5,727.25	0.52	0.00	-0.52
12,512.00	89.53	268.55	7,922.71	-1,134.96	-5,737.48	5,821.86	1.87	-0.23	-1.85
12,608.00	89.44	267.93	7,923.58	-1,137.91	-5,833.43	5,917.63	0.65	-0.09	-0.65
12,703.00	89.62	267.49	7,924.35	-1,141.70	-5,928.35	6,012.46	0.50	0.19	-0.46
12,798.00	89.97	267.18	7,924.69	-1,146.12	-6,023.24	6,107.33	0.49	0.37	-0.33
12,893.00	89.09	269.25	7,925.47	-1,149.08	-6,118.19	6,202.09	2.37	-0.93	2.18
12,988.00	89.22	272.21	7,926.88	-1,147.87	-6,213.16	6,296.48	3.12	0.14	3.12
13,083.00	89.79	270.71	7,927.70	-1,145.45	-6,308.12	6,390.73	1.69	0.60	-1.58
13,178.00	90.32	270.66	7,927.60	-1,144.31	-6,403.11	6,485.14	0.56	0.56	-0.05
13,273.90	88.60	270.44	7,928.51	-1,143.39	-6,499.00	6,580.46	1.81	-1.79	-0.23
Cross @ 13273.90' MD									
13,274.00	88.60	270.44	7,928.51	-1,143.39	-6,499.10	6,580.56	1.81	-1.79	-0.23
13,369.00	88.33	269.69	7,931.05	-1,143.29	-6,594.07	6,675.04	0.84	-0.28	-0.79
13,464.00	88.42	269.65	7,933.75	-1,143.83	-6,689.03	6,769.59	0.10	0.09	-0.04
13,559.00	89.04	268.99	7,935.85	-1,144.96	-6,784.00	6,864.20	0.95	0.65	-0.69
13,655.00	89.35	270.75	7,937.20	-1,145.18	-6,879.98	6,959.73	1.86	0.32	1.83
13,750.00	89.84	269.78	7,937.87	-1,144.74	-6,974.98	7,054.21	1.14	0.52	-1.02
13,845.00	90.54	269.56	7,937.56	-1,145.29	-7,069.98	7,148.79	0.77	0.74	-0.23
13,940.00	90.59	272.12	7,936.62	-1,143.89	-7,164.95	7,243.16	2.70	0.05	2.69
14,035.00	90.28	269.83	7,935.90	-1,142.28	-7,259.93	7,337.51	2.43	-0.33	-2.41
14,130.00	89.17	270.18	7,936.36	-1,142.27	-7,354.93	7,432.03	1.23	-1.17	0.37
14,224.00	89.48	269.69	7,937.46	-1,142.37	-7,448.92	7,525.57	0.62	0.33	-0.52
14,319.00	90.32	268.72	7,937.63	-1,143.69	-7,543.91	7,620.22	1.35	0.88	-1.02
14,415.00	89.13	270.49	7,938.09	-1,144.35	-7,639.90	7,715.80	2.22	-1.24	1.84
14,510.00	89.97	270.22	7,938.84	-1,143.77	-7,734.89	7,810.27	0.93	0.88	-0.28
14,605.00	88.69	270.40	7,939.95	-1,143.25	-7,829.88	7,904.74	1.36	-1.35	0.19
14,700.00	89.70	269.69	7,941.28	-1,143.18	-7,924.87	7,999.25	1.30	1.06	-0.75
14,795.00	89.22	271.19	7,942.18	-1,142.45	-8,019.86	8,093.70	1.66	-0.51	1.58
14,889.00	89.88	270.44	7,942.92	-1,141.11	-8,113.85	8,187.09	1.06	0.70	-0.80
14,984.00	90.41	269.12	7,942.68	-1,141.48	-8,208.85	8,281.65	1.50	0.56	-1.39
15,079.00	88.69	271.72	7,943.42	-1,140.78	-8,303.83	8,376.09	3.28	-1.81	2.74
15,174.00	89.75	271.02	7,944.72	-1,138.51	-8,398.79	8,470.36	1.34	1.12	-0.74
15,269.00	90.68	269.52	7,944.36	-1,138.06	-8,493.79	8,564.84	1.86	0.98	-1.58
15,364.00	88.51	271.06	7,945.03	-1,137.58	-8,588.77	8,659.31	2.80	-2.28	1.62
15,459.00	87.36	270.14	7,948.45	-1,136.59	-8,683.70	8,753.67	1.55	-1.21	-0.97
15,554.00	87.72	270.71	7,952.53	-1,135.88	-8,778.61	8,848.04	0.71	0.38	0.60
15,649.00	86.13	269.61	7,957.63	-1,135.62	-8,873.47	8,942.40	2.03	-1.67	-1.16
15,744.00	86.43	268.99	7,963.79	-1,136.77	-8,968.26	9,036.84	0.72	0.32	-0.65
15,839.00	87.54	271.50	7,968.79	-1,136.37	-9,063.12	9,131.19	2.89	1.17	2.64
15,934.00	88.07	271.41	7,972.43	-1,133.96	-9,158.02	9,225.38	0.57	0.56	-0.09
16,030.00	88.56	272.65	7,975.25	-1,130.56	-9,253.92	9,320.46	1.39	0.51	1.29
16,125.00	89.48	273.53	7,976.87	-1,125.44	-9,348.76	9,414.33	1.34	0.97	0.93
16,219.00	89.31	271.59	7,977.87	-1,121.24	-9,442.66	9,507.34	2.07	-0.18	-2.06
16,314.00	90.28	270.58	7,978.21	-1,119.44	-9,537.64	9,601.67	1.47	1.02	-1.06

Survey Report

Company:	Axis Exploration	Local Co-ordinate Reference:	Well Jamaso 4-65 5-6-09
Project:	Weld County, CO (NAD83)	TVD Reference:	KB @ 5616.00usft (Patterson 340)
Site:	Sec 04-T04S-R65W Jamaso Pad	MD Reference:	KB @ 5616.00usft (Patterson 340)
Well:	Jamaso 4-65 5-6-09	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,409.00	90.59	269.87	7,977.49	-1,119.07	-9,632.64	9,696.16	0.82	0.33	-0.75
16,505.00	90.85	269.17	7,976.28	-1,119.87	-9,728.62	9,791.76	0.78	0.27	-0.73
16,600.00	90.15	270.75	7,975.45	-1,119.94	-9,823.62	9,886.28	1.82	-0.74	1.66
16,695.00	91.21	270.58	7,974.32	-1,118.84	-9,918.60	9,980.69	1.13	1.12	-0.18
16,790.00	92.36	269.47	7,971.36	-1,118.79	-10,013.55	10,075.17	1.68	1.21	-1.17
16,885.00	90.41	270.27	7,969.07	-1,119.01	-10,108.52	10,169.69	2.22	-2.05	0.84
16,980.00	90.72	269.30	7,968.13	-1,119.37	-10,203.51	10,264.24	1.07	0.33	-1.02
17,075.00	89.17	271.32	7,968.22	-1,118.85	-10,298.50	10,358.71	2.68	-1.63	2.13
17,171.00	89.70	270.62	7,969.17	-1,117.23	-10,394.48	10,454.06	0.91	0.55	-0.73
17,266.00	89.48	270.05	7,969.85	-1,116.67	-10,489.48	10,548.53	0.64	-0.23	-0.60
17,361.00	90.32	268.11	7,970.01	-1,118.20	-10,584.46	10,643.19	2.23	0.88	-2.04
17,456.00	88.03	268.11	7,971.38	-1,121.33	-10,679.39	10,737.96	2.41	-2.41	0.00
17,551.00	88.60	268.20	7,974.18	-1,124.39	-10,774.30	10,832.71	0.61	0.60	0.09
17,646.00	88.64	271.41	7,976.46	-1,124.71	-10,869.26	10,927.23	3.38	0.04	3.38
17,741.00	88.73	270.58	7,978.64	-1,123.06	-10,964.22	11,021.56	0.88	0.09	-0.87
17,836.00	88.91	269.08	7,980.60	-1,123.34	-11,059.20	11,116.09	1.59	0.19	-1.58
17,932.00	89.70	268.72	7,981.77	-1,125.19	-11,155.17	11,211.77	0.90	0.82	-0.38
17,993.00	90.77	269.69	7,981.52	-1,126.03	-11,216.17	11,272.55	2.37	1.75	1.59
Last MWD Survey @ 17993' MD									
18,055.00	90.77	269.69	7,980.68	-1,126.37	-11,278.16	11,334.27	0.00	0.00	0.00
Projection to TD @ 18055' MD 1657.5' FSL/ 517' FWL									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
30° Inclination @ 7783.0 - actual wellpath misses target center by 0.01usft at 7783.02usft MD (7561.31 TVD, -1156.04 N, -1134.21 E) - Point	0.00	0.00	7,561.31	-1,156.05	-1,134.21	1,145,604.15	3,231,162.35	39.730107	-104.678114
Cross @ 7885.26' MD - actual wellpath hits target center - Point	0.00	0.00	7,645.52	-1,154.74	-1,192.00	1,145,604.92	3,231,104.55	39.730111	-104.678319
70° Inclination @ 8205.9 - actual wellpath hits target center - Point	0.00	0.00	7,847.04	-1,151.04	-1,436.04	1,145,606.34	3,230,860.50	39.730121	-104.679187
Cross @ 13273.90' MD - actual wellpath hits target center - Point	0.00	0.00	7,928.51	-1,143.39	-6,499.00	1,145,566.84	3,225,797.68	39.730140	-104.697188

Survey Report

Company:	Axis Exploration	Local Co-ordinate Reference:	Well Jamaso 4-65 5-6-09
Project:	Weld County, CO (NAD83)	TVD Reference:	KB @ 5616.00usft (Patterson 340)
Site:	Sec 04-T04S-R65W Jamaso Pad	MD Reference:	KB @ 5616.00usft (Patterson 340)
Well:	Jamaso 4-65 5-6-09	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,578.00	2,527.14	-289.85	-274.45	Tie into Surface Surveys
2,700.00	2,644.10	-313.44	-299.90	First MWD Survey @ 2700' MD
7,783.02	7,561.31	-1,156.04	-1,134.21	30° Inclination @ 7783.02' MD
7,885.26	7,645.53	-1,154.74	-1,192.00	Cross @ 7885.26' MD
8,205.96	7,847.04	-1,151.05	-1,436.04	70° Inclination @ 8205.96' MD
13,273.90	7,928.51	-1,143.39	-6,499.00	Cross @ 13273.90' MD
17,993.00	7,981.52	-1,126.03	-11,216.17	Last MWD Survey @ 17993' MD
18,055.00	7,980.68	-1,126.37	-11,278.16	Projection to TD @ 18055' MD 1657.5' FSL/ 517' FWL

Checked By: _____ Approved By: _____ Date: _____