

# **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

**Sec 10-T01S-R68W Interchange Pad**

**Interchange B S22-30-15N**

**Wellbore #1**

**Design: Wellbore #1**

## **Standard Survey Report**

**10 July, 2019**

## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Interchange B S22-30-15N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Site:</b>	Sec 10-T01S-R68W Interchange Pad	<b>MD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Well:</b>	Interchange B S22-30-15N	<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 10-T01S-R68W Interchange Pad			
Site Position:		Northing:	1,235,601.28 usft	Latitude:	39.978987
From:	Map	Easting:	3,142,562.59 usft	Longitude:	-104.991281
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.33 °

Well		Interchange B S22-30-15N				
Well Position	+N/-S	0.00 usft	Northing:	1,235,301.32 usft	Latitude:	39.978163
	+E/-W	0.00 usft	Easting:	3,142,599.06 usft	Longitude:	-104.991157
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,206.10 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	6/8/2019	8.08	66.43	51,880.67915395

<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	168.83	

<b>Survey Program</b>	<b>Date</b>	7/10/2019			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
217.00	1,608.00	Surface Surveys (Wellbore #1)	MWD	MWD - Standard	
1,666.00	24,655.00	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	
217.00	0.31	241.50	217.00	-0.28	-0.52	0.17	0.14	0.14	0.00	
308.00	0.35	230.36	308.00	-0.57	-0.95	0.38	0.08	0.04	-12.24	
403.00	0.31	220.44	403.00	-0.96	-1.34	0.68	0.07	-0.04	-10.44	
499.00	0.40	208.85	498.99	-1.45	-1.67	1.10	0.12	0.09	-12.07	
594.00	0.97	40.21	593.99	-1.12	-1.31	0.85	1.44	0.60	-177.52	
690.00	2.61	27.60	689.94	1.43	0.23	-1.36	1.75	1.71	-13.14	
785.00	4.29	29.89	784.77	6.43	3.00	-5.73	1.77	1.77	2.41	
881.00	5.79	27.56	880.39	13.84	7.03	-12.21	1.58	1.56	-2.43	
976.00	7.64	30.55	974.74	23.53	12.46	-20.67	1.98	1.95	3.15	

# Survey Report

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<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Site:</b>	Sec 10-T01S-R68W Interchange Pad	<b>MD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Well:</b>	Interchange B S22-30-15N	<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)
1,072.00	9.28	34.74	1,069.69	35.38	20.12	-30.82	1.82	1.71	4.36
1,167.00	11.14	29.45	1,163.18	49.67	28.99	-43.11	2.19	1.96	-5.57
1,263.00	12.28	27.43	1,257.18	66.81	38.26	-58.13	1.26	1.19	-2.10
1,358.00	14.05	25.97	1,349.68	86.14	47.96	-75.22	1.90	1.86	-1.54
1,453.00	15.38	27.34	1,441.57	107.70	58.80	-94.28	1.45	1.40	1.44
1,548.00	17.23	27.69	1,532.74	131.35	71.12	-115.09	1.95	1.95	0.37
1,608.00	18.25	27.47	1,589.89	147.56	79.59	-129.35	1.70	1.70	-0.37
Tie into Surface Surveys									
1,666.00	19.31	26.06	1,644.80	164.23	87.99	-144.08	1.99	1.83	-2.43
First MWD Survey @ 1666' MD									
1,762.00	25.72	31.39	1,733.44	196.31	105.83	-172.09	7.00	6.68	5.55
1,857.00	25.81	30.20	1,819.00	231.78	126.97	-202.80	0.55	0.09	-1.25
1,953.00	27.49	29.28	1,904.80	269.17	148.32	-235.35	1.80	1.75	-0.96
2,048.00	29.52	29.01	1,988.28	308.77	170.40	-269.92	2.14	2.14	-0.28
2,143.00	31.11	33.02	2,070.29	349.82	195.13	-305.40	2.71	1.67	4.22
2,239.00	33.72	30.16	2,151.33	393.67	222.03	-343.21	3.15	2.72	-2.98
2,334.00	35.31	31.35	2,229.61	439.92	249.57	-383.25	1.82	1.67	1.25
2,429.00	34.20	29.81	2,307.66	486.53	277.13	-423.64	1.49	-1.17	-1.62
2,525.00	37.34	32.89	2,385.55	534.40	306.36	-464.95	3.77	3.27	3.21
2,620.00	35.57	30.77	2,461.96	582.34	336.14	-506.21	2.29	-1.86	-2.23
2,715.00	32.48	28.22	2,540.69	628.57	362.35	-546.49	3.58	-3.25	-2.68
2,811.00	35.13	31.88	2,620.46	674.75	389.13	-586.61	3.48	2.76	3.81
2,906.00	37.65	32.93	2,696.93	722.33	419.35	-627.43	2.73	2.65	1.11
3,002.00	35.09	31.83	2,774.23	770.39	449.84	-668.67	2.75	-2.67	-1.15
3,097.00	36.54	33.95	2,851.26	817.05	480.04	-708.60	2.01	1.53	2.23
3,193.00	32.57	32.93	2,930.31	862.46	510.06	-747.34	4.18	-4.14	-1.06
3,288.00	34.47	32.45	3,009.51	906.62	538.39	-785.17	2.02	2.00	-0.51
3,384.00	36.54	30.77	3,087.66	954.10	567.59	-826.10	2.38	2.16	-1.75
3,479.00	37.91	30.42	3,163.30	1,003.57	596.84	-868.97	1.46	1.44	-0.37
3,575.00	34.78	28.97	3,240.62	1,052.97	625.04	-911.97	3.38	-3.26	-1.51
3,670.00	38.00	31.30	3,317.09	1,101.68	653.36	-954.27	3.69	3.39	2.45
3,765.00	34.51	29.19	3,393.68	1,150.18	681.69	-996.37	3.90	-3.67	-2.22
3,860.00	37.56	30.20	3,470.50	1,198.71	709.39	-1,038.61	3.27	3.21	1.06
3,955.00	38.49	29.01	3,545.33	1,249.59	738.29	-1,082.93	1.25	0.98	-1.25
4,051.00	36.28	27.51	3,621.61	1,300.92	765.90	-1,127.94	2.49	-2.30	-1.56
4,146.00	34.95	32.45	3,698.85	1,348.82	793.49	-1,169.59	3.34	-1.40	5.20
4,242.00	36.46	31.08	3,776.81	1,396.46	822.97	-1,210.62	1.78	1.57	-1.43
4,337.00	32.13	29.36	3,855.28	1,442.67	849.95	-1,250.73	4.67	-4.56	-1.81
4,433.00	34.73	31.00	3,935.39	1,488.37	876.55	-1,290.41	2.87	2.71	1.71
4,528.00	35.88	31.17	4,012.92	1,535.39	904.90	-1,331.05	1.21	1.21	0.18
4,624.00	37.07	31.35	4,090.11	1,584.17	934.51	-1,373.17	1.24	1.24	0.19
4,719.00	38.00	33.20	4,165.44	1,633.10	965.43	-1,415.19	1.54	0.98	1.95
4,814.00	34.20	31.61	4,242.19	1,680.32	995.44	-1,455.70	4.12	-4.00	-1.67

# Survey Report

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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)	
4,909.00	35.62	30.82	4,320.09	1,726.82	1,023.61	-1,495.87	1.57	1.49	-0.83	
5,005.00	37.74	29.32	4,397.08	1,776.45	1,052.33	-1,538.99	2.40	2.21	-1.56	
5,100.00	36.94	30.33	4,472.61	1,826.44	1,080.98	-1,582.49	1.06	-0.84	1.06	
5,196.00	33.32	29.58	4,551.11	1,874.29	1,108.57	-1,624.08	3.80	-3.77	-0.78	
5,291.00	35.71	30.47	4,629.39	1,920.88	1,135.51	-1,664.58	2.57	2.52	0.94	
5,387.00	37.56	29.54	4,706.42	1,970.49	1,164.15	-1,707.70	2.01	1.93	-0.97	
5,482.00	36.85	31.08	4,782.08	2,020.08	1,193.13	-1,750.74	1.23	-0.75	1.62	
5,600.00	37.69	33.33	4,875.99	2,080.53	1,231.22	-1,802.66	1.36	0.71	1.91	
5,695.00	35.00	30.42	4,952.51	2,128.30	1,260.98	-1,843.77	3.36	-2.83	-3.06	
5,790.00	36.46	29.72	5,029.63	2,176.31	1,288.77	-1,885.49	1.60	1.54	-0.74	
5,886.00	35.09	27.69	5,107.51	2,225.52	1,315.74	-1,928.54	1.89	-1.43	-2.11	
5,981.00	36.06	31.61	5,184.79	2,273.52	1,343.09	-1,970.33	2.61	1.02	4.13	
6,076.00	33.36	28.75	5,262.88	2,320.24	1,370.31	-2,010.90	3.32	-2.84	-3.01	
6,172.00	35.84	31.48	5,341.90	2,367.36	1,397.69	-2,051.83	3.05	2.58	2.84	
6,267.00	38.58	29.98	5,417.56	2,416.75	1,427.02	-2,094.60	3.04	2.88	-1.58	
6,363.00	34.73	25.88	5,494.57	2,467.31	1,453.93	-2,138.99	4.75	-4.01	-4.27	
6,458.00	34.34	31.00	5,572.85	2,514.63	1,479.55	-2,180.45	3.08	-0.41	5.39	
6,553.00	36.01	33.68	5,650.50	2,560.85	1,508.84	-2,220.12	2.39	1.76	2.82	
6,648.00	37.16	32.63	5,726.78	2,608.25	1,539.80	-2,260.63	1.38	1.21	-1.11	
6,744.00	34.42	28.66	5,804.66	2,656.49	1,568.45	-2,302.41	3.74	-2.85	-4.14	
6,839.00	34.78	25.40	5,882.86	2,704.53	1,592.96	-2,344.79	1.98	0.38	-3.43	
6,935.00	35.71	27.16	5,961.27	2,754.20	1,617.49	-2,388.76	1.43	0.97	1.83	
7,030.00	38.05	34.78	6,037.29	2,802.94	1,646.87	-2,430.90	5.40	2.46	8.02	
7,126.00	36.41	32.54	6,113.73	2,851.27	1,679.07	-2,472.07	2.22	-1.71	-2.33	
7,221.00	34.47	31.44	6,191.12	2,897.98	1,708.26	-2,512.24	2.15	-2.04	-1.16	
7,316.00	35.57	28.40	6,268.93	2,945.22	1,735.43	-2,553.33	2.17	1.16	-3.20	
7,411.00	35.09	31.48	6,346.44	2,992.82	1,762.83	-2,594.72	1.94	-0.51	3.24	
7,506.00	36.01	31.13	6,423.73	3,040.01	1,791.53	-2,635.46	0.99	0.97	-0.37	
7,602.00	37.38	28.75	6,500.71	3,089.72	1,820.14	-2,678.69	2.06	1.43	-2.48	
7,697.00	37.91	34.78	6,575.96	3,139.00	1,850.67	-2,721.11	3.92	0.56	6.35	
7,792.00	35.13	33.99	6,652.30	3,185.64	1,882.60	-2,760.69	2.97	-2.93	-0.83	
7,888.00	33.58	35.75	6,731.55	3,230.09	1,913.56	-2,798.30	1.92	-1.61	1.83	
7,983.00	35.62	32.36	6,809.75	3,274.79	1,943.72	-2,836.31	2.95	2.15	-3.57	
8,079.00	32.97	32.23	6,889.05	3,320.51	1,972.62	-2,875.57	2.76	-2.76	-0.14	
8,174.00	34.16	30.42	6,968.21	3,365.38	1,999.91	-2,914.30	1.64	1.25	-1.91	
8,269.00	31.64	42.89	7,048.06	3,406.69	2,030.42	-2,948.92	7.59	-2.65	13.13	
8,364.00	27.66	63.34	7,130.82	3,434.92	2,067.19	-2,969.50	11.38	-4.19	21.53	
8,460.00	19.75	81.19	7,218.76	3,447.44	2,103.23	-2,974.80	11.04	-8.24	18.59	
8,555.00	21.34	88.06	7,307.73	3,450.48	2,136.38	-2,971.36	3.04	1.67	7.23	
8,651.00	22.89	102.16	7,396.73	3,447.14	2,172.11	-2,961.16	5.75	1.61	14.69	
8,746.00	26.25	115.43	7,483.18	3,434.21	2,209.19	-2,941.30	6.78	3.54	13.97	
8,797.58	29.69	126.31	7,528.76	3,421.74	2,229.80	-2,925.07	11.91	6.67	21.09	
30° Inclination @ 8797.58' MD										
8,842.00	33.23	133.85	7,566.66	3,406.78	2,247.46	-2,906.98	11.91	7.97	16.98	

# Survey Report

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<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Site:</b>	Sec 10-T01S-R68W Interchange Pad	<b>MD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Well:</b>	Interchange B S22-30-15N	<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)	
8,937.00	43.04	146.28	7,641.40	3,361.61	2,284.37	-2,855.51	13.07	10.33	13.08	
9,033.00	50.02	163.06	7,707.65	3,298.86	2,313.42	-2,788.32	14.58	7.27	17.48	
9,128.00	60.85	166.68	7,761.48	3,223.43	2,333.65	-2,710.41	11.82	11.40	3.81	
9,189.65	69.98	170.11	7,787.11	3,168.58	2,344.85	-2,654.42	15.65	14.81	5.56	
70° Inclination @ 9189.65' MD										
9,223.00	74.95	171.79	7,797.16	3,137.18	2,349.85	-2,622.65	15.65	14.89	5.04	
9,296.48	79.20	175.99	7,813.60	3,066.00	2,357.44	-2,551.35	8.03	5.78	5.71	
Cross @ 9296.48' MD										
9,319.00	80.51	177.25	7,817.56	3,043.87	2,358.75	-2,529.38	8.03	5.83	5.60	
9,414.00	88.69	179.37	7,826.50	2,949.42	2,361.52	-2,436.18	8.89	8.61	2.23	
9,509.00	88.51	183.51	7,828.82	2,854.50	2,359.14	-2,343.52	4.36	-0.19	4.36	
9,605.00	87.01	183.29	7,832.57	2,758.75	2,353.45	-2,250.68	1.58	-1.56	-0.23	
9,700.00	90.99	181.75	7,834.23	2,663.87	2,349.27	-2,158.41	4.49	4.19	-1.62	
9,795.00	90.59	180.60	7,832.92	2,568.90	2,347.33	-2,065.62	1.28	-0.42	-1.21	
9,904.00	90.23	182.50	7,832.14	2,459.95	2,344.38	-1,959.30	1.77	-0.33	1.74	
10,000.00	91.30	181.44	7,830.86	2,364.02	2,341.08	-1,865.83	1.57	1.11	-1.10	
10,095.00	90.54	183.38	7,829.33	2,269.12	2,337.08	-1,773.50	2.19	-0.80	2.04	
10,191.00	91.65	181.97	7,827.50	2,173.25	2,332.61	-1,680.31	1.87	1.16	-1.47	
10,286.00	90.94	181.49	7,825.35	2,078.32	2,329.74	-1,587.73	0.90	-0.75	-0.51	
10,381.00	90.10	180.03	7,824.49	1,983.33	2,328.48	-1,494.79	1.77	-0.88	-1.54	
10,477.00	89.53	183.56	7,824.80	1,887.40	2,325.47	-1,401.25	3.72	-0.59	3.68	
10,573.00	90.37	181.84	7,824.88	1,791.51	2,320.95	-1,308.05	1.99	0.88	-1.79	
10,668.00	89.17	183.64	7,825.26	1,696.62	2,316.41	-1,215.84	2.28	-1.26	1.89	
10,763.00	90.37	181.40	7,825.64	1,601.72	2,312.23	-1,123.55	2.67	1.26	-2.36	
10,859.00	89.70	181.75	7,825.59	1,505.76	2,309.59	-1,029.92	0.79	-0.70	0.36	
10,954.00	89.93	182.10	7,825.89	1,410.81	2,306.40	-937.39	0.44	0.24	0.37	
11,050.00	90.46	178.93	7,825.57	1,314.83	2,305.54	-843.39	3.35	0.55	-3.30	
11,145.00	89.97	176.77	7,825.21	1,219.90	2,309.10	-749.57	2.33	-0.52	-2.27	
11,241.00	88.91	179.11	7,826.15	1,123.98	2,312.55	-654.79	2.68	-1.10	2.44	
11,336.00	89.35	181.40	7,827.59	1,029.00	2,312.13	-561.69	2.45	0.46	2.41	
11,432.00	90.46	179.85	7,827.75	933.01	2,311.08	-467.72	1.99	1.16	-1.61	
11,527.00	89.22	181.13	7,828.02	838.01	2,310.27	-374.68	1.88	-1.31	1.35	
11,623.00	89.93	179.68	7,828.73	742.02	2,309.59	-280.64	1.68	0.74	-1.51	
11,718.00	89.26	181.62	7,829.40	647.04	2,308.52	-187.66	2.16	-0.71	2.04	
11,813.00	90.50	179.15	7,829.60	552.05	2,307.88	-94.60	2.91	1.31	-2.60	
11,909.00	89.04	180.25	7,829.98	456.05	2,308.38	-0.32	1.90	-1.52	1.15	
12,004.00	90.28	177.96	7,830.55	361.08	2,309.86	93.14	2.74	1.31	-2.41	
12,100.00	89.13	179.24	7,831.04	265.11	2,312.21	187.75	1.79	-1.20	1.33	
12,195.00	90.01	178.31	7,831.75	170.14	2,314.24	281.32	1.35	0.93	-0.98	
12,291.00	88.95	179.33	7,832.63	74.16	2,316.22	375.86	1.53	-1.10	1.06	
12,386.00	90.32	178.22	7,833.23	-20.81	2,318.25	469.42	1.86	1.44	-1.17	
12,482.00	89.17	179.63	7,833.66	-116.79	2,320.05	563.93	1.90	-1.20	1.47	
12,577.00	90.54	178.05	7,833.90	-211.76	2,321.97	657.48	2.20	1.44	-1.66	

# Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Interchange B S22-30-15N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Site:</b>	Sec 10-T01S-R68W Interchange Pad	<b>MD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Well:</b>	Interchange B S22-30-15N	<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)	
12,672.00	89.04	179.28	7,834.25	-306.73	2,324.19	751.08	2.04	-1.58	1.29	
12,767.00	89.31	181.75	7,835.61	-401.71	2,323.33	844.10	2.62	0.28	2.60	
12,863.00	90.54	179.28	7,835.74	-497.70	2,322.47	938.10	2.87	1.28	-2.57	
12,958.00	89.57	179.90	7,835.65	-592.69	2,323.15	1,031.43	1.21	-1.02	0.65	
13,054.00	89.79	178.80	7,836.19	-688.68	2,324.24	1,125.81	1.17	0.23	-1.15	
13,149.00	89.66	179.72	7,836.64	-783.67	2,325.46	1,219.24	0.98	-0.14	0.97	
13,244.00	90.59	177.21	7,836.43	-878.63	2,328.01	1,312.89	2.82	0.98	-2.64	
13,339.00	89.88	178.89	7,836.04	-973.57	2,331.24	1,406.66	1.92	-0.75	1.77	
13,435.00	90.46	179.24	7,835.76	-1,069.56	2,332.81	1,501.13	0.71	0.60	0.36	
13,531.00	89.57	179.41	7,835.73	-1,165.55	2,333.94	1,595.53	0.94	-0.93	0.18	
13,626.00	90.54	177.48	7,835.64	-1,260.51	2,336.52	1,689.19	2.27	1.02	-2.03	
13,721.00	89.62	180.65	7,835.51	-1,355.48	2,338.07	1,782.66	3.47	-0.97	3.34	
13,817.00	90.77	178.71	7,835.18	-1,451.48	2,338.60	1,876.94	2.35	1.20	-2.02	
13,913.00	89.75	180.21	7,834.75	-1,547.47	2,339.51	1,971.29	1.89	-1.06	1.56	
14,008.00	89.79	181.97	7,835.13	-1,642.44	2,337.70	2,064.12	1.85	0.04	1.85	
14,104.00	90.81	179.94	7,834.63	-1,738.42	2,336.10	2,157.97	2.37	1.06	-2.11	
14,200.00	89.79	180.91	7,834.12	-1,834.42	2,335.39	2,252.01	1.47	-1.06	1.01	
14,295.00	90.77	179.19	7,833.66	-1,929.41	2,335.31	2,345.19	2.08	1.03	-1.81	
14,390.00	89.31	180.34	7,833.59	-2,024.41	2,335.69	2,438.46	1.96	-1.54	1.21	
14,486.00	90.15	180.03	7,834.05	-2,120.40	2,335.38	2,532.58	0.93	0.88	-0.32	
14,582.00	89.26	179.63	7,834.54	-2,216.40	2,335.67	2,626.81	1.02	-0.93	-0.42	
14,583.60	89.27	179.62	7,834.56	-2,218.00	2,335.68	2,628.38	1.05	0.75	-0.74	
<b>Cross @ 14583.60' MD</b>										
14,677.00	89.97	178.93	7,835.18	-2,311.39	2,336.86	2,720.23	1.05	0.75	-0.74	
14,773.00	89.35	180.69	7,835.75	-2,407.38	2,337.18	2,814.47	1.94	-0.65	1.83	
14,868.00	90.10	180.03	7,836.20	-2,502.38	2,336.59	2,907.55	1.05	0.79	-0.69	
14,963.00	89.44	180.43	7,836.59	-2,597.38	2,336.20	3,000.68	0.81	-0.69	0.42	
15,058.00	90.01	178.58	7,837.04	-2,692.37	2,337.02	3,094.03	2.04	0.60	-1.95	
15,154.00	89.17	179.85	7,837.73	-2,788.35	2,338.34	3,188.45	1.59	-0.88	1.32	
15,249.00	89.26	182.67	7,839.03	-2,883.31	2,336.25	3,281.21	2.97	0.09	2.97	
15,345.00	90.50	180.96	7,839.23	-2,979.26	2,333.21	3,374.75	2.20	1.29	-1.78	
15,441.00	89.84	179.33	7,838.95	-3,075.25	2,332.97	3,468.88	1.83	-0.69	-1.70	
15,536.00	89.13	181.62	7,839.80	-3,170.24	2,332.18	3,561.91	2.52	-0.75	2.41	
15,631.00	90.15	178.44	7,840.40	-3,265.23	2,332.13	3,655.09	3.52	1.07	-3.35	
15,727.00	89.35	179.90	7,840.82	-3,361.21	2,333.52	3,749.53	1.73	-0.83	1.52	
15,822.00	89.93	178.40	7,841.41	-3,456.20	2,334.93	3,842.99	1.69	0.61	-1.58	
15,917.00	89.13	180.82	7,842.19	-3,551.18	2,335.58	3,936.30	2.68	-0.84	2.55	
16,013.00	90.41	179.33	7,842.58	-3,647.18	2,335.45	4,030.45	2.05	1.33	-1.55	
16,107.00	89.13	180.65	7,842.96	-3,741.17	2,335.47	4,122.67	1.96	-1.36	1.40	
16,201.00	90.41	178.84	7,843.33	-3,835.16	2,335.89	4,214.96	2.36	1.36	-1.93	
16,295.00	89.09	180.16	7,843.74	-3,929.16	2,336.71	4,307.34	1.99	-1.40	1.40	
16,389.00	90.32	178.58	7,844.23	-4,023.14	2,337.74	4,399.74	2.13	1.31	-1.68	
16,483.00	89.26	180.60	7,844.57	-4,117.13	2,338.41	4,492.09	2.43	-1.13	2.15	
16,577.00	90.37	179.19	7,844.88	-4,211.13	2,338.59	4,584.33	1.91	1.18	-1.50	

# Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Interchange B S22-30-15N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Site:</b>	Sec 10-T01S-R68W Interchange Pad	<b>MD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Well:</b>	Interchange B S22-30-15N	<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)	
16,671.00	89.17	179.85	7,845.25	-4,305.12	2,339.37	4,676.70	1.46	-1.28	0.70	
16,765.00	89.35	179.19	7,846.47	-4,399.11	2,340.16	4,769.06	0.73	0.19	-0.70	
16,859.00	90.01	177.87	7,846.99	-4,493.08	2,342.57	4,861.71	1.57	0.70	-1.40	
16,954.00	89.04	179.50	7,847.78	-4,588.04	2,344.75	4,955.31	2.00	-1.02	1.72	
17,048.00	90.50	178.09	7,848.16	-4,682.02	2,346.73	5,047.88	2.16	1.55	-1.50	
17,142.00	89.00	179.94	7,848.57	-4,776.00	2,348.34	5,140.39	2.53	-1.60	1.97	
17,237.00	90.01	179.90	7,849.39	-4,870.99	2,348.48	5,233.62	1.06	1.06	-0.04	
17,331.00	89.57	179.85	7,849.73	-4,964.99	2,348.68	5,325.87	0.47	-0.47	-0.05	
17,425.00	89.48	178.66	7,850.51	-5,058.98	2,349.90	5,418.32	1.27	-0.10	-1.27	
17,519.00	89.04	181.26	7,851.73	-5,152.96	2,349.97	5,510.54	2.81	-0.47	2.77	
17,612.00	90.01	178.89	7,852.50	-5,245.95	2,349.85	5,601.74	2.75	1.04	-2.55	
17,706.00	88.56	180.03	7,853.67	-5,339.93	2,350.73	5,694.12	1.96	-1.54	1.21	
17,800.00	89.70	179.15	7,855.10	-5,433.92	2,351.41	5,786.45	1.53	1.21	-0.94	
17,893.00	88.42	179.68	7,856.62	-5,526.90	2,352.36	5,877.86	1.49	-1.38	0.57	
17,989.00	89.66	178.71	7,858.23	-5,622.87	2,353.71	5,972.27	1.64	1.29	-1.01	
18,084.00	88.47	180.96	7,859.78	-5,717.85	2,353.98	6,065.51	2.68	-1.25	2.37	
18,179.00	90.01	179.50	7,861.04	-5,812.84	2,353.60	6,158.62	2.23	1.62	-1.54	
18,275.00	88.64	180.96	7,862.17	-5,908.83	2,353.21	6,252.72	2.09	-1.43	1.52	
18,371.00	89.40	179.59	7,863.81	-6,004.81	2,352.75	6,346.79	1.63	0.79	-1.43	
18,466.00	89.04	180.82	7,865.11	-6,099.80	2,352.41	6,439.91	1.35	-0.38	1.29	
18,562.00	89.84	179.11	7,866.05	-6,195.79	2,352.47	6,534.10	1.97	0.83	-1.78	
18,658.00	88.51	180.52	7,867.43	-6,291.77	2,352.78	6,628.33	2.02	-1.39	1.47	
18,753.00	89.70	179.68	7,868.91	-6,386.76	2,352.62	6,721.48	1.53	1.25	-0.88	
18,849.00	87.94	179.59	7,870.89	-6,482.73	2,353.23	6,815.76	1.84	-1.83	-0.09	
18,944.00	88.25	180.34	7,874.05	-6,577.68	2,353.28	6,908.92	0.85	0.33	0.79	
19,039.00	88.95	177.65	7,876.37	-6,672.63	2,354.95	7,002.39	2.93	0.74	-2.83	
19,134.00	87.41	179.55	7,879.39	-6,767.54	2,357.27	7,095.96	2.57	-1.62	2.00	
19,229.00	88.47	180.47	7,882.80	-6,862.48	2,357.25	7,189.09	1.48	1.12	0.97	
19,324.00	88.56	178.36	7,885.26	-6,957.44	2,358.22	7,282.44	2.22	0.09	-2.22	
19,420.00	87.98	181.35	7,888.16	-7,053.38	2,358.47	7,376.62	3.17	-0.60	3.11	
19,515.00	89.22	179.68	7,890.48	-7,148.34	2,357.61	7,469.61	2.19	1.31	-1.76	
19,611.00	88.25	180.07	7,892.60	-7,244.32	2,357.82	7,563.81	1.09	-1.01	0.41	
19,706.00	89.22	178.36	7,894.70	-7,339.28	2,359.12	7,657.23	2.07	1.02	-1.80	
19,801.00	88.11	180.60	7,896.91	-7,434.25	2,359.99	7,750.56	2.63	-1.17	2.36	
19,874.78	89.03	179.59	7,898.75	-7,508.00	2,359.87	7,822.90	1.86	1.25	-1.38	
Cross @ 19874.78' MD										
19,897.00	89.31	179.28	7,899.07	-7,530.22	2,360.09	7,844.74	1.86	1.25	-1.37	
19,992.00	87.94	180.47	7,901.35	-7,625.19	2,360.30	7,937.95	1.91	-1.44	1.25	
20,087.00	89.31	178.53	7,903.63	-7,720.15	2,361.12	8,031.27	2.50	1.44	-2.04	
20,183.00	87.94	180.43	7,905.94	-7,816.11	2,362.00	8,125.58	2.44	-1.43	1.98	
20,279.00	89.17	179.68	7,908.36	-7,912.08	2,361.90	8,219.72	1.50	1.28	-0.78	
20,374.00	88.78	180.21	7,910.06	-8,007.06	2,362.00	8,312.92	0.69	-0.41	0.56	
20,469.00	88.29	181.79	7,912.49	-8,102.01	2,360.34	8,405.75	1.74	-0.52	1.66	

# Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Interchange B S22-30-15N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Site:</b>	Sec 10-T01S-R68W Interchange Pad	<b>MD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Well:</b>	Interchange B S22-30-15N	<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)	
20,564.00	89.53	179.19	7,914.29	-8,196.98	2,359.53	8,498.76	3.03	1.31	-2.74	
20,660.00	88.03	181.49	7,916.34	-8,292.95	2,358.96	8,592.80	2.86	-1.56	2.40	
20,754.00	89.70	180.03	7,918.20	-8,386.92	2,357.71	8,684.75	2.36	1.78	-1.55	
20,848.00	89.04	177.83	7,919.23	-8,480.89	2,359.47	8,777.28	2.44	-0.70	-2.34	
20,942.00	87.80	180.47	7,921.83	-8,574.83	2,360.86	8,869.72	3.10	-1.32	2.81	
21,036.00	88.78	179.37	7,924.63	-8,668.79	2,360.99	8,961.92	1.57	1.04	-1.17	
21,130.00	88.29	180.69	7,927.04	-8,762.75	2,360.94	9,054.10	1.50	-0.52	1.40	
21,225.00	89.40	178.00	7,928.95	-8,857.72	2,362.03	9,147.47	3.06	1.17	-2.83	
21,318.00	88.16	180.91	7,930.93	-8,950.68	2,362.91	9,238.85	3.40	-1.33	3.13	
21,413.00	89.17	179.37	7,933.14	-9,045.65	2,362.68	9,331.98	1.94	1.06	-1.62	
21,507.00	88.11	181.62	7,935.38	-9,139.61	2,361.87	9,424.00	2.65	-1.13	2.39	
21,601.00	89.35	178.71	7,937.46	-9,233.58	2,361.60	9,516.13	3.36	1.32	-3.10	
21,695.00	88.16	181.44	7,939.50	-9,327.54	2,361.48	9,608.30	3.17	-1.27	2.90	
21,789.00	90.28	179.85	7,940.78	-9,421.52	2,360.42	9,700.29	2.82	2.26	-1.69	
21,883.00	89.66	181.49	7,940.83	-9,515.51	2,359.32	9,792.29	1.87	-0.66	1.74	
21,977.00	89.88	184.53	7,941.21	-9,609.37	2,354.39	9,883.41	3.24	0.23	3.23	
22,071.00	91.12	181.49	7,940.39	-9,703.22	2,349.45	9,974.53	3.49	1.32	-3.23	
22,165.00	91.60	177.74	7,938.16	-9,797.18	2,350.08	10,066.83	4.02	0.51	-3.99	
22,259.00	89.93	177.21	7,936.90	-9,891.08	2,354.22	10,159.75	1.86	-1.78	-0.56	
22,353.00	90.10	178.84	7,936.88	-9,985.02	2,357.46	10,252.54	1.74	0.18	1.73	
22,447.00	90.32	179.15	7,936.53	-10,079.00	2,359.11	10,345.07	0.40	0.23	0.33	
22,541.00	90.23	177.96	7,936.08	-10,172.97	2,361.48	10,437.71	1.27	-0.10	-1.27	
22,635.00	90.68	176.59	7,935.33	-10,266.86	2,365.95	10,530.69	1.53	0.48	-1.46	
22,729.00	89.97	177.92	7,934.80	-10,360.74	2,370.45	10,623.67	1.60	-0.76	1.41	
22,822.00	90.77	176.64	7,934.20	-10,453.63	2,374.86	10,715.66	1.62	0.86	-1.38	
22,916.00	90.06	177.92	7,933.52	-10,547.52	2,379.32	10,808.63	1.56	-0.76	1.36	
23,010.00	90.32	178.31	7,933.21	-10,641.47	2,382.42	10,901.40	0.50	0.28	0.41	
23,104.00	90.19	178.58	7,932.79	-10,735.44	2,384.97	10,994.08	0.32	-0.14	0.29	
23,198.00	90.01	177.70	7,932.63	-10,829.39	2,388.02	11,086.84	0.96	-0.19	-0.94	
23,292.00	90.63	178.44	7,932.10	-10,923.33	2,391.18	11,179.62	1.03	0.66	0.79	
23,386.00	90.99	177.03	7,930.77	-11,017.24	2,394.90	11,272.48	1.55	0.38	-1.50	
23,480.00	90.46	177.92	7,929.58	-11,111.14	2,399.04	11,365.40	1.10	-0.56	0.95	
23,574.00	89.88	176.73	7,929.30	-11,205.04	2,403.43	11,458.37	1.41	-0.62	-1.27	
23,667.00	90.37	177.96	7,929.10	-11,297.94	2,407.73	11,550.34	1.42	0.53	1.32	
23,762.00	90.94	177.61	7,928.01	-11,392.86	2,411.41	11,644.18	0.70	0.60	-0.37	
23,856.00	90.23	179.77	7,927.05	-11,486.82	2,413.55	11,736.78	2.42	-0.76	2.30	
23,952.00	91.47	178.27	7,925.63	-11,582.80	2,415.20	11,831.25	2.03	1.29	-1.56	
24,047.00	90.06	179.50	7,924.36	-11,677.76	2,417.04	11,924.78	1.97	-1.48	1.29	
24,143.00	90.59	180.38	7,923.82	-11,773.76	2,417.14	12,018.98	1.07	0.55	0.92	
24,238.00	91.34	178.05	7,922.22	-11,868.73	2,418.45	12,112.40	2.58	0.79	-2.45	
24,333.00	90.01	180.21	7,921.10	-11,963.71	2,419.89	12,205.86	2.67	-1.40	2.27	
24,429.00	91.34	178.40	7,919.97	-12,059.69	2,421.05	12,300.24	2.34	1.39	-1.89	
24,524.00	89.97	179.94	7,918.88	-12,154.67	2,422.43	12,393.69	2.17	-1.44	1.62	
24,619.00	91.34	177.96	7,917.79	-12,249.64	2,424.17	12,487.20	2.53	1.44	-2.08	



## Survey Report

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well Interchange B S22-30-15N
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Site:</b>	Sec 10-T01S-R68W Interchange Pad	<b>MD Reference:</b>	KB @ 5235.10usft (Patterson 901)
<b>Well:</b>	Interchange B S22-30-15N	<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)
<b>Last MWD Survey @ 24619' MD</b>									
24,655.00	91.34	177.96	7,916.95	-12,285.60	2,425.45	12,522.73	0.00	0.00	0.00
<b>Projection to TD @ 24655' MD 505' FSL/ 1205' FEL</b>									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
30° Inclination @ 8797.5	0.00	0.00	7,528.68	3,421.85	2,230.03	1,238,735.91	3,144,809.41	39.987556	-104.983199
- actual wellpath misses target center by 0.26usft at 8797.58usft MD (7528.76 TVD, 3421.74 N, 2229.80 E)									
- Point									
70° Inclination @ 9189.6	0.00	0.00	7,787.10	3,168.58	2,344.91	1,238,483.31	3,144,925.74	39.986861	-104.982789
- actual wellpath misses target center by 0.06usft at 9189.65usft MD (7787.11 TVD, 3168.58 N, 2344.85 E)									
- Point									
Cross @ 9296.48' MD	0.00	0.00	7,813.60	3,066.00	2,357.44	1,238,380.80	3,144,938.87	39.986580	-104.982744
- actual wellpath hits target center									
- Point									
Cross @ 14583.60' MD	0.00	0.00	7,834.56	-2,218.00	2,335.68	1,233,096.76	3,144,947.43	39.972074	-104.982824
- actual wellpath hits target center									
- Point									
Cross @ 19874.78' MD	0.00	0.00	7,898.75	-7,508.00	2,359.87	1,227,806.98	3,145,001.97	39.957552	-104.982739
- actual wellpath hits target center									
- Point									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,608.00	1,589.89	147.56	79.59	Tie into Surface Surveys
1,666.00	1,644.80	164.23	87.99	First MWD Survey @ 1666' MD
8,797.58	7,528.76	3,421.74	2,229.80	30° Inclination @ 8797.58' MD
9,189.65	7,787.11	3,168.58	2,344.85	70° Inclination @ 9189.65' MD
9,296.48	7,813.60	3,066.00	2,357.44	Cross @ 9296.48' MD
14,583.60	7,834.56	-2,218.00	2,335.68	Cross @ 14583.60' MD
19,874.78	7,898.75	-7,508.00	2,359.87	Cross @ 19874.78' MD
24,619.00	7,917.79	-12,249.64	2,424.17	Last MWD Survey @ 24619' MD
24,655.00	7,916.95	-12,285.60	2,425.45	Projection to TD @ 24655' MD 505' FSL/ 1205' FEL

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