

Axis Exploration

Weld County, CO (NAD83)

Sec 04-T04S-R65W Jamaso Pad

Jamaso 4-65 5-6-12

Wellbore #1

Design: Wellbore #1

Standard Survey Report

15 August, 2019

Survey Report

Company:	Axis Exploration	Local Co-ordinate Reference:	Well Jamaso 4-65 5-6-12
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 5-6-12	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 5-6-12					
Well Position	+N/-S	0.00 usft	Northing:	1,146,771.32 usft	Latitude:	39.733281
	+E/-W	0.00 usft	Easting:	3,232,352.96 usft	Longitude:	-104.673842
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	51,774.61812661

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	258.57	

Survey Program	Date	8/7/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
135.00	2,677.00	Surface Surveys (Wellbore #1)	MWD	MWD - Standard	
2,795.00	18,308.00	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	1.05	277.89	134.99	0.17	-1.23	1.17	0.78	0.78	0.00	
223.00	1.89	239.13	222.96	-0.46	-3.27	3.30	1.43	0.95	-44.05	
310.00	2.94	213.29	309.89	-3.07	-5.73	6.22	1.71	1.21	-29.70	
397.00	6.11	206.26	396.61	-9.08	-9.00	10.62	3.69	3.64	-8.08	
484.00	7.87	208.54	482.96	-18.47	-13.89	17.28	2.05	2.02	2.62	
572.00	9.45	205.29	569.95	-30.29	-19.86	25.47	1.88	1.80	-3.69	
659.00	11.16	205.82	655.55	-44.33	-26.58	34.84	1.97	1.97	0.61	
746.00	13.05	205.03	740.61	-60.81	-34.40	45.77	2.18	2.17	-0.91	
833.00	14.06	203.54	825.18	-79.40	-42.78	57.67	1.23	1.16	-1.71	

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Site:	Sec 04-T04S-R65W Jamaso Pad	MD Reference:	KB @ 5616.00usft (Patterson 340)
Well:	Jamaso 4-65 5-6-12	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	16.52	203.18	910.06	-100.71	-51.97	70.90	2.80	2.80	-0.41
1,008.00	17.49	203.97	993.26	-124.02	-62.15	85.50	1.15	1.11	0.91
1,095.00	18.94	205.47	1,075.90	-148.72	-73.54	101.55	1.75	1.67	1.72
1,182.00	21.71	205.29	1,157.47	-176.02	-86.49	119.66	3.18	3.18	-0.21
1,270.00	22.76	206.35	1,238.93	-205.99	-100.99	139.82	1.28	1.19	1.20
1,357.00	24.52	205.38	1,318.62	-237.38	-116.20	160.95	2.07	2.02	-1.11
1,444.00	24.79	204.85	1,397.69	-270.24	-131.61	182.56	0.40	0.31	-0.61
1,531.00	24.57	203.54	1,476.74	-303.38	-146.50	203.72	0.68	-0.25	-1.51
1,619.00	24.96	206.35	1,556.65	-336.79	-162.04	225.58	1.41	0.44	3.19
1,706.00	24.70	207.05	1,635.61	-369.43	-178.46	248.14	0.45	-0.30	0.80
1,793.00	24.61	207.67	1,714.68	-401.66	-195.14	270.88	0.31	-0.10	0.71
1,880.00	25.88	207.40	1,793.37	-434.56	-212.29	294.21	1.47	1.46	-0.31
1,968.00	25.88	208.63	1,872.55	-468.47	-230.33	318.61	0.61	0.00	1.40
2,055.00	23.47	208.19	1,951.60	-500.41	-247.61	341.88	2.78	-2.77	-0.51
2,142.00	23.77	207.49	2,031.31	-531.23	-263.89	363.95	0.47	0.34	-0.80
2,229.00	22.50	207.58	2,111.31	-561.54	-279.69	385.44	1.46	-1.46	0.10
2,317.00	23.25	206.35	2,192.39	-592.03	-295.20	406.68	1.01	0.85	-1.40
2,404.00	23.64	203.45	2,272.21	-623.42	-309.76	427.18	1.40	0.45	-3.33
2,491.00	23.07	203.62	2,352.08	-655.04	-323.53	446.95	0.66	-0.66	0.20
2,578.00	22.98	202.48	2,432.15	-686.35	-336.86	466.21	0.52	-0.10	-1.31
2,666.00	23.64	203.71	2,512.97	-718.38	-350.52	485.95	0.93	0.75	1.40
2,677.00	24.21	203.27	2,523.02	-722.47	-352.30	488.50	5.43	5.18	-4.00
Tie into Surface Surveys									
2,795.00	24.17	203.51	2,630.66	-766.85	-371.49	516.11	0.09	-0.03	0.20
First MWD Survey @ 2795' MD									
2,890.00	23.29	202.18	2,717.63	-802.08	-386.34	537.65	1.08	-0.93	-1.40
2,985.00	20.11	202.23	2,805.88	-834.60	-399.61	557.10	3.35	-3.35	0.05
3,081.00	23.02	200.46	2,895.16	-867.47	-412.42	576.17	3.11	3.03	-1.84
3,176.00	21.96	210.29	2,982.96	-900.22	-427.88	597.82	4.11	-1.12	10.35
3,271.00	23.82	217.61	3,070.49	-930.76	-448.55	624.13	3.58	1.96	7.71
3,366.00	22.63	217.03	3,157.79	-960.55	-471.27	652.30	1.28	-1.25	-0.61
3,461.00	21.17	216.59	3,245.94	-988.92	-492.50	678.74	1.55	-1.54	-0.46
3,556.00	22.80	214.08	3,334.03	-1,017.94	-513.04	704.62	1.98	1.72	-2.64
3,651.00	24.75	210.95	3,420.96	-1,050.25	-533.59	731.16	2.44	2.05	-3.29
3,746.00	26.25	209.45	3,506.71	-1,085.60	-554.14	758.32	1.72	1.58	-1.58
3,841.00	24.75	208.57	3,592.45	-1,121.36	-573.98	784.85	1.63	-1.58	-0.93
3,936.00	25.81	205.62	3,678.36	-1,157.47	-592.44	810.10	1.73	1.12	-3.11
4,031.00	24.26	205.31	3,764.43	-1,193.77	-609.73	834.24	1.64	-1.63	-0.33
4,127.00	24.88	204.52	3,851.73	-1,229.97	-626.54	857.89	0.73	0.65	-0.82
4,222.00	22.71	204.12	3,938.65	-1,264.89	-642.33	880.29	2.29	-2.28	-0.42
4,317.00	24.57	203.24	4,025.68	-1,299.78	-657.62	902.19	1.99	1.96	-0.93
4,412.00	22.32	202.32	4,112.83	-1,334.62	-672.26	923.45	2.40	-2.37	-0.97
4,507.00	23.24	204.78	4,200.42	-1,368.33	-686.97	944.55	1.39	0.97	2.59

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Survey									
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4,602.00	23.73	207.47	4,287.55	-1,402.31	-703.64	967.63	1.24	0.52	2.83
4,696.00	24.22	206.15	4,373.44	-1,436.40	-720.87	991.26	0.77	0.52	-1.40
4,792.00	24.53	203.24	4,460.89	-1,472.38	-737.41	1,014.61	1.29	0.32	-3.03
4,886.00	21.56	203.73	4,547.38	-1,506.13	-752.06	1,035.66	3.17	-3.16	0.52
4,980.00	24.04	204.69	4,634.03	-1,539.35	-767.01	1,056.90	2.67	2.64	1.02
5,076.00	23.42	204.47	4,721.91	-1,574.48	-783.08	1,079.61	0.65	-0.65	-0.23
5,171.00	24.53	204.47	4,808.71	-1,609.61	-799.07	1,102.25	1.17	1.17	0.00
5,267.00	26.47	204.47	4,895.36	-1,647.23	-816.19	1,126.48	2.02	2.02	0.00
5,362.00	23.33	203.55	4,981.52	-1,683.75	-832.48	1,149.69	3.33	-3.31	-0.97
5,457.00	25.94	205.05	5,067.86	-1,719.82	-848.80	1,172.83	2.82	2.75	1.58
5,552.00	23.33	204.30	5,154.21	-1,755.80	-865.34	1,196.18	2.77	-2.75	-0.79
5,647.00	24.66	204.34	5,241.00	-1,791.00	-881.25	1,218.75	1.40	1.40	0.04
5,742.00	24.61	204.39	5,327.35	-1,827.07	-897.59	1,241.91	0.06	-0.05	0.05
5,837.00	23.33	203.28	5,414.16	-1,862.37	-913.19	1,264.20	1.43	-1.35	-1.17
5,955.00	21.92	202.18	5,523.07	-1,904.23	-930.74	1,289.70	1.25	-1.19	-0.93
6,050.00	24.83	206.99	5,610.27	-1,938.44	-946.49	1,311.92	3.66	3.06	5.06
6,145.00	23.38	208.00	5,696.99	-1,972.86	-964.39	1,336.29	1.59	-1.53	1.06
6,240.00	25.23	206.72	5,783.57	-2,007.59	-982.35	1,360.77	2.02	1.95	-1.35
6,335.00	23.73	206.24	5,870.02	-2,042.82	-999.91	1,384.96	1.59	-1.58	-0.51
6,430.00	24.39	205.31	5,956.77	-2,077.70	-1,016.74	1,408.38	0.80	0.69	-0.98
6,525.00	24.61	203.24	6,043.22	-2,113.61	-1,032.93	1,431.37	0.93	0.23	-2.18
6,621.00	23.91	201.52	6,130.74	-2,150.07	-1,047.96	1,453.32	1.04	-0.73	-1.79
6,715.00	23.07	202.58	6,216.95	-2,184.80	-1,062.02	1,473.98	1.00	-0.89	1.13
6,811.00	20.99	205.36	6,305.94	-2,217.71	-1,076.61	1,494.81	2.42	-2.17	2.90
6,905.00	18.56	208.88	6,394.39	-2,246.03	-1,091.05	1,514.57	2.88	-2.59	3.74
7,000.00	16.00	207.07	6,485.10	-2,270.93	-1,104.31	1,532.51	2.75	-2.69	-1.91
7,096.00	14.01	197.16	6,577.83	-2,293.82	-1,113.76	1,546.31	3.38	-2.07	-10.32
7,191.00	10.08	193.77	6,670.73	-2,312.89	-1,119.13	1,555.35	4.20	-4.14	-3.57
7,286.00	7.82	193.41	6,764.56	-2,327.25	-1,122.61	1,561.61	2.38	-2.38	-0.38
7,380.00	6.72	193.77	6,857.81	-2,338.81	-1,125.40	1,566.64	1.17	-1.17	0.38
7,476.00	3.84	193.15	6,953.39	-2,347.40	-1,127.47	1,570.37	3.00	-3.00	-0.65
7,571.00	1.33	181.16	7,048.28	-2,351.60	-1,128.22	1,571.93	2.69	-2.64	-12.62
7,666.00	0.09	181.16	7,143.28	-2,352.78	-1,128.24	1,572.19	1.31	-1.31	0.00
7,761.00	5.44	280.18	7,238.13	-2,352.06	-1,132.68	1,576.39	5.74	5.63	104.23
7,856.00	16.22	281.55	7,331.30	-2,348.60	-1,150.16	1,592.84	11.35	11.35	1.44
7,951.00	23.69	277.49	7,420.54	-2,343.44	-1,182.13	1,623.16	7.99	7.86	-4.27
8,030.40	30.00	275.04	7,491.35	-2,339.62	-1,217.75	1,657.32	8.06	7.94	-3.08
30° Inclination @ 8030.40' MD									
8,046.00	31.24	274.67	7,504.78	-2,338.94	-1,225.67	1,664.94	8.06	7.97	-2.39
8,109.68	36.32	271.79	7,557.69	-2,337.01	-1,261.00	1,699.19	8.36	7.98	-4.52
Cross @ 8109.68' MD									
8,141.00	38.84	270.62	7,582.51	-2,336.61	-1,280.10	1,717.83	8.36	8.05	-3.74
8,236.00	45.12	270.80	7,653.10	-2,335.82	-1,343.60	1,779.92	6.61	6.61	0.19
8,331.00	53.25	269.12	7,715.14	-2,335.93	-1,415.44	1,850.35	8.66	8.56	-1.77

Survey Report

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Site:	Sec 04-T04S-R65W Jamaso Pad	MD Reference:	KB @ 5616.00usft (Patterson 340)
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Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

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8,427.00	62.70	267.45	7,765.99	-2,338.43	-1,496.69	1,930.48	9.95	9.84	-1.74
8,522.00	69.86	266.39	7,804.19	-2,343.12	-1,583.48	2,016.48	7.61	7.54	-1.12
8,525.27	70.00	266.51	7,805.31	-2,343.31	-1,586.55	2,019.53	5.46	4.25	3.65
70° Inclination @ 8525.27' MD									
8,617.00	73.93	269.78	7,833.71	-2,346.11	-1,673.70	2,105.50	5.46	4.29	3.57
8,712.00	80.60	271.15	7,854.64	-2,345.34	-1,766.30	2,196.11	7.16	7.02	1.44
8,807.00	87.85	271.81	7,864.19	-2,342.90	-1,860.72	2,288.18	7.66	7.63	0.69
8,903.00	88.03	270.22	7,867.64	-2,341.20	-1,956.64	2,381.86	1.67	0.19	-1.66
8,997.00	88.56	269.96	7,870.44	-2,341.05	-2,050.60	2,473.92	0.63	0.56	-0.28
9,092.00	89.00	269.61	7,872.46	-2,341.41	-2,145.58	2,567.09	0.59	0.46	-0.37
9,187.00	90.41	270.40	7,872.95	-2,341.40	-2,240.57	2,660.20	1.70	1.48	0.83
9,283.00	89.17	269.21	7,873.30	-2,341.72	-2,336.57	2,754.35	1.79	-1.29	-1.24
9,378.00	87.23	270.44	7,876.29	-2,342.01	-2,431.52	2,847.47	2.42	-2.04	1.29
9,472.00	87.50	270.97	7,880.61	-2,340.86	-2,525.41	2,939.27	0.63	0.29	0.56
9,568.00	87.67	270.80	7,884.65	-2,339.38	-2,621.31	3,032.98	0.25	0.18	-0.18
9,663.00	87.67	270.71	7,888.52	-2,338.13	-2,716.22	3,125.76	0.09	0.00	-0.09
9,758.00	87.19	270.71	7,892.78	-2,336.95	-2,811.12	3,218.54	0.51	-0.51	0.00
9,852.00	87.32	271.06	7,897.28	-2,335.50	-2,905.00	3,310.27	0.40	0.14	0.37
9,947.00	89.75	269.78	7,899.71	-2,334.80	-2,999.96	3,403.21	2.89	2.56	-1.35
10,043.00	89.40	269.87	7,900.42	-2,335.10	-3,095.96	3,497.36	0.38	-0.36	0.09
10,138.00	91.47	271.55	7,899.70	-2,333.92	-3,190.94	3,590.22	2.81	2.18	1.77
10,233.00	93.20	270.93	7,895.83	-2,331.87	-3,285.83	3,682.83	1.93	1.82	-0.65
10,328.00	90.72	269.08	7,892.58	-2,331.86	-3,380.77	3,775.88	3.26	-2.61	-1.95
10,422.00	89.04	269.34	7,892.78	-2,333.16	-3,474.75	3,868.26	1.81	-1.79	0.28
10,517.00	89.66	269.43	7,893.85	-2,334.18	-3,569.74	3,961.56	0.66	0.65	0.09
10,612.00	89.40	269.08	7,894.63	-2,335.41	-3,664.73	4,054.91	0.46	-0.27	-0.37
10,707.00	89.57	268.95	7,895.49	-2,337.04	-3,759.71	4,148.33	0.23	0.18	-0.14
10,802.00	90.50	268.28	7,895.43	-2,339.34	-3,854.68	4,241.87	1.21	0.98	-0.71
10,897.00	90.41	270.66	7,894.67	-2,340.22	-3,949.67	4,335.15	2.51	-0.09	2.51
10,993.00	89.09	270.97	7,895.09	-2,338.85	-4,045.66	4,428.96	1.41	-1.38	0.32
11,088.00	89.93	270.27	7,895.91	-2,337.83	-4,140.65	4,521.86	1.15	0.88	-0.74
11,183.00	89.13	271.50	7,896.68	-2,336.36	-4,235.63	4,614.67	1.54	-0.84	1.29
11,278.00	86.70	271.68	7,900.14	-2,333.72	-4,330.52	4,707.16	2.56	-2.56	0.19
11,372.00	86.92	271.37	7,905.37	-2,331.23	-4,424.34	4,798.62	0.40	0.23	-0.33
11,468.00	87.85	271.32	7,909.75	-2,328.98	-4,520.21	4,892.15	0.97	0.97	-0.05
11,563.00	88.82	270.27	7,912.51	-2,327.66	-4,615.16	4,984.95	1.50	1.02	-1.11
11,658.00	89.13	270.49	7,914.21	-2,327.03	-4,710.15	5,077.93	0.40	0.33	0.23
11,753.00	88.16	271.46	7,916.46	-2,325.41	-4,805.10	5,170.68	1.44	-1.02	1.02
11,848.00	89.62	270.80	7,918.30	-2,323.54	-4,900.06	5,263.38	1.69	1.54	-0.69
11,943.00	87.67	271.02	7,920.54	-2,322.03	-4,995.02	5,356.16	2.07	-2.05	0.23
12,038.00	87.23	270.27	7,924.77	-2,320.96	-5,089.92	5,448.96	0.91	-0.46	-0.79
12,133.00	86.83	269.78	7,929.69	-2,320.92	-5,184.79	5,541.94	0.67	-0.42	-0.52
12,229.00	88.95	269.87	7,933.23	-2,321.21	-5,280.72	5,636.03	2.21	2.21	0.09

Survey Report

Company:	Axis Exploration	Local Co-ordinate Reference:	Well Jamaso 4-65 5-6-12
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 5-6-12	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)
12,323.00	90.01	270.93	7,934.08	-2,320.56	-5,374.71	5,728.02	1.59	1.13	1.13
12,419.00	91.34	271.06	7,932.95	-2,318.89	-5,470.69	5,821.77	1.39	1.39	0.14
12,514.00	91.78	271.55	7,930.36	-2,316.73	-5,565.63	5,914.39	0.69	0.46	0.52
12,610.00	92.49	271.15	7,926.79	-2,314.47	-5,661.53	6,007.95	0.85	0.74	-0.42
12,705.00	90.06	269.65	7,924.67	-2,313.81	-5,756.50	6,100.90	3.01	-2.56	-1.58
12,800.00	88.25	268.81	7,926.07	-2,315.08	-5,851.47	6,194.24	2.10	-1.91	-0.88
12,895.00	89.17	268.68	7,928.21	-2,317.16	-5,946.43	6,287.72	0.98	0.97	-0.14
12,990.00	88.95	268.64	7,929.77	-2,319.38	-6,041.39	6,381.24	0.24	-0.23	-0.04
13,085.00	90.28	268.50	7,930.41	-2,321.75	-6,136.35	6,474.79	1.41	1.40	-0.15
13,180.00	89.48	269.08	7,930.61	-2,323.76	-6,231.33	6,568.28	1.04	-0.84	0.61
13,276.00	90.23	268.50	7,930.85	-2,325.79	-6,327.31	6,662.76	0.99	0.78	-0.60
13,371.00	89.00	270.53	7,931.49	-2,326.59	-6,422.30	6,756.02	2.50	-1.29	2.14
13,466.00	90.50	270.66	7,931.90	-2,325.60	-6,517.29	6,848.93	1.58	1.58	0.14
13,523.72	89.72	270.45	7,931.79	-2,325.05	-6,575.00	6,905.39	1.40	-1.35	-0.37
Cross @ 13523.72' MD									
13,561.00	89.22	270.31	7,932.14	-2,324.80	-6,612.28	6,941.88	1.40	-1.35	-0.37
13,657.00	88.86	270.93	7,933.75	-2,323.76	-6,708.26	7,035.75	0.75	-0.38	0.65
13,752.00	89.48	270.49	7,935.12	-2,322.59	-6,803.24	7,128.62	0.80	0.65	-0.46
13,847.00	89.97	269.43	7,935.58	-2,322.65	-6,898.24	7,221.74	1.23	0.52	-1.12
13,942.00	90.59	269.39	7,935.11	-2,323.63	-6,993.23	7,315.05	0.65	0.65	-0.04
14,036.00	88.73	271.68	7,935.67	-2,322.75	-7,087.22	7,406.99	3.14	-1.98	2.44
14,131.00	87.80	271.02	7,938.55	-2,320.51	-7,182.15	7,499.59	1.20	-0.98	-0.69
14,226.00	89.00	270.27	7,941.20	-2,319.45	-7,277.10	7,592.45	1.49	1.26	-0.79
14,321.00	90.32	269.30	7,941.76	-2,319.80	-7,372.10	7,685.63	1.72	1.39	-1.02
14,416.00	87.85	270.05	7,943.28	-2,320.34	-7,467.07	7,778.83	2.72	-2.60	0.79
14,512.00	89.22	270.62	7,945.73	-2,319.78	-7,563.04	7,872.78	1.55	1.43	0.59
14,607.00	87.19	271.59	7,948.71	-2,317.95	-7,657.97	7,965.47	2.37	-2.14	1.02
14,702.00	87.98	271.72	7,952.71	-2,315.21	-7,752.84	8,057.92	0.84	0.83	0.14
14,797.00	89.26	271.55	7,955.00	-2,312.50	-7,847.78	8,150.43	1.36	1.35	-0.18
14,891.00	89.88	271.46	7,955.71	-2,310.03	-7,941.74	8,242.04	0.67	0.66	-0.10
14,986.00	90.54	270.93	7,955.36	-2,308.05	-8,036.72	8,334.74	0.89	0.69	-0.56
15,080.00	88.91	271.68	7,955.81	-2,305.91	-8,130.69	8,426.42	1.91	-1.73	0.80
15,176.00	90.15	271.63	7,956.60	-2,303.14	-8,226.64	8,519.92	1.29	1.29	-0.05
15,271.00	91.56	271.37	7,955.18	-2,300.65	-8,321.60	8,612.50	1.51	1.48	-0.27
15,366.00	89.84	268.90	7,954.02	-2,300.43	-8,416.58	8,705.55	3.17	-1.81	-2.60
15,461.00	90.46	269.21	7,953.77	-2,301.99	-8,511.57	8,798.97	0.73	0.65	0.33
15,556.00	89.26	269.69	7,954.00	-2,302.90	-8,606.56	8,892.26	1.36	-1.26	0.51
15,651.00	90.85	270.09	7,953.91	-2,303.09	-8,701.56	8,985.40	1.73	1.67	0.42
15,746.00	89.93	270.00	7,953.26	-2,303.01	-8,796.55	9,078.50	0.97	-0.97	-0.09
15,841.00	88.33	269.78	7,954.71	-2,303.19	-8,891.54	9,171.64	1.70	-1.68	-0.23
15,936.00	88.60	269.96	7,957.25	-2,303.41	-8,986.50	9,264.76	0.34	0.28	0.19
16,032.00	90.01	270.53	7,958.42	-2,303.00	-9,082.49	9,358.77	1.58	1.47	0.59
16,126.00	88.33	268.72	7,959.78	-2,303.61	-9,176.47	9,451.00	2.63	-1.79	-1.93
16,221.00	89.48	268.59	7,961.59	-2,305.84	-9,271.43	9,544.52	1.22	1.21	-0.14

Survey Report

Company:	Axis Exploration	Local Co-ordinate Reference:	Well Jamaso 4-65 5-6-12
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 5-6-12	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)	
16,316.00	90.90	269.03	7,961.28	-2,307.82	-9,366.40	9,638.00	1.56	1.49	0.46	
16,411.00	90.37	267.01	7,960.23	-2,311.10	-9,461.34	9,731.70	2.20	-0.56	-2.13	
16,506.00	88.11	268.64	7,961.49	-2,314.70	-9,556.25	9,825.45	2.93	-2.38	1.72	
16,602.00	89.70	268.59	7,963.32	-2,317.02	-9,652.20	9,919.95	1.66	1.66	-0.05	
16,697.00	91.03	269.03	7,962.71	-2,319.00	-9,747.18	10,013.43	1.47	1.40	0.46	
16,792.00	89.93	270.18	7,961.92	-2,319.65	-9,842.17	10,106.67	1.68	-1.16	1.21	
16,887.00	88.69	269.74	7,963.06	-2,319.72	-9,937.16	10,199.79	1.38	-1.31	-0.46	
16,982.00	89.84	269.74	7,964.28	-2,320.15	-10,032.15	10,292.98	1.21	1.21	0.00	
17,077.00	88.56	270.93	7,965.61	-2,319.59	-10,127.13	10,385.97	1.84	-1.35	1.25	
17,172.00	88.78	271.02	7,967.81	-2,317.98	-10,222.10	10,478.73	0.25	0.23	0.09	
17,268.00	89.62	271.77	7,969.15	-2,315.64	-10,318.06	10,572.32	1.17	0.88	0.78	
17,363.00	87.80	271.55	7,971.29	-2,312.89	-10,412.99	10,664.83	1.93	-1.92	-0.23	
17,457.00	88.03	271.63	7,974.71	-2,310.28	-10,506.89	10,756.35	0.26	0.24	0.09	
17,553.00	88.78	271.28	7,977.38	-2,307.85	-10,602.82	10,849.89	0.86	0.78	-0.36	
17,648.00	89.62	270.71	7,978.71	-2,306.20	-10,697.80	10,942.66	1.07	0.88	-0.60	
17,743.00	88.42	270.14	7,980.34	-2,305.49	-10,792.78	11,035.61	1.40	-1.26	-0.60	
17,838.00	89.00	270.80	7,982.47	-2,304.71	-10,887.75	11,128.55	0.92	0.61	0.69	
17,934.00	90.15	270.66	7,983.19	-2,303.49	-10,983.74	11,222.39	1.21	1.20	-0.15	
18,028.00	87.85	271.10	7,984.83	-2,302.05	-11,077.70	11,314.21	2.49	-2.45	0.47	
18,123.00	88.42	270.97	7,987.92	-2,300.33	-11,172.64	11,406.92	0.62	0.60	-0.14	
18,218.00	88.95	271.19	7,990.10	-2,298.54	-11,267.60	11,499.64	0.60	0.56	0.23	
Last MWD Survey @ 18218' MD										
18,308.00	88.95	271.19	7,991.75	-2,296.67	-11,357.56	11,587.45	0.00	0.00	0.00	
Projection to TD @ 18308' MD 487' FSL/ 509' FWL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
30° Inclination @ 8030.4	0.00	0.00	7,491.35	-2,339.58	-1,217.75	1,144,420.50	3,231,157.06	39.726858	-104.678172	
- actual wellpath misses target center by 0.03usft at 8030.40usft MD (7491.35 TVD, -2339.62 N, -1217.75 E)										
- Point										
Cross @ 8109.68' MD	0.00	0.00	7,557.69	-2,337.01	-1,261.00	1,144,422.67	3,231,113.79	39.726865	-104.678325	
- actual wellpath hits target center										
- Point										
70° Inclination @ 8525.2	0.00	0.00	7,805.31	-2,343.31	-1,586.55	1,144,413.34	3,230,788.32	39.726848	-104.679483	
- actual wellpath hits target center										
- Point										
Cross @ 13523.72' MD	0.00	0.00	7,931.79	-2,325.05	-6,575.00	1,144,385.12	3,225,799.91	39.726896	-104.697218	
- actual wellpath hits target center										
- Point										

Survey Report

Company:	Axis Exploration	Local Co-ordinate Reference:	Well Jamaso 4-65 5-6-12
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 5-6-12	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)	
2,677.00	2,523.02	-722.47	-352.30	Tie into Surface Surveys
2,795.00	2,630.66	-766.85	-371.49	First MWD Survey @ 2795' MD
8,030.40	7,491.35	-2,339.62	-1,217.75	30° Inclination @ 8030.40' MD
8,109.68	7,557.69	-2,337.01	-1,261.00	Cross @ 8109.68' MD
8,525.27	7,805.31	-2,343.31	-1,586.55	70° Inclination @ 8525.27' MD
13,523.72	7,931.79	-2,325.05	-6,575.00	Cross @ 13523.72' MD
18,218.00	7,990.10	-2,298.54	-11,267.60	Last MWD Survey @ 18218' MD
18,308.00	7,991.75	-2,296.67	-11,357.56	Projection to TD @ 18308' MD 487' FSL/ 509' FWL

Checked By: _____ Approved By: _____ Date: _____