

# **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

**Sec 07-T01S-R68W Livingston Pad**

**Livingston S19-25-07N**

**Wellbore #1**

**Design: Wellbore #1**

## **Standard Survey Report**

**02 October, 2019**

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Livingston S19-25-07N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Site:</b>	Sec 07-T01S-R68W Livingston Pad	<b>MD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Well:</b>	Livingston S19-25-07N	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	EDM 5000.15 Single User Db

<b>Project</b>	Weld County, CO (NAD83),		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Ground Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 S19-25-07N				
Well Position	+N/-S	0.00 usft	Northing:	1,235,372.27 usft	Latitude:	39.978562
	+E/-W	0.00 usft	Easting:	3,128,984.29 usft	Longitude:	-105.039737
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,320.50 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	6/28/2019	8.10	66.42	51,868.58506016

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<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	186.34	

<b>Survey Program</b>	<b>Date</b>	10/2/2019			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
143.00	1,588.00	Surface Surveys (Wellbore #1)	MWD	MWD - Standard	
1,670.00	21,037.00	Atlas MWD Surveys (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</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>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
143.00	0.83	131.33	143.00	-0.68	0.78	0.59	0.58	0.58	0.00	
230.00	1.05	126.85	229.98	-1.58	1.89	1.36	0.27	0.25	-5.15	
317.00	0.18	98.11	316.98	-2.08	2.66	1.77	1.03	-1.00	-33.03	
405.00	0.31	157.17	404.98	-2.31	2.89	1.98	0.30	0.15	67.11	
492.00	0.40	185.12	491.98	-2.83	2.96	2.49	0.22	0.10	32.13	
579.00	0.48	255.61	578.97	-3.23	2.58	2.92	0.59	0.09	81.02	
666.00	0.97	254.20	665.97	-3.52	1.51	3.33	0.56	0.56	-1.62	
754.00	1.71	278.11	753.94	-3.54	-0.50	3.57	1.04	0.84	27.17	
841.00	2.46	286.64	840.88	-2.82	-3.58	3.20	0.93	0.86	9.80	

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Livingston S19-25-07N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Site:</b>	Sec 07-T01S-R68W Livingston Pad	<b>MD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Well:</b>	Livingston S19-25-07N	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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	3.82	295.34	927.75	-1.04	-7.99	1.92	1.65	1.56	10.00
1,016.00	5.19	298.59	1,015.48	2.12	-14.13	-0.54	1.58	1.56	3.69
1,103.00	8.09	301.93	1,101.89	7.24	-22.78	-4.68	3.36	3.33	3.84
1,190.00	8.83	301.49	1,187.94	13.96	-33.67	-10.16	0.85	0.85	-0.51
1,277.00	10.33	297.53	1,273.72	21.06	-46.28	-15.82	1.88	1.72	-4.55
1,365.00	12.48	296.48	1,359.98	28.95	-61.79	-21.95	2.45	2.44	-1.19
1,452.00	14.24	295.42	1,444.62	37.73	-79.87	-28.68	2.04	2.02	-1.22
1,539.00	14.99	296.13	1,528.81	47.28	-99.64	-35.99	0.89	0.86	0.82
1,588.00	15.23	296.04	1,576.11	52.90	-111.11	-40.31	0.49	0.49	-0.18
Tie into Surface Surveys									
1,670.00	15.69	295.95	1,655.15	62.48	-130.76	-47.66	0.56	0.56	-0.11
First MWD Survey @ 1670' MD									
1,765.00	15.07	296.12	1,746.74	73.53	-153.40	-56.15	0.65	-0.65	0.18
1,860.00	14.54	296.26	1,838.59	84.25	-175.18	-64.39	0.56	-0.56	0.15
1,956.00	13.83	295.55	1,931.66	94.53	-196.34	-72.28	0.76	-0.74	-0.74
2,051.00	13.12	295.15	2,024.05	104.01	-216.34	-79.49	0.75	-0.75	-0.42
2,145.00	15.38	303.04	2,115.16	115.34	-236.46	-88.53	3.16	2.40	8.39
2,240.00	14.36	303.04	2,206.97	128.63	-256.89	-99.49	1.07	-1.07	0.00
2,334.00	13.21	302.95	2,298.26	140.83	-275.68	-109.54	1.22	-1.22	-0.10
2,429.00	15.95	301.85	2,390.20	153.62	-295.88	-120.02	2.90	2.88	-1.16
2,524.00	15.07	302.82	2,481.74	167.21	-317.34	-131.15	0.97	-0.93	1.02
2,619.00	13.08	303.04	2,573.88	179.76	-336.74	-141.49	2.10	-2.09	0.23
2,714.00	16.79	296.08	2,665.66	191.66	-358.08	-150.96	4.33	3.91	-7.33
2,808.00	15.82	294.63	2,755.88	202.97	-381.92	-159.57	1.12	-1.03	-1.54
2,903.00	13.79	291.50	2,847.72	212.52	-404.23	-166.59	2.30	-2.14	-3.29
2,999.00	11.75	287.88	2,941.35	219.71	-424.18	-171.54	2.28	-2.13	-3.77
3,094.00	14.18	291.85	3,033.92	227.01	-444.19	-176.59	2.72	2.56	4.18
3,189.00	13.26	291.14	3,126.21	235.27	-465.15	-182.49	0.98	-0.97	-0.75
3,284.00	11.67	290.40	3,218.96	242.55	-484.32	-187.60	1.68	-1.67	-0.78
3,379.00	13.30	298.46	3,311.72	251.11	-502.94	-194.05	2.51	1.72	8.48
3,475.00	12.24	299.61	3,405.35	261.40	-521.49	-202.23	1.14	-1.10	1.20
3,570.00	14.18	305.73	3,497.83	273.17	-539.70	-211.92	2.51	2.04	6.44
3,665.00	12.90	304.06	3,590.19	285.91	-557.93	-222.57	1.41	-1.35	-1.76
3,761.00	15.47	302.21	3,683.26	298.74	-577.64	-233.14	2.72	2.68	-1.93
3,856.00	14.10	301.63	3,775.11	311.56	-598.22	-243.61	1.45	-1.44	-0.61
3,975.00	11.18	300.31	3,891.21	324.99	-620.52	-254.50	2.47	-2.45	-1.11
4,070.00	13.17	295.11	3,984.07	334.23	-638.28	-261.72	2.39	2.09	-5.47
4,165.00	16.44	297.67	4,075.91	345.07	-659.99	-270.10	3.51	3.44	2.69
4,261.00	14.49	296.08	4,168.43	356.66	-682.81	-279.10	2.08	-2.03	-1.66
4,356.00	12.02	295.95	4,260.89	366.21	-702.38	-286.43	2.60	-2.60	-0.14
4,451.00	13.65	296.48	4,353.51	375.54	-721.31	-293.61	1.72	1.72	0.56
4,547.00	12.55	294.10	4,447.02	384.85	-740.97	-300.70	1.28	-1.15	-2.48
4,642.00	14.98	297.49	4,539.28	394.73	-761.29	-308.28	2.69	2.56	3.57

# Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Livingston S19-25-07N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Site:</b>	Sec 07-T01S-R68W Livingston Pad	<b>MD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Well:</b>	Livingston S19-25-07N	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)	
4,737.00	14.18	296.48	4,631.22	405.59	-782.59	-316.71	0.88	-0.84	-1.06	
4,833.00	16.22	298.64	4,723.86	417.26	-804.89	-325.85	2.21	2.13	2.25	
4,928.00	15.47	296.52	4,815.25	429.28	-827.87	-335.26	1.00	-0.79	-2.23	
5,024.00	13.30	293.57	4,908.24	439.41	-849.45	-342.95	2.39	-2.26	-3.07	
5,119.00	14.63	295.24	5,000.43	448.89	-870.32	-350.07	1.46	1.40	1.76	
5,215.00	14.27	295.33	5,093.39	459.13	-891.98	-357.85	0.38	-0.38	0.09	
5,309.00	16.62	299.65	5,183.99	470.74	-914.14	-366.94	2.78	2.50	4.60	
5,405.00	16.00	298.55	5,276.13	483.85	-937.69	-377.38	0.72	-0.65	-1.15	
5,500.00	14.76	298.46	5,367.72	495.88	-959.83	-386.88	1.31	-1.31	-0.09	
5,596.00	13.52	297.45	5,460.81	506.88	-980.54	-395.53	1.32	-1.29	-1.05	
5,691.00	12.06	297.75	5,553.45	516.62	-999.18	-403.15	1.54	-1.54	0.32	
5,787.00	12.99	294.10	5,647.17	525.69	-1,017.91	-410.11	1.27	0.97	-3.80	
5,882.00	13.17	294.58	5,739.70	534.55	-1,037.49	-416.75	0.22	0.19	0.51	
5,977.00	14.76	304.67	5,831.91	545.94	-1,057.29	-425.89	3.06	1.67	10.62	
6,073.00	13.48	301.94	5,925.01	558.82	-1,076.85	-436.52	1.50	-1.33	-2.84	
6,169.00	13.48	295.82	6,018.37	569.61	-1,096.42	-445.09	1.49	0.00	-6.38	
6,264.00	14.80	298.02	6,110.49	580.14	-1,117.09	-453.27	1.50	1.39	2.32	
6,360.00	12.86	296.65	6,203.70	590.69	-1,137.47	-461.51	2.05	-2.02	-1.43	
6,454.00	12.90	297.93	6,295.33	600.30	-1,156.09	-469.00	0.31	0.04	1.36	
6,549.00	14.85	297.67	6,387.56	610.92	-1,176.24	-477.33	2.05	2.05	-0.27	
6,645.00	16.39	299.39	6,480.01	623.28	-1,198.94	-487.11	1.67	1.60	1.79	
6,740.00	14.49	299.74	6,571.58	635.75	-1,220.94	-497.08	2.00	-2.00	0.37	
6,835.00	16.08	296.43	6,663.22	647.50	-1,243.04	-506.32	1.91	1.67	-3.48	
6,930.00	14.27	297.01	6,754.90	658.68	-1,265.26	-514.97	1.91	-1.91	0.61	
7,025.00	13.26	296.65	6,847.17	668.88	-1,285.43	-522.89	1.07	-1.06	-0.38	
7,121.00	11.36	295.24	6,940.96	677.85	-1,303.82	-529.77	2.00	-1.98	-1.47	
7,216.00	9.41	291.98	7,034.40	684.75	-1,319.49	-534.90	2.14	-2.05	-3.43	
7,311.00	8.09	293.26	7,128.29	690.30	-1,332.83	-538.94	1.40	-1.39	1.35	
7,407.00	4.77	298.59	7,223.67	694.88	-1,342.54	-542.42	3.51	-3.46	5.55	
7,502.00	2.17	311.86	7,318.49	697.97	-1,347.35	-544.96	2.85	-2.74	13.97	
7,598.00	0.66	255.41	7,414.46	699.04	-1,349.24	-545.82	1.97	-1.57	-58.80	
7,693.00	8.48	185.52	7,509.11	691.92	-1,350.45	-538.61	8.71	8.23	-73.57	
7,788.00	16.39	177.54	7,601.81	671.52	-1,350.55	-518.32	8.50	8.33	-8.40	
7,884.00	25.14	179.43	7,691.49	637.53	-1,349.76	-484.63	9.14	9.11	1.97	
7,937.31	30.00	179.68	7,738.73	612.87	-1,349.57	-460.14	9.12	9.12	0.47	
30° Inclination @ 7937.31' MD										
7,979.00	33.80	179.83	7,774.12	590.84	-1,349.48	-438.25	9.12	9.12	0.36	
8,074.00	43.00	183.58	7,848.50	531.95	-1,351.43	-379.51	9.99	9.68	3.95	
8,170.00	52.14	182.21	7,913.20	461.26	-1,354.94	-308.86	9.58	9.52	-1.43	
8,265.00	58.68	181.90	7,967.10	383.14	-1,357.74	-230.91	6.89	6.88	-0.33	
8,361.00	64.25	180.01	8,012.95	298.86	-1,359.10	-146.99	6.05	5.80	-1.97	
8,422.51	70.00	180.12	8,036.85	242.21	-1,359.17	-90.68	9.35	9.35	0.18	
70° Inclination @ 8422.51' MD										
8,456.00	73.13	180.18	8,047.44	210.44	-1,359.26	-59.10	9.35	9.35	0.17	

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Livingston S19-25-07N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Site:</b>	Sec 07-T01S-R68W Livingston Pad	<b>MD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Well:</b>	Livingston S19-25-07N	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
8,551.00	84.40	179.21	8,065.92	117.41	-1,358.74	33.30	11.91	11.86	-1.02
8,647.00	92.22	179.83	8,068.75	21.53	-1,357.94	128.51	8.17	8.15	0.65
8,742.00	89.48	179.48	8,067.34	-73.45	-1,357.37	222.84	2.91	-2.88	-0.37
8,838.00	89.53	178.46	8,068.17	-169.43	-1,355.64	318.05	1.06	0.05	-1.06
8,934.00	89.40	179.74	8,069.06	-265.41	-1,354.14	413.28	1.34	-0.14	1.33
9,132.00	89.66	181.90	8,070.69	-463.37	-1,356.97	610.34	1.10	0.13	1.09
9,227.00	90.59	183.88	8,070.48	-558.24	-1,361.76	705.16	2.30	0.98	2.08
9,322.00	90.63	184.11	8,069.47	-653.01	-1,368.38	800.08	0.25	0.04	0.24
9,417.00	90.41	183.31	8,068.61	-747.80	-1,374.52	894.97	0.87	-0.23	-0.84
9,512.00	90.23	180.98	8,068.08	-842.73	-1,378.08	989.71	2.46	-0.19	-2.45
9,608.00	90.15	181.33	8,067.76	-938.71	-1,380.02	1,085.32	0.37	-0.08	0.36
9,703.00	90.23	181.28	8,067.44	-1,033.68	-1,382.18	1,179.95	0.10	0.08	-0.05
9,797.00	90.19	179.26	8,067.10	-1,127.68	-1,382.62	1,273.42	2.15	-0.04	-2.15
9,892.00	90.28	178.91	8,066.71	-1,222.66	-1,381.10	1,367.66	0.38	0.09	-0.37
9,988.00	90.06	180.84	8,066.42	-1,318.66	-1,380.90	1,463.04	2.02	-0.23	2.01
10,083.00	90.41	177.80	8,066.03	-1,413.64	-1,379.77	1,557.32	3.22	0.37	-3.20
10,178.00	90.15	179.04	8,065.57	-1,508.60	-1,377.15	1,651.41	1.33	-0.27	1.31
10,273.00	90.46	179.17	8,065.06	-1,603.59	-1,375.66	1,745.65	0.35	0.33	0.14
10,368.00	90.28	179.61	8,064.45	-1,698.58	-1,374.65	1,839.95	0.50	-0.19	0.46
10,463.00	90.23	180.14	8,064.03	-1,793.58	-1,374.45	1,934.35	0.56	-0.05	0.56
10,559.00	89.57	179.70	8,064.20	-1,889.58	-1,374.31	2,029.74	0.83	-0.69	-0.46
10,654.00	89.84	179.21	8,064.68	-1,984.57	-1,373.41	2,124.06	0.59	0.28	-0.52
10,749.00	89.57	178.64	8,065.17	-2,079.55	-1,371.63	2,218.26	0.66	-0.28	-0.60
10,844.00	89.35	181.99	8,066.07	-2,174.53	-1,372.15	2,312.72	3.53	-0.23	3.53
10,939.00	90.10	179.52	8,066.53	-2,269.51	-1,373.40	2,407.26	2.72	0.79	-2.60
11,003.49	89.83	180.36	8,066.57	-2,334.00	-1,373.33	2,471.35	1.37	-0.42	1.31
<b>Cross @ 11003.49' MD</b>									
11,034.00	89.70	180.76	8,066.69	-2,364.51	-1,373.63	2,501.70	1.37	-0.42	1.31
11,130.00	90.01	178.55	8,066.93	-2,460.50	-1,373.05	2,597.04	2.32	0.32	-2.30
11,225.00	90.19	179.48	8,066.77	-2,555.49	-1,371.42	2,691.27	1.00	0.19	0.98
11,320.00	89.84	177.94	8,066.74	-2,650.46	-1,369.28	2,785.42	1.66	-0.37	-1.62
11,415.00	89.48	181.64	8,067.31	-2,745.44	-1,368.93	2,879.79	3.91	-0.38	3.89
11,510.00	89.79	179.52	8,067.91	-2,840.43	-1,369.90	2,974.30	2.26	0.33	-2.23
11,606.00	89.35	180.62	8,068.63	-2,936.43	-1,370.01	3,069.72	1.23	-0.46	1.15
11,701.00	89.88	179.30	8,069.27	-3,031.42	-1,369.95	3,164.13	1.50	0.56	-1.39
11,796.00	89.44	180.18	8,069.84	-3,126.42	-1,369.52	3,258.50	1.04	-0.46	0.93
11,892.00	89.48	179.70	8,070.74	-3,222.41	-1,369.41	3,353.89	0.50	0.04	-0.50
11,987.00	89.62	179.92	8,071.49	-3,317.41	-1,369.10	3,448.27	0.27	0.15	0.23
12,083.00	90.10	177.76	8,071.72	-3,413.38	-1,367.16	3,543.45	2.30	0.50	-2.25
12,178.00	89.75	177.94	8,071.85	-3,508.32	-1,363.59	3,637.41	0.41	-0.37	0.19
12,274.00	89.84	179.39	8,072.19	-3,604.29	-1,361.36	3,732.54	1.51	0.09	1.51
12,369.00	90.19	176.83	8,072.16	-3,699.23	-1,358.22	3,826.56	2.72	0.37	-2.69
12,465.00	90.28	176.66	8,071.77	-3,795.07	-1,352.77	3,921.21	0.20	0.09	-0.18

# Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Livingston S19-25-07N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Site:</b>	Sec 07-T01S-R68W Livingston Pad	<b>MD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Well:</b>	Livingston S19-25-07N	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)	
12,560.00	90.32	176.08	8,071.27	-3,889.88	-1,346.76	4,014.78	0.61	0.04	-0.61	
12,656.00	90.15	177.32	8,070.88	-3,985.72	-1,341.23	4,109.42	1.30	-0.18	1.29	
12,752.00	89.75	180.58	8,070.96	-4,081.69	-1,339.47	4,204.61	3.42	-0.42	3.40	
12,847.00	89.66	179.30	8,071.45	-4,176.68	-1,339.37	4,299.02	1.35	-0.09	-1.35	
12,942.00	89.31	183.36	8,072.31	-4,271.64	-1,341.58	4,393.63	4.29	-0.37	4.27	
13,037.00	89.84	180.80	8,073.01	-4,366.56	-1,345.03	4,488.36	2.75	0.56	-2.69	
13,133.00	89.53	182.52	8,073.54	-4,462.52	-1,347.81	4,584.03	1.82	-0.32	1.79	
13,228.00	89.62	181.33	8,074.24	-4,557.46	-1,351.00	4,678.75	1.26	0.09	-1.25	
13,324.00	89.66	181.46	8,074.85	-4,653.43	-1,353.33	4,774.39	0.14	0.04	0.14	
13,420.00	89.66	180.93	8,075.42	-4,749.41	-1,355.34	4,870.00	0.55	0.00	-0.55	
13,515.00	90.01	180.40	8,075.69	-4,844.40	-1,356.44	4,964.53	0.67	0.37	-0.56	
13,610.00	90.23	179.48	8,075.49	-4,939.40	-1,356.34	5,058.94	1.00	0.23	-0.97	
13,706.00	90.01	178.68	8,075.29	-5,035.38	-1,354.80	5,154.17	0.86	-0.23	-0.83	
13,801.00	89.88	181.24	8,075.38	-5,130.38	-1,354.73	5,248.57	2.70	-0.14	2.69	
13,897.00	90.23	179.87	8,075.29	-5,226.37	-1,355.66	5,344.08	1.47	0.36	-1.43	
13,991.00	89.93	180.45	8,075.16	-5,320.37	-1,355.92	5,437.54	0.69	-0.32	0.62	
14,086.00	89.97	178.60	8,075.24	-5,415.36	-1,355.14	5,531.86	1.95	0.04	-1.95	
14,181.00	90.15	179.08	8,075.14	-5,510.34	-1,353.21	5,626.05	0.54	0.19	0.51	
14,277.00	90.01	180.67	8,075.01	-5,606.34	-1,353.00	5,721.43	1.66	-0.15	1.66	
14,371.00	89.57	180.58	8,075.35	-5,700.33	-1,354.03	5,814.97	0.48	-0.47	-0.10	
14,466.00	89.48	181.15	8,076.14	-5,795.32	-1,355.46	5,909.53	0.61	-0.09	0.60	
14,562.00	89.84	180.10	8,076.71	-5,891.31	-1,356.51	6,005.05	1.16	0.38	-1.09	
14,657.00	89.75	179.92	8,077.05	-5,986.31	-1,356.53	6,099.47	0.21	-0.09	-0.19	
14,752.00	89.62	180.62	8,077.57	-6,081.30	-1,356.97	6,193.94	0.75	-0.14	0.74	
14,847.00	90.01	180.01	8,077.88	-6,176.30	-1,357.50	6,288.41	0.76	0.41	-0.64	
14,942.00	89.44	180.45	8,078.33	-6,271.30	-1,357.88	6,382.87	0.76	-0.60	0.46	
15,037.00	89.93	180.18	8,078.86	-6,366.29	-1,358.40	6,477.34	0.59	0.52	-0.28	
15,132.00	89.93	180.40	8,078.97	-6,461.29	-1,358.88	6,571.81	0.23	0.00	0.23	
15,227.00	89.62	180.27	8,079.35	-6,556.29	-1,359.44	6,666.29	0.35	-0.33	-0.14	
15,322.00	89.66	179.74	8,079.94	-6,651.29	-1,359.45	6,760.71	0.56	0.04	-0.56	
15,417.00	89.62	182.12	8,080.54	-6,746.27	-1,360.99	6,855.28	2.51	-0.04	2.51	
15,512.00	90.10	180.40	8,080.77	-6,841.24	-1,363.08	6,949.90	1.88	0.51	-1.81	
15,607.00	89.84	179.61	8,080.82	-6,936.24	-1,363.08	7,044.32	0.88	-0.27	-0.83	
15,703.00	89.62	181.42	8,081.27	-7,032.23	-1,363.95	7,139.82	1.90	-0.23	1.89	
15,798.00	89.84	179.65	8,081.72	-7,127.22	-1,364.83	7,234.33	1.88	0.23	-1.86	
15,893.00	89.31	180.40	8,082.43	-7,222.22	-1,364.88	7,328.75	0.97	-0.56	0.79	
15,988.00	89.93	179.35	8,083.06	-7,317.21	-1,364.67	7,423.14	1.28	0.65	-1.11	
16,083.00	89.79	180.27	8,083.29	-7,412.21	-1,364.35	7,517.52	0.98	-0.15	0.97	
16,175.00	89.93	178.82	8,083.51	-7,504.21	-1,363.62	7,608.88	1.58	0.15	-1.58	
16,270.00	90.59	178.95	8,083.08	-7,599.19	-1,361.77	7,703.07	0.71	0.69	0.14	
16,271.81	90.55	178.95	8,083.06	-7,601.00	-1,361.74	7,704.87	2.29	-2.28	-0.09	
Cross @ 16271.81' MD										
16,365.00	88.42	178.86	8,083.90	-7,694.16	-1,359.96	7,797.26	2.29	-2.28	-0.09	
16,461.00	88.42	179.79	8,086.55	-7,790.12	-1,358.83	7,892.51	0.97	0.00	0.97	

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Livingston S19-25-07N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Site:</b>	Sec 07-T01S-R68W Livingston Pad	<b>MD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Well:</b>	Livingston S19-25-07N	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
16,555.00	88.33	179.74	8,089.22	-7,884.08	-1,358.44	7,985.85	0.11	-0.10	-0.05
16,651.00	89.40	182.08	8,091.12	-7,980.04	-1,359.97	8,081.40	2.68	1.11	2.44
16,746.00	89.44	181.90	8,092.08	-8,074.98	-1,363.27	8,176.12	0.19	0.04	-0.19
16,842.00	90.01	182.17	8,092.54	-8,170.91	-1,366.67	8,271.85	0.66	0.59	0.28
16,937.00	90.19	182.56	8,092.37	-8,265.83	-1,370.59	8,366.62	0.45	0.19	0.41
17,032.00	88.60	183.71	8,093.38	-8,360.68	-1,375.79	8,461.46	2.07	-1.67	1.21
17,128.00	89.62	183.53	8,094.87	-8,456.48	-1,381.85	8,557.34	1.08	1.06	-0.19
17,223.00	89.44	182.96	8,095.65	-8,551.32	-1,387.23	8,652.20	0.63	-0.19	-0.60
17,318.00	90.28	182.74	8,095.88	-8,646.20	-1,391.95	8,747.02	0.91	0.88	-0.23
17,412.00	88.56	182.69	8,096.83	-8,740.09	-1,396.40	8,840.82	1.83	-1.83	-0.05
17,508.00	88.20	182.08	8,099.54	-8,835.97	-1,400.40	8,936.56	0.74	-0.38	-0.64
17,603.00	88.51	182.08	8,102.27	-8,930.86	-1,403.84	9,031.25	0.33	0.33	0.00
17,698.00	88.47	182.12	8,104.78	-9,025.77	-1,407.32	9,125.96	0.06	-0.04	0.04
17,793.00	88.69	182.12	8,107.13	-9,120.67	-1,410.84	9,220.67	0.23	0.23	0.00
17,889.00	88.56	181.11	8,109.43	-9,216.61	-1,413.54	9,316.32	1.06	-0.14	-1.05
17,984.00	87.80	179.57	8,112.45	-9,311.55	-1,414.10	9,410.75	1.81	-0.80	-1.62
18,080.00	87.41	179.30	8,116.46	-9,407.46	-1,413.16	9,505.97	0.49	-0.41	-0.28
18,175.00	87.01	178.73	8,121.09	-9,502.34	-1,411.53	9,600.08	0.73	-0.42	-0.60
18,271.00	88.42	177.67	8,124.91	-9,598.21	-1,408.51	9,695.04	1.84	1.47	-1.10
18,366.00	87.98	177.41	8,127.90	-9,693.07	-1,404.44	9,788.87	0.54	-0.46	-0.27
18,462.00	89.48	179.26	8,130.03	-9,789.00	-1,401.65	9,883.91	2.48	1.56	1.93
18,558.00	89.48	178.64	8,130.90	-9,884.98	-1,399.89	9,979.10	0.65	0.00	-0.65
18,653.00	89.09	178.38	8,132.08	-9,979.94	-1,397.42	10,073.21	0.49	-0.41	-0.27
18,749.00	88.86	178.29	8,133.80	-10,075.89	-1,394.63	10,168.26	0.26	-0.24	-0.09
18,844.00	89.13	177.72	8,135.47	-10,170.81	-1,391.33	10,262.24	0.66	0.28	-0.60
18,939.00	89.22	180.62	8,136.83	-10,265.78	-1,389.95	10,356.48	3.05	0.09	3.05
19,035.00	89.09	179.39	8,138.25	-10,361.77	-1,389.96	10,451.88	1.29	-0.14	-1.28
19,130.00	89.17	179.61	8,139.69	-10,456.76	-1,389.13	10,546.20	0.25	0.08	0.23
19,226.00	87.98	179.92	8,142.08	-10,552.73	-1,388.74	10,641.53	1.28	-1.24	0.32
19,321.00	87.89	179.96	8,145.50	-10,647.66	-1,388.64	10,735.88	0.10	-0.09	0.04
19,417.00	87.98	179.35	8,148.96	-10,743.60	-1,388.06	10,831.17	0.64	0.09	-0.64
19,512.00	88.20	179.04	8,152.13	-10,838.54	-1,386.73	10,925.38	0.40	0.23	-0.33
19,607.00	87.85	178.64	8,155.40	-10,933.46	-1,384.80	11,019.51	0.56	-0.37	-0.42
19,701.00	88.16	178.51	8,158.67	-11,027.37	-1,382.47	11,112.59	0.36	0.33	-0.14
19,795.00	88.51	177.80	8,161.41	-11,121.28	-1,379.44	11,205.59	0.84	0.37	-0.76
19,890.00	88.25	177.89	8,164.09	-11,216.18	-1,375.87	11,299.51	0.29	-0.27	0.09
19,984.00	88.38	177.27	8,166.86	-11,310.05	-1,371.90	11,392.38	0.67	0.14	-0.66
20,080.00	88.47	179.21	8,169.49	-11,405.97	-1,368.96	11,487.38	2.02	0.09	2.02
20,174.00	89.17	179.57	8,171.43	-11,499.94	-1,367.96	11,580.67	0.84	0.74	0.38
20,269.00	89.22	179.70	8,172.77	-11,594.93	-1,367.35	11,675.01	0.15	0.05	0.14
20,365.00	89.40	178.77	8,173.92	-11,690.91	-1,366.07	11,770.26	0.99	0.19	-0.97
20,459.00	90.37	181.99	8,174.11	-11,784.90	-1,366.69	11,863.74	3.58	1.03	3.43
20,553.00	90.32	181.24	8,173.54	-11,878.86	-1,369.34	11,957.42	0.80	-0.05	-0.80

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Livingston S19-25-07N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Site:</b>	Sec 07-T01S-R68W Livingston Pad	<b>MD Reference:</b>	KB @ 5349.50usft (Patterson 901)
<b>Well:</b>	Livingston S19-25-07N	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
20,648.00	90.94	181.33	8,172.50	-11,973.83	-1,371.47	12,052.05	0.66	0.65	0.09
20,744.00	91.07	180.71	8,170.82	-12,069.80	-1,373.18	12,147.62	0.66	0.14	-0.65
20,838.00	91.07	180.45	8,169.06	-12,163.78	-1,374.13	12,241.13	0.28	0.00	-0.28
20,932.00	91.21	179.26	8,167.19	-12,257.76	-1,373.89	12,334.51	1.27	0.15	-1.27
20,989.00	91.38	179.74	8,165.90	-12,314.74	-1,373.40	12,391.09	0.89	0.30	0.84
<b>Last MWD Survey @ 20989' MD</b>									
21,037.00	91.38	179.74	8,164.75	-12,362.73	-1,373.18	12,438.75	0.00	0.00	0.00
<b>Projection to TD @ 21037' MD 511.5' FSL/ 2317' FWL</b>									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
30° Inclination @ 7937.3	0.00	0.00	7,738.73	612.87	-1,349.57	1,235,978.12	3,127,631.56	39.980244	-105.044553
- hit/miss target									
- Shape									
- actual wellpath misses target center by 0.01usft at 7937.31usft MD (7738.73 TVD, 612.87 N, -1349.57 E)									
- Point									
70° Inclination @ 8422.5	0.00	0.00	8,036.85	242.20	-1,359.17	1,235,607.41	3,127,623.88	39.979227	-105.044587
- actual wellpath hits target center									
- Point									
Cross @ 11003.49' MD	0.00	0.00	8,066.57	-2,334.00	-1,373.33	1,233,031.17	3,127,623.09	39.972155	-105.044637
- actual wellpath hits target center									
- Point									
Cross @ 16271.81' MD	0.00	0.00	8,083.06	-7,601.00	-1,361.74	1,227,764.30	3,127,662.02	39.957696	-105.044595
- actual wellpath hits target center									
- Point									

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,588.00	1,576.11	52.90	-111.11	Tie into Surface Surveys	
1,670.00	1,655.15	62.48	-130.76	First MWD Survey @ 1670' MD	
7,937.31	7,738.73	612.87	-1,349.57	30° Inclination @ 7937.31' MD	
8,422.51	8,036.85	242.21	-1,359.17	70° Inclination @ 8422.51' MD	
11,003.49	8,066.57	-2,334.00	-1,373.33	Cross @ 11003.49' MD	
16,271.81	8,083.06	-7,601.00	-1,361.74	Cross @ 16271.81' MD	
20,989.00	8,165.90	-12,314.74	-1,373.40	Last MWD Survey @ 20989' MD	
21,037.00	8,164.75	-12,362.73	-1,373.18	Projection to TD @ 21037' MD 511.5' FSL/ 2317' FWL	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_