

Extraction Oil & Gas

Weld County, CO (NAD83)

Sec 07-T01S-R68W Livingston Pad

Livingston S19-25-03N

Wellbore #1

Design: Wellbore #1

Standard Survey Report

07 August, 2019

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Livingston S19-25-03N
Project:	Weld County, CO (NAD83)	TVD Reference:	KB @ 5346.40usft (Patterson 901)
Site:	Sec 07-T01S-R68W Livingston Pad	MD Reference:	KB @ 5346.40usft (Patterson 901)
Well:	Livingston S19-25-03N	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 07-T01S-R68W Livingston Pad						
Site Position:		Northing:	1,238,290.24	usft	Latitude:	39.986624		
From:	Lat/Long	Easting:	3,125,301.58	usft	Longitude:	-105.052826		
Position Uncertainty:	0.00	usft	Slot Radius:	13-3/16	"	Grid Convergence:	0.29	°

Well		Livingston S19-25-03N				
Well Position	+N/-S	0.00 usft	Northing:	1,235,372.61 usft	Latitude:	39.978564
	+E/-W	0.00 usft	Easting:	3,128,912.54 usft	Longitude:	-105.039993
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,317.40 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	6/28/2019	8.10	66.42	51,868.58348033

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	192.07	

Survey Program	Date	8/7/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
143.00	1,583.00	Surface Surveys (Wellbore #1)	MWD	MWD - Standard	
1,667.00	21,396.00	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	
143.00	0.18	148.74	143.00	-0.19	0.12	0.16	0.13	0.13	0.00	
230.00	0.04	69.02	230.00	-0.30	0.22	0.25	0.20	-0.16	-91.63	
317.00	0.88	263.78	317.00	-0.36	-0.42	0.44	1.06	0.97	-189.93	
405.00	1.93	267.12	404.97	-0.51	-2.57	1.03	1.20	1.19	3.80	
492.00	4.31	274.42	491.83	-0.33	-7.30	1.85	2.77	2.74	8.39	
579.00	5.45	278.73	578.52	0.55	-14.64	2.52	1.38	1.31	4.95	
666.00	7.34	283.12	664.97	2.44	-24.14	2.66	2.24	2.17	5.05	
754.00	9.45	284.53	752.02	5.53	-36.60	2.25	2.41	2.40	1.60	
841.00	11.25	282.33	837.61	9.13	-51.81	1.90	2.12	2.07	-2.53	

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Site:	Sec 07-T01S-R68W Livingston Pad	MD Reference:	KB @ 5346.40usft (Patterson 901)
Well:	Livingston S19-25-03N	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)
928.00	12.88	288.48	922.68	14.02	-69.30	0.78	2.38	1.87	7.07
1,016.00	14.24	290.68	1,008.23	20.95	-88.73	-1.93	1.65	1.55	2.50
1,103.00	15.82	290.50	1,092.25	28.88	-109.85	-5.28	1.82	1.82	-0.21
1,190.00	16.79	287.51	1,175.75	36.82	-132.94	-8.21	1.47	1.11	-3.44
1,277.00	18.76	287.08	1,258.60	44.71	-158.30	-10.62	2.27	2.26	-0.49
1,365.00	20.57	284.88	1,341.46	52.83	-186.77	-12.61	2.22	2.06	-2.50
1,452.00	22.06	284.44	1,422.51	60.83	-217.36	-14.04	1.72	1.71	-0.51
1,539.00	23.51	284.97	1,502.72	69.39	-249.95	-15.59	1.68	1.67	0.61
1,583.00	24.08	286.02	1,542.98	74.13	-267.06	-16.66	1.61	1.30	2.39
Tie into Surface Surveys									
1,667.00	24.26	286.61	1,619.61	83.80	-300.07	-19.20	0.36	0.21	0.70
First MWD Survey @ 1667' MD									
1,762.00	23.16	283.87	1,706.60	93.85	-336.91	-21.33	1.64	-1.16	-2.88
1,858.00	24.57	284.05	1,794.39	103.23	-374.60	-22.62	1.47	1.47	0.19
1,953.00	26.25	285.55	1,880.19	113.65	-414.00	-24.58	1.89	1.77	1.58
2,048.00	24.75	283.48	1,965.94	123.92	-453.58	-26.34	1.84	-1.58	-2.18
2,143.00	26.25	284.01	2,051.68	133.64	-493.31	-27.54	1.60	1.58	0.56
2,238.00	23.73	280.48	2,137.78	142.21	-532.50	-27.72	3.08	-2.65	-3.72
2,332.00	24.83	287.44	2,223.49	151.57	-569.93	-29.05	3.26	1.17	7.40
2,426.00	23.38	285.81	2,309.29	162.56	-606.71	-32.11	1.70	-1.54	-1.73
2,521.00	25.19	289.29	2,395.88	174.38	-643.93	-35.88	2.43	1.91	3.66
2,616.00	23.24	287.18	2,482.52	186.60	-680.93	-40.09	2.25	-2.05	-2.22
2,712.00	24.83	289.65	2,570.20	198.97	-718.01	-44.44	1.96	1.66	2.57
2,806.00	26.43	292.20	2,654.95	213.51	-755.97	-50.72	2.07	1.70	2.71
2,900.00	24.26	290.48	2,739.90	228.17	-793.43	-57.23	2.44	-2.31	-1.83
2,996.00	26.78	288.02	2,826.53	241.77	-832.48	-62.36	2.85	2.63	-2.56
3,091.00	23.95	286.74	2,912.36	253.95	-871.31	-66.15	3.03	-2.98	-1.35
3,187.00	25.76	285.94	2,999.46	265.29	-910.03	-69.14	1.92	1.89	-0.83
3,282.00	22.67	282.82	3,086.10	275.02	-947.74	-70.78	3.52	-3.25	-3.28
3,377.00	24.97	284.23	3,173.00	284.01	-985.03	-71.77	2.49	2.42	1.48
3,472.00	28.19	282.68	3,257.95	293.87	-1,026.37	-72.77	3.47	3.39	-1.63
3,567.00	25.14	280.97	3,342.84	302.64	-1,068.08	-72.62	3.31	-3.21	-1.80
3,663.00	26.29	284.67	3,429.33	311.90	-1,108.67	-73.19	2.06	1.20	3.85
3,758.00	22.85	282.64	3,515.72	321.27	-1,147.04	-74.33	3.73	-3.62	-2.14
3,854.00	24.88	285.94	3,603.51	330.90	-1,184.65	-75.88	2.53	2.11	3.44
3,949.00	26.16	280.74	3,689.25	340.29	-1,224.45	-76.75	2.71	1.35	-5.47
4,044.00	22.67	279.07	3,775.75	347.08	-1,263.11	-75.30	3.74	-3.67	-1.76
4,139.00	22.14	284.36	3,863.58	354.41	-1,298.54	-75.06	2.19	-0.56	5.57
4,235.00	24.17	289.65	3,951.85	365.51	-1,334.58	-78.38	3.03	2.11	5.51
4,330.00	24.92	286.91	4,038.27	377.87	-1,372.04	-82.63	1.43	0.79	-2.88
4,425.00	25.41	287.18	4,124.26	389.71	-1,410.67	-86.13	0.53	0.52	0.28
4,520.00	25.72	286.21	4,209.96	401.48	-1,449.93	-89.44	0.55	0.33	-1.02
4,616.00	25.45	285.94	4,296.54	412.96	-1,489.77	-92.34	0.31	-0.28	-0.28

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Design:	Wellbore #1	Database:	EDM 5000.15 Single User Db

Survey										
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4,711.00	26.38	286.34	4,381.99	424.51	-1,529.65	-95.29	1.00	0.98	0.42	
4,806.00	25.76	285.77	4,467.32	436.06	-1,569.77	-98.19	0.70	-0.65	-0.60	
4,902.00	25.59	282.60	4,553.85	446.25	-1,610.08	-99.73	1.44	-0.18	-3.30	
4,997.00	25.67	284.80	4,639.50	455.98	-1,650.00	-100.90	1.01	0.08	2.32	
5,093.00	27.84	282.64	4,725.22	466.20	-1,691.98	-102.11	2.48	2.26	-2.25	
5,189.00	24.53	280.57	4,811.36	474.76	-1,733.46	-101.81	3.58	-3.45	-2.16	
5,283.00	25.50	281.76	4,896.54	482.47	-1,772.45	-101.19	1.16	1.03	1.27	
5,378.00	21.48	279.11	4,983.65	489.39	-1,809.66	-100.19	4.37	-4.23	-2.79	
5,474.00	25.28	282.68	5,071.76	496.68	-1,847.03	-99.50	4.22	3.96	3.72	
5,569.00	27.97	282.95	5,156.68	506.12	-1,888.54	-100.06	2.83	2.83	0.28	
5,665.00	26.12	281.71	5,242.18	515.46	-1,931.17	-100.27	2.01	-1.93	-1.29	
5,761.00	24.88	282.55	5,328.82	524.14	-1,971.58	-100.31	1.35	-1.29	0.88	
5,855.00	25.28	283.87	5,413.96	533.24	-2,010.37	-101.10	0.73	0.43	1.40	
5,951.00	22.63	280.30	5,501.69	541.46	-2,048.45	-101.18	3.15	-2.76	-3.72	
6,047.00	21.12	283.04	5,590.78	548.67	-2,083.47	-100.90	1.90	-1.57	2.85	
6,142.00	21.87	285.15	5,679.17	557.15	-2,117.22	-102.14	1.13	0.79	2.22	
6,238.00	25.19	286.34	5,767.18	567.58	-2,154.10	-104.62	3.49	3.46	1.24	
6,333.00	24.39	287.22	5,853.42	579.07	-2,192.24	-107.89	0.93	-0.84	0.93	
6,428.00	25.14	288.99	5,939.69	591.45	-2,230.05	-112.08	1.11	0.79	1.86	
6,523.00	26.78	288.94	6,025.10	604.96	-2,269.38	-117.07	1.73	1.73	-0.05	
6,618.00	24.66	287.80	6,110.68	617.97	-2,308.50	-121.61	2.29	-2.23	-1.20	
6,714.00	25.45	284.01	6,197.65	629.08	-2,347.58	-124.31	1.86	0.82	-3.95	
6,809.00	25.10	285.33	6,283.56	639.35	-2,386.82	-126.15	0.70	-0.37	1.39	
6,904.00	22.14	284.40	6,370.59	649.13	-2,423.60	-128.02	3.14	-3.12	-0.98	
6,999.00	18.78	283.34	6,459.58	657.12	-2,455.83	-129.09	3.56	-3.54	-1.12	
7,094.00	16.97	290.44	6,550.01	665.49	-2,483.70	-131.45	2.98	-1.91	7.47	
7,190.00	14.72	290.09	6,642.35	674.57	-2,508.29	-135.19	2.35	-2.34	-0.36	
7,285.00	12.64	289.38	6,734.65	682.17	-2,529.43	-138.20	2.20	-2.19	-0.75	
7,380.00	10.61	288.50	6,827.70	688.39	-2,547.53	-140.50	2.14	-2.14	-0.93	
7,476.00	8.62	284.98	6,922.35	693.05	-2,562.87	-141.86	2.16	-2.07	-3.67	
7,571.00	6.54	282.64	7,016.51	696.08	-2,575.02	-142.27	2.21	-2.19	-2.46	
7,667.00	3.40	266.60	7,112.14	697.11	-2,583.20	-141.57	3.55	-3.27	-16.71	
7,762.00	2.12	225.31	7,207.04	695.70	-2,587.26	-139.35	2.41	-1.35	-43.46	
7,857.00	1.81	228.97	7,301.98	693.48	-2,589.64	-136.68	0.35	-0.33	3.85	
7,953.00	3.09	231.96	7,397.89	690.89	-2,592.83	-133.48	1.34	1.33	3.11	
8,071.00	9.32	210.85	7,515.16	680.72	-2,600.24	-121.98	5.54	5.28	-17.89	
8,166.00	18.69	199.57	7,607.25	659.72	-2,609.30	-99.55	10.23	9.86	-11.87	
8,262.00	23.77	198.47	7,696.70	626.86	-2,620.59	-65.05	5.31	5.29	-1.15	
8,323.97	29.96	193.24	7,751.96	599.92	-2,628.10	-37.14	10.68	9.99	-8.43	
30° Inclination @ 8323.97' MD										
8,357.00	33.32	191.20	7,780.08	582.99	-2,631.76	-19.82	10.68	10.18	-6.19	
8,452.00	43.44	187.54	7,854.47	524.86	-2,641.13	38.99	10.91	10.65	-3.85	
8,548.00	53.25	183.80	7,918.21	453.57	-2,648.03	110.14	10.62	10.22	-3.90	
8,643.00	65.44	181.33	7,966.56	372.09	-2,651.57	190.56	13.02	12.83	-2.60	

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Site:	Sec 07-T01S-R68W Livingston Pad	MD Reference:	KB @ 5346.40usft (Patterson 901)
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8,680.10	70.00	181.15	7,980.62	337.78	-2,652.31	224.27	12.30	12.29	-0.48	
70° Inclination @ 8680.10' MD										
8,739.00	77.24	180.89	7,997.22	281.31	-2,653.32	279.70	12.30	12.29	-0.45	
8,834.00	87.98	175.82	8,009.43	187.31	-2,650.57	371.04	12.48	11.31	-5.34	
8,930.00	91.78	176.17	8,009.63	91.56	-2,643.86	463.27	3.98	3.96	0.36	
9,025.00	92.27	174.90	8,006.27	-3.09	-2,636.47	554.29	1.43	0.52	-1.34	
9,120.00	91.16	175.60	8,003.43	-97.71	-2,628.61	645.18	1.38	-1.17	0.74	
9,222.00	92.18	175.12	8,000.46	-199.34	-2,620.36	742.83	1.11	1.00	-0.47	
9,317.00	91.87	174.54	7,997.10	-293.89	-2,611.81	833.51	0.69	-0.33	-0.61	
9,412.00	91.60	175.95	7,994.22	-388.52	-2,603.94	924.40	1.51	-0.28	1.48	
9,507.00	91.03	176.66	7,992.04	-483.29	-2,597.82	1,015.80	0.96	-0.60	0.75	
9,603.00	90.19	176.70	7,991.02	-579.13	-2,592.26	1,108.35	0.88	-0.88	0.04	
9,698.00	89.93	178.82	7,990.92	-674.05	-2,588.54	1,200.40	2.25	-0.27	2.23	
9,792.00	90.28	179.21	7,990.75	-768.03	-2,586.93	1,291.97	0.56	0.37	0.41	
9,887.00	90.19	181.11	7,990.36	-863.03	-2,587.19	1,384.92	2.00	-0.09	2.00	
9,983.00	89.84	181.06	7,990.33	-959.01	-2,589.01	1,479.16	0.37	-0.36	-0.05	
10,078.00	90.23	180.89	7,990.28	-1,054.00	-2,590.63	1,572.38	0.45	0.41	-0.18	
10,173.00	90.46	181.20	7,989.70	-1,148.98	-2,592.36	1,665.63	0.41	0.24	0.33	
10,268.00	90.68	180.32	7,988.76	-1,243.96	-2,593.62	1,758.78	0.95	0.23	-0.93	
10,363.00	90.23	179.74	7,988.00	-1,338.96	-2,593.67	1,851.68	0.77	-0.47	-0.61	
10,458.00	90.37	179.13	7,987.51	-1,433.95	-2,592.73	1,944.38	0.66	0.15	-0.64	
10,554.00	90.28	179.57	7,986.96	-1,529.95	-2,591.64	2,038.02	0.47	-0.09	0.46	
10,649.00	89.75	180.18	7,986.94	-1,624.95	-2,591.44	2,130.88	0.85	-0.56	0.64	
10,744.00	89.57	178.60	7,987.50	-1,719.94	-2,590.43	2,223.56	1.67	-0.19	-1.66	
10,839.00	89.62	180.14	7,988.17	-1,814.92	-2,589.38	2,316.23	1.62	0.05	1.62	
10,934.00	89.48	179.17	7,988.92	-1,909.92	-2,588.81	2,409.00	1.03	-0.15	-1.02	
11,029.00	90.01	179.61	7,989.34	-2,004.91	-2,587.80	2,501.69	0.73	0.56	0.46	
11,125.00	89.62	178.68	7,989.65	-2,100.90	-2,586.37	2,595.25	1.05	-0.41	-0.97	
11,220.00	89.31	179.04	7,990.54	-2,195.88	-2,584.48	2,687.73	0.50	-0.33	0.38	
11,315.00	89.35	179.08	7,991.65	-2,290.86	-2,582.92	2,780.29	0.06	0.04	0.04	
11,361.15	89.56	179.23	7,992.09	-2,337.00	-2,582.24	2,825.27	0.57	0.46	0.33	
Cross @ 11361.15' MD										
11,410.00	89.79	179.39	7,992.36	-2,385.85	-2,581.65	2,872.91	0.57	0.46	0.33	
11,505.00	89.57	179.87	7,992.89	-2,480.84	-2,581.04	2,965.68	0.56	-0.23	0.51	
11,601.00	89.93	180.18	7,993.31	-2,576.84	-2,581.08	3,059.57	0.49	0.38	0.32	
11,696.00	89.79	181.46	7,993.54	-2,671.83	-2,582.44	3,152.74	1.36	-0.15	1.35	
11,791.00	90.41	180.98	7,993.38	-2,766.81	-2,584.46	3,246.04	0.83	0.65	-0.51	
11,887.00	90.32	181.59	7,992.77	-2,862.78	-2,586.61	3,340.34	0.64	-0.09	0.64	
11,982.00	90.28	180.76	7,992.27	-2,957.76	-2,588.56	3,433.63	0.87	-0.04	-0.87	
12,078.00	90.32	181.20	7,991.77	-3,053.74	-2,590.20	3,527.84	0.46	0.04	0.46	
12,173.00	90.19	180.14	7,991.34	-3,148.73	-2,591.31	3,620.96	1.12	-0.14	-1.12	
12,269.00	90.10	179.83	7,991.10	-3,244.73	-2,591.29	3,714.83	0.34	-0.09	-0.32	
12,364.00	90.15	179.61	7,990.89	-3,339.73	-2,590.82	3,807.63	0.24	0.05	-0.23	

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Livingston S19-25-03N
Project:	Weld County, CO (NAD83)	TVD Reference:	KB @ 5346.40usft (Patterson 901)
Site:	Sec 07-T01S-R68W Livingston Pad	MD Reference:	KB @ 5346.40usft (Patterson 901)
Well:	Livingston S19-25-03N	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)	
12,460.00	90.23	179.39	7,990.58	-3,435.73	-2,589.99	3,901.33	0.24	0.08	-0.23	
12,555.00	90.15	179.43	7,990.26	-3,530.72	-2,589.01	3,994.02	0.09	-0.08	0.04	
12,651.00	90.10	180.62	7,990.05	-3,626.72	-2,589.05	4,087.91	1.24	-0.05	1.24	
12,747.00	90.10	179.43	7,989.88	-3,722.72	-2,589.09	4,181.79	1.24	0.00	-1.24	
12,842.00	90.37	180.32	7,989.49	-3,817.72	-2,588.88	4,274.65	0.98	0.28	0.94	
12,937.00	90.28	179.83	7,988.96	-3,912.71	-2,589.01	4,367.57	0.52	-0.09	-0.52	
13,032.00	90.50	180.54	7,988.31	-4,007.71	-2,589.32	4,460.53	0.78	0.23	0.75	
13,128.00	90.10	180.67	7,987.81	-4,103.70	-2,590.33	4,554.61	0.44	-0.42	0.14	
13,223.00	90.23	180.49	7,987.53	-4,198.70	-2,591.29	4,647.71	0.23	0.14	-0.19	
13,319.00	89.84	180.76	7,987.47	-4,294.69	-2,592.34	4,741.80	0.49	-0.41	0.28	
13,415.00	90.15	181.02	7,987.48	-4,390.68	-2,593.83	4,835.98	0.42	0.32	0.27	
13,510.00	90.19	182.61	7,987.20	-4,485.63	-2,596.84	4,929.46	1.67	0.04	1.67	
13,605.00	90.28	181.42	7,986.81	-4,580.57	-2,600.18	5,023.00	1.26	0.09	-1.25	
13,701.00	90.15	181.11	7,986.45	-4,676.54	-2,602.30	5,117.30	0.35	-0.14	-0.32	
13,796.00	89.88	180.93	7,986.43	-4,771.53	-2,603.99	5,210.53	0.34	-0.28	-0.19	
13,892.00	90.28	181.20	7,986.29	-4,867.51	-2,605.77	5,304.77	0.50	0.42	0.28	
13,986.00	90.23	181.02	7,985.87	-4,961.49	-2,607.59	5,397.05	0.20	-0.05	-0.19	
14,081.00	90.15	180.98	7,985.56	-5,056.48	-2,609.25	5,490.29	0.09	-0.08	-0.04	
14,176.00	89.75	180.67	7,985.64	-5,151.47	-2,610.62	5,583.46	0.53	-0.42	-0.33	
14,272.00	89.79	181.20	7,986.03	-5,247.45	-2,612.19	5,677.65	0.55	0.04	0.55	
14,366.00	89.97	180.93	7,986.22	-5,341.44	-2,613.93	5,769.92	0.35	0.19	-0.29	
14,461.00	89.66	181.90	7,986.53	-5,436.41	-2,616.28	5,863.29	1.07	-0.33	1.02	
14,557.00	89.70	180.27	7,987.07	-5,532.38	-2,618.10	5,957.52	1.70	0.04	-1.70	
14,652.00	90.28	180.23	7,987.08	-5,627.38	-2,618.51	6,050.51	0.61	0.61	-0.04	
14,747.00	90.46	180.18	7,986.47	-5,722.38	-2,618.85	6,143.48	0.20	0.19	-0.05	
14,842.00	90.10	180.36	7,986.01	-5,817.38	-2,619.30	6,236.47	0.42	-0.38	0.19	
14,937.00	89.70	179.39	7,986.17	-5,912.38	-2,619.09	6,329.32	1.10	-0.42	-1.02	
15,032.00	89.44	181.64	7,986.88	-6,007.36	-2,619.95	6,422.39	2.38	-0.27	2.37	
15,127.00	89.53	181.15	7,987.74	-6,102.33	-2,622.26	6,515.74	0.52	0.09	-0.52	
15,222.00	89.62	180.67	7,988.44	-6,197.32	-2,623.77	6,608.94	0.51	0.09	-0.51	
15,317.00	89.75	180.18	7,988.96	-6,292.31	-2,624.47	6,701.98	0.53	0.14	-0.52	
15,412.00	89.66	180.89	7,989.45	-6,387.31	-2,625.36	6,795.06	0.75	-0.09	0.75	
15,507.00	89.35	180.01	7,990.27	-6,482.30	-2,626.10	6,888.11	0.98	-0.33	-0.93	
15,602.00	89.40	180.05	7,991.31	-6,577.29	-2,626.15	6,981.02	0.07	0.05	0.04	
15,698.00	89.62	180.62	7,992.13	-6,673.29	-2,626.72	7,075.01	0.64	0.23	0.59	
15,793.00	89.48	180.23	7,992.88	-6,768.28	-2,627.42	7,168.05	0.44	-0.15	-0.41	
15,888.00	89.57	180.98	7,993.67	-6,863.27	-2,628.42	7,261.15	0.80	0.09	0.79	
15,983.00	89.62	179.35	7,994.34	-6,958.27	-2,628.70	7,354.10	1.72	0.05	-1.72	
16,078.00	89.79	180.49	7,994.83	-7,053.26	-2,628.56	7,446.97	1.21	0.18	1.20	
16,173.00	89.75	179.21	7,995.21	-7,148.26	-2,628.32	7,539.82	1.35	-0.04	-1.35	
16,267.00	89.66	180.98	7,995.69	-7,242.26	-2,628.47	7,631.77	1.89	-0.10	1.88	
16,363.00	89.62	180.10	7,996.29	-7,338.25	-2,629.38	7,725.83	0.92	-0.04	-0.92	
16,459.00	90.32	179.79	7,996.35	-7,434.25	-2,629.28	7,819.68	0.80	0.73	-0.32	
16,553.00	90.06	179.04	7,996.03	-7,528.24	-2,628.32	7,911.40	0.84	-0.28	-0.80	

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Livingston S19-25-03N
Project:	Weld County, CO (NAD83)	TVD Reference:	KB @ 5346.40usft (Patterson 901)
Site:	Sec 07-T01S-R68W Livingston Pad	MD Reference:	KB @ 5346.40usft (Patterson 901)
Well:	Livingston S19-25-03N	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)
16,627.77	90.26	179.00	7,995.82	-7,603.00	-2,627.05	7,984.24	0.28	0.27	-0.05
Cross @ 16627.77' MD									
16,649.00	90.32	178.99	7,995.72	-7,624.23	-2,626.67	8,004.92	0.28	0.27	-0.05
16,744.00	89.88	181.02	7,995.55	-7,719.22	-2,626.68	8,097.82	2.19	-0.46	2.14
16,840.00	90.06	179.39	7,995.60	-7,815.22	-2,627.03	8,191.76	1.71	0.19	-1.70
16,935.00	90.03	180.98	7,995.52	-7,910.21	-2,627.33	8,284.72	1.67	-0.03	1.67
17,030.00	90.15	180.18	7,995.38	-8,005.21	-2,628.29	8,377.82	0.85	0.13	-0.84
17,126.00	90.28	180.40	7,995.02	-8,101.21	-2,628.78	8,471.79	0.27	0.14	0.23
17,221.00	90.15	180.18	7,994.66	-8,196.20	-2,629.26	8,564.79	0.27	-0.14	-0.23
17,315.00	89.75	179.04	7,994.74	-8,290.20	-2,628.62	8,656.58	1.29	-0.43	-1.21
17,409.00	90.23	178.77	7,994.76	-8,384.18	-2,626.82	8,748.11	0.59	0.51	-0.29
17,505.00	89.93	179.08	7,994.62	-8,480.17	-2,625.02	8,841.59	0.45	-0.31	0.32
17,600.00	89.48	180.14	7,995.11	-8,575.16	-2,624.38	8,934.35	1.21	-0.47	1.12
17,695.00	89.84	179.92	7,995.68	-8,670.16	-2,624.43	9,027.26	0.44	0.38	-0.23
17,790.00	89.66	179.39	7,996.09	-8,765.16	-2,623.85	9,120.04	0.59	-0.19	-0.56
17,886.00	89.62	179.79	7,996.69	-8,861.15	-2,623.17	9,213.77	0.42	-0.04	0.42
17,982.00	89.09	181.24	7,997.77	-8,957.14	-2,624.03	9,307.81	1.61	-0.55	1.51
18,077.00	88.86	179.61	7,999.47	-9,052.12	-2,624.73	9,400.84	1.73	-0.24	-1.72
18,173.00	89.00	180.10	8,001.27	-9,148.10	-2,624.49	9,494.65	0.53	0.15	0.51
18,268.00	88.86	181.20	8,003.04	-9,243.08	-2,625.57	9,587.75	1.17	-0.15	1.16
18,363.00	89.62	180.18	8,004.30	-9,338.06	-2,626.71	9,680.88	1.34	0.80	-1.07
18,459.00	89.57	180.80	8,004.98	-9,434.05	-2,627.53	9,774.92	0.65	-0.05	0.65
18,555.00	89.66	180.32	8,005.62	-9,530.04	-2,628.47	9,868.99	0.51	0.09	-0.50
18,650.00	89.17	179.26	8,006.59	-9,625.04	-2,628.12	9,961.81	1.23	-0.52	-1.12
18,746.00	89.31	178.95	8,007.87	-9,721.02	-2,626.62	10,055.35	0.35	0.15	-0.32
18,841.00	89.17	178.95	8,009.13	-9,815.99	-2,624.88	10,147.86	0.15	-0.15	0.00
18,936.00	89.17	180.05	8,010.50	-9,910.98	-2,624.06	10,240.58	1.16	0.00	1.16
19,032.00	89.17	180.14	8,011.90	-10,006.97	-2,624.21	10,334.48	0.09	0.00	0.09
19,128.00	89.22	180.10	8,013.24	-10,102.96	-2,624.42	10,428.39	0.07	0.05	-0.04
19,223.00	89.09	178.51	8,014.64	-10,197.94	-2,623.26	10,521.03	1.68	-0.14	-1.67
19,319.00	89.17	180.54	8,016.10	-10,293.92	-2,622.47	10,614.72	2.12	0.08	2.11
19,414.00	88.64	179.65	8,017.92	-10,388.90	-2,622.63	10,707.63	1.09	-0.56	-0.94
19,509.00	88.64	180.23	8,020.17	-10,483.87	-2,622.53	10,800.49	0.61	0.00	0.61
19,604.00	88.51	181.33	8,022.54	-10,578.83	-2,623.82	10,893.62	1.17	-0.14	1.16
19,698.00	88.47	181.90	8,025.01	-10,672.76	-2,626.47	10,986.03	0.61	-0.04	0.61
19,793.00	88.64	181.42	8,027.41	-10,767.69	-2,629.22	11,079.43	0.54	0.18	-0.51
19,888.00	88.82	181.20	8,029.51	-10,862.64	-2,631.39	11,172.74	0.30	0.19	-0.23
19,982.00	88.86	180.54	8,031.42	-10,956.61	-2,632.82	11,264.93	0.70	0.04	-0.70
20,077.00	88.56	179.74	8,033.56	-11,051.59	-2,633.05	11,357.85	0.90	-0.32	-0.84
20,171.00	88.56	180.01	8,035.92	-11,145.56	-2,632.84	11,449.70	0.29	0.00	0.29
20,267.00	88.56	182.17	8,038.33	-11,241.50	-2,634.67	11,543.91	2.25	0.00	2.25
20,362.00	88.60	181.15	8,040.68	-11,336.43	-2,637.42	11,637.32	1.07	0.04	-1.07
20,456.00	88.60	180.45	8,042.98	-11,430.40	-2,638.73	11,729.48	0.74	0.00	-0.74

Survey Report

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Livingston S19-25-03N
Project:	Weld County, CO (NAD83)	TVD Reference:	KB @ 5346.40usft (Patterson 901)
Site:	Sec 07-T01S-R68W Livingston Pad	MD Reference:	KB @ 5346.40usft (Patterson 901)
Well:	Livingston S19-25-03N	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)	
20,551.00	88.69	180.62	8,045.23	-11,525.37	-2,639.62	11,822.53	0.20	0.09	0.18	
20,645.00	89.40	181.51	8,046.79	-11,619.33	-2,641.37	11,914.79	1.21	0.76	0.95	
20,741.00	89.26	180.93	8,047.92	-11,715.31	-2,643.41	12,009.07	0.62	-0.15	-0.60	
20,835.00	90.01	180.05	8,048.52	-11,809.30	-2,644.21	12,101.15	1.23	0.80	-0.94	
20,929.00	89.48	179.74	8,048.93	-11,903.30	-2,644.04	12,193.03	0.65	-0.56	-0.33	
21,023.00	89.57	179.96	8,049.71	-11,997.29	-2,643.79	12,284.90	0.25	0.10	0.23	
21,118.00	89.13	179.21	8,050.79	-12,092.28	-2,643.11	12,377.65	0.92	-0.46	-0.79	
21,213.00	89.04	180.45	8,052.31	-12,187.27	-2,642.83	12,470.48	1.31	-0.09	1.31	
21,308.00	88.51	180.76	8,054.34	-12,282.24	-2,643.83	12,563.56	0.65	-0.56	0.33	
Last MWD Survey @ 21308' MD										
21,396.00	88.51	180.76	8,056.63	-12,370.21	-2,644.99	12,649.82	0.00	0.00	0.00	
Projection to TD @ 21396' MD 510' FSL/ 974' 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 @ 8323.9	0.00	0.00	7,751.96	599.93	-2,628.23	1,235,958.90	3,126,281.23	39.980211	-105.049372	
- hit/miss target										
- Shape										
- actual wellpath misses target center by 0.13usft at 8323.97usft MD (7751.97 TVD, 599.92 N, -2628.10 E)										
- Point										
70° Inclination @ 8680.1	0.00	0.00	7,980.62	337.78	-2,652.32	1,235,696.63	3,126,258.51	39.979491	-105.049458	
- actual wellpath hits target center										
- Point										
Cross @ 11361.15' MD	0.00	0.00	7,992.09	-2,337.00	-2,582.24	1,233,022.25	3,126,342.46	39.972148	-105.049207	
- actual wellpath hits target center										
- Point										
Cross @ 16627.77' MD	0.00	0.00	7,995.82	-7,603.00	-2,627.05	1,227,756.09	3,126,324.97	39.957692	-105.049365	
- actual wellpath hits target center										
- Point										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,583.00	1,542.98	74.13	-267.06	Tie into Surface Surveys	
1,667.00	1,619.61	83.80	-300.07	First MWD Survey @ 1667' MD	
8,323.97	7,751.96	599.92	-2,628.10	30° Inclination @ 8323.97' MD	
8,680.10	7,980.62	337.78	-2,652.31	70° Inclination @ 8680.10' MD	
11,361.15	7,992.09	-2,337.00	-2,582.24	Cross @ 11361.15' MD	
16,627.77	7,995.82	-7,603.00	-2,627.05	Cross @ 16627.77' MD	
21,308.00	8,054.34	-12,282.24	-2,643.83	Last MWD Survey @ 21308' MD	
21,396.00	8,056.63	-12,370.21	-2,644.99	Projection to TD @ 21396' MD 510' FSL/ 974' FWL	

Checked By: _____	Approved By: _____	Date: _____
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