

# **EXTRACTION OIL & GAS**

**WELD COUNTY, COLORADO (NAD 83)**

**Sec 3, T4N-R68W 6th PM (KB 29' CORRECT 111917)**

**Jesser 3E 10-5N**

**Wellbore #1**

**Survey: Survey #2**

## **Standard Survey Report**

**18 January, 2018**

## Survey Report

<b>Company:</b>	EXTRACTION OIL & GAS	<b>Local Co-ordinate Reference:</b>	Well Jesser 3E 10-5N
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>TVD Reference:</b>	KB=29 @ 5142.0usft
<b>Site:</b>	Sec 3, T4N-R68W 6th PM (KB 29' CORRECT 111917)	<b>MD Reference:</b>	KB=29 @ 5142.0usft
<b>Well:</b>	Jesser 3E 10-5N	<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 5000.1

<b>Project</b>	WELD COUNTY, COLORADO (NAD 83)		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site		Sec 3, T4N-R68W 6th PM (KB 29' CORRECT 111917)				
Site Position:		Northing:	1,367,717.12 usft	Latitude:	40° 20' 30.109 N	
From:	Map	Easting:	3,139,952.04 usft	Longitude:	104° 59' 52.537 W	
Position Uncertainty:		0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.32 °

Well	Jesser 3E 10-5N					
Well Position	+N/-S	0.0 usft	Northing:	1,367,718.66 usft	Latitude:	40° 20' 30.120 N
	+E/-W	0.0 usft	Easting:	3,140,032.03 usft	Longitude:	104° 59' 51.504 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	5,113.0 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	11/27/2017	8.28	66.76	52,284

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	72.29	

<b>Survey Program</b>	<b>Date</b>	1/18/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
125.0	1,538.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	
1,666.0	11,930.0	Survey #2 (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>	
1,538.0	13.70	335.40	1,531.2	84.6	-30.8	-3.6	0.00	0.00	0.00	
1,666.0	14.10	336.10	1,655.4	112.7	-43.4	-7.1	0.34	0.31	0.55	
1,761.0	15.11	330.77	1,747.3	134.1	-54.1	-10.8	1.77	1.06	-5.61	
1,856.0	15.20	328.30	1,839.0	155.5	-66.7	-16.3	0.69	0.09	-2.60	
1,952.0	14.49	325.87	1,931.8	176.1	-80.1	-22.7	0.98	-0.74	-2.53	
2,047.0	14.49	324.29	2,023.8	195.6	-93.7	-29.7	0.42	0.00	-1.66	
2,143.0	15.20	330.77	2,116.6	216.3	-106.8	-35.9	1.88	0.74	6.75	
2,238.0	16.88	337.86	2,207.9	240.0	-118.1	-39.5	2.71	1.77	7.46	
2,334.0	17.01	337.86	2,299.7	265.9	-128.7	-41.7	0.14	0.14	0.00	

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<b>Site:</b>	Sec 3, T4N-R68W 6th PM (KB 29' CORRECT 111917)	<b>MD Reference:</b>	KB=29 @ 5142.0usft
<b>Well:</b>	Jesser 3E 10-5N	<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 5000.1

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)	
2,429.0	17.28	336.10	2,390.5	291.7	-139.6	-44.2	0.62	0.28	-1.85	
2,525.0	17.72	335.08	2,482.1	318.0	-151.5	-47.6	0.56	0.46	-1.06	
2,621.0	16.08	332.66	2,573.9	343.0	-163.8	-51.7	1.86	-1.71	-2.52	
2,716.0	14.80	328.56	2,665.5	365.1	-176.2	-56.8	1.77	-1.35	-4.32	
2,812.0	14.10	331.07	2,758.5	385.7	-188.2	-61.9	0.98	-0.73	2.61	
2,907.0	13.92	329.66	2,850.6	405.7	-199.6	-66.7	0.41	-0.19	-1.48	
3,003.0	13.92	336.67	2,943.8	426.3	-210.0	-70.3	1.76	0.00	7.30	
3,099.0	13.52	339.67	3,037.1	447.4	-218.5	-72.0	0.85	-0.42	3.13	
3,194.0	14.01	333.89	3,129.4	468.2	-227.4	-74.2	1.54	0.52	-6.08	
3,290.0	15.11	338.48	3,222.3	490.3	-237.1	-76.7	1.66	1.15	4.78	
3,385.0	13.52	331.78	3,314.3	511.6	-246.9	-79.5	2.41	-1.67	-7.05	
3,481.0	13.79	338.57	3,407.6	532.1	-256.4	-82.3	1.69	0.28	7.07	
3,576.0	16.31	341.17	3,499.4	555.3	-264.8	-83.3	2.75	2.65	2.74	
3,672.0	16.88	340.06	3,591.4	581.1	-273.9	-84.1	0.68	0.59	-1.16	
3,767.0	17.41	338.70	3,682.2	607.3	-283.8	-85.6	0.70	0.56	-1.43	
3,863.0	17.59	337.20	3,773.7	634.1	-294.6	-87.7	0.51	0.19	-1.56	
3,958.0	16.88	335.08	3,864.4	659.8	-306.0	-90.7	1.00	-0.75	-2.23	
4,054.0	14.58	334.16	3,956.8	683.3	-317.2	-94.2	2.41	-2.40	-0.96	
4,149.0	12.81	331.87	4,049.1	703.4	-327.3	-97.8	1.95	-1.86	-2.41	
4,245.0	11.80	337.38	4,142.9	721.8	-336.1	-100.6	1.61	-1.05	5.74	
4,340.0	11.71	336.19	4,235.9	739.6	-343.8	-102.4	0.27	-0.09	-1.25	
4,435.0	14.98	333.28	4,328.4	759.4	-353.2	-105.4	3.51	3.44	-3.06	
4,531.0	13.52	329.97	4,421.4	780.2	-364.4	-109.7	1.74	-1.52	-3.45	
4,626.0	16.00	332.48	4,513.3	801.5	-376.0	-114.3	2.70	2.61	2.64	
4,721.0	15.60	331.78	4,604.7	824.3	-388.1	-118.8	0.47	-0.42	-0.74	
4,816.0	17.41	334.38	4,695.8	848.4	-400.3	-123.1	2.06	1.91	2.74	
4,912.0	15.60	332.00	4,787.8	872.7	-412.5	-127.4	2.01	-1.89	-2.48	
5,007.0	12.59	328.69	4,879.9	892.9	-423.9	-132.1	3.28	-3.17	-3.48	
5,103.0	13.92	333.50	4,973.4	912.1	-434.5	-136.4	1.80	1.39	5.01	
5,221.0	16.00	339.49	5,087.4	940.1	-446.5	-139.3	2.19	1.76	5.08	
5,317.0	16.70	335.00	5,179.5	965.0	-457.0	-141.7	1.50	0.73	-4.68	
5,412.0	13.52	328.69	5,271.2	986.8	-468.5	-146.0	3.76	-3.35	-6.64	
5,508.0	14.01	330.77	5,364.5	1,006.6	-480.0	-151.0	0.73	0.51	2.17	
5,604.0	15.60	329.80	5,457.3	1,027.9	-492.2	-156.1	1.68	1.66	-1.01	
5,699.0	16.22	335.79	5,548.6	1,051.0	-504.1	-160.4	1.85	0.65	6.31	
5,795.0	15.91	334.78	5,640.9	1,075.1	-515.2	-163.6	0.43	-0.32	-1.05	
5,890.0	16.31	335.39	5,732.2	1,099.1	-526.3	-166.9	0.46	0.42	0.64	
5,986.0	15.11	332.57	5,824.6	1,122.4	-537.7	-170.6	1.48	-1.25	-2.94	
6,081.0	16.08	332.97	5,916.1	1,145.1	-549.3	-174.9	1.03	1.02	0.42	
6,176.0	15.91	333.37	6,007.4	1,168.5	-561.2	-179.0	0.21	-0.18	0.42	
6,271.0	15.29	330.37	6,098.9	1,191.0	-573.2	-183.6	1.07	-0.65	-3.16	
6,367.0	15.11	330.90	6,191.5	1,213.0	-585.5	-188.7	0.24	-0.19	0.55	

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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
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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)
6,462.0	14.41	333.59	6,283.4	1,234.4	-596.8	-192.9	1.03	-0.74	2.83
6,558.0	13.70	348.79	6,376.6	1,256.2	-604.3	-193.5	3.90	-0.74	15.83
6,653.0	20.19	25.20	6,467.6	1,282.2	-599.5	-181.0	12.78	6.83	38.33
6,749.0	24.70	53.80	6,556.6	1,309.1	-576.2	-150.6	12.16	4.70	29.79
6,844.0	26.91	77.99	6,642.4	1,325.4	-539.1	-110.2	11.25	2.33	25.46
6,940.0	32.39	80.20	6,725.8	1,334.3	-492.4	-63.1	5.82	5.71	2.30
7,035.0	36.72	79.67	6,804.0	1,343.7	-439.4	-9.7	4.57	4.56	-0.56
7,130.0	45.29	78.70	6,875.6	1,355.4	-378.2	52.1	9.05	9.02	-1.02
7,226.0	57.40	82.09	6,935.5	1,367.7	-304.4	126.1	12.91	12.61	3.53
7,321.0	67.21	82.58	6,979.6	1,378.9	-221.2	208.9	10.34	10.33	0.52
7,417.0	71.72	83.77	7,013.2	1,389.6	-131.9	297.1	4.84	4.70	1.24
7,496.6	84.01	85.89	7,029.9	1,396.5	-54.6	372.9	15.66	15.44	2.66
Cross 460' FWL 7496.6 MD/7029.9 TVD 1396.6 N -54.6 W N: 1369114.81 E: 3139969.5									
7,512.0	86.39	86.28	7,031.2	1,397.6	-39.3	387.8	15.66	15.45	2.55
7,608.0	90.59	88.48	7,033.8	1,402.0	56.6	480.5	4.94	4.38	2.29
7,703.0	88.60	87.47	7,034.4	1,405.3	151.5	571.9	2.35	-2.09	-1.06
7,799.0	88.20	86.68	7,037.1	1,410.2	247.3	664.7	0.92	-0.42	-0.82
7,894.0	88.29	86.37	7,040.0	1,416.0	342.1	756.7	0.34	0.09	-0.33
7,990.0	89.88	87.29	7,041.5	1,421.3	437.9	849.6	1.91	1.66	0.96
8,085.0	90.41	89.50	7,041.3	1,423.9	532.9	940.9	2.39	0.56	2.33
8,180.0	89.48	89.28	7,041.4	1,425.0	627.9	1,031.7	1.01	-0.98	-0.23
8,276.0	89.09	88.57	7,042.6	1,426.8	723.9	1,123.7	0.84	-0.41	-0.74
8,371.0	89.22	90.60	7,044.0	1,427.4	818.9	1,214.4	2.14	0.14	2.14
8,467.0	87.72	91.96	7,046.6	1,425.3	914.8	1,305.1	2.11	-1.56	1.42
8,562.0	87.10	92.18	7,050.9	1,421.9	1,009.6	1,394.4	0.69	-0.65	0.23
8,657.0	88.29	90.69	7,054.7	1,419.5	1,104.5	1,484.1	2.01	1.25	-1.57
8,752.0	88.29	90.86	7,057.5	1,418.2	1,199.5	1,574.1	0.18	0.00	0.18
8,848.0	88.11	90.38	7,060.5	1,417.2	1,295.4	1,665.2	0.53	-0.19	-0.50
8,943.0	89.31	90.99	7,062.7	1,416.0	1,390.4	1,755.3	1.42	1.26	0.64
9,039.0	89.09	90.38	7,064.0	1,414.9	1,486.4	1,846.4	0.68	-0.23	-0.64
9,134.0	89.22	91.17	7,065.4	1,413.6	1,581.3	1,936.5	0.84	0.14	0.83
9,230.0	89.31	91.39	7,066.6	1,411.5	1,677.3	2,027.3	0.25	0.09	0.23
9,325.0	90.10	90.77	7,067.1	1,409.7	1,772.3	2,117.2	1.06	0.83	-0.65
9,420.0	89.62	90.38	7,067.4	1,408.7	1,867.3	2,207.4	0.65	-0.51	-0.41
9,516.0	92.00	89.36	7,066.0	1,408.9	1,963.3	2,298.9	2.70	2.48	-1.06
9,612.0	91.38	90.47	7,063.2	1,409.1	2,059.2	2,390.3	1.32	-0.65	1.16
9,707.0	91.38	89.76	7,060.9	1,408.9	2,154.2	2,480.7	0.75	0.00	-0.75
9,803.0	92.18	89.10	7,057.9	1,409.8	2,250.1	2,572.4	1.08	0.83	-0.69
9,899.0	90.72	89.89	7,055.5	1,410.7	2,346.1	2,664.1	1.73	-1.52	0.82
9,994.0	90.19	89.28	7,054.7	1,411.4	2,441.1	2,754.8	0.85	-0.56	-0.64
10,090.0	88.69	90.47	7,055.7	1,411.6	2,537.1	2,846.3	1.99	-1.56	1.24
10,185.0	88.11	89.89	7,058.3	1,411.3	2,632.1	2,936.7	0.86	-0.61	-0.61
10,281.0	88.11	89.10	7,061.5	1,412.1	2,728.0	3,028.3	0.82	0.00	-0.82

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<b>Well:</b>	Jesser 3E 10-5N	<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 5000.1

Survey										
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10,376.0	87.98	88.66	7,064.7	1,414.0	2,822.9	3,119.3	0.48	-0.14	-0.46	
10,471.0	88.82	91.26	7,067.4	1,414.1	2,917.9	3,209.8	2.88	0.88	2.74	
10,567.0	91.69	90.77	7,066.9	1,412.4	3,013.9	3,300.7	3.03	2.99	-0.51	
10,662.0	92.18	90.07	7,063.7	1,411.7	3,108.8	3,390.9	0.90	0.52	-0.74	
10,758.0	90.81	90.29	7,061.2	1,411.4	3,204.8	3,482.2	1.45	-1.43	0.23	
10,853.0	90.72	89.76	7,060.0	1,411.3	3,299.7	3,572.7	0.57	-0.09	-0.56	
10,949.0	90.90	89.19	7,058.6	1,412.2	3,395.7	3,664.4	0.62	0.19	-0.59	
11,044.0	89.79	88.88	7,058.0	1,413.8	3,490.7	3,755.4	1.21	-1.17	-0.33	
11,140.0	90.01	90.38	7,058.2	1,414.4	3,586.7	3,847.0	1.58	0.23	1.56	
11,235.0	90.41	90.69	7,057.8	1,413.5	3,681.7	3,937.2	0.53	0.42	0.33	
11,330.0	90.41	90.77	7,057.2	1,412.3	3,776.7	4,027.4	0.08	0.00	0.08	
11,426.0	90.72	90.47	7,056.2	1,411.3	3,872.7	4,118.5	0.45	0.32	-0.31	
11,521.0	91.38	89.67	7,054.5	1,411.2	3,967.7	4,208.9	1.09	0.69	-0.84	
11,617.0	92.18	88.97	7,051.5	1,412.3	4,063.6	4,300.7	1.11	0.83	-0.73	
11,712.0	90.19	89.89	7,049.5	1,413.2	4,158.6	4,391.4	2.31	-2.09	0.97	
11,807.0	89.09	88.09	7,050.1	1,414.9	4,253.6	4,482.4	2.22	-1.16	-1.89	
<b>Last MWD Survey 11807 MD/7050.1 TVD 1414.9 N 4253.6 E N: 1369157.6 E: 3144277.3</b>										
11,930.0	89.09	88.09	7,052.1	1,419.0	4,376.5	4,600.7	0.00	0.00	0.00	
<b>PTB 483' FEL 11930 MD/7052.1 TVD 1419 N 4376.5 E N: 1369162.3 E: 3144400.2</b>										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
7,496.6	7,029.9	1,396.5	-54.6	Cross 460' FWL 7496.6 MD/7029.9 TVD 1396.6 N -54.6 W N: 1369114.81 E: 3144277.3	
11,807.0	7,050.1	1,414.9	4,253.6	Last MWD Survey 11807 MD/7050.1 TVD 1414.9 N 4253.6 E N: 1369157.6 E: 3144277.3	
11,930.0	7,052.1	1,419.0	4,376.5	PTB 483' FEL 11930 MD/7052.1 TVD 1419 N 4376.5 E N: 1369162.3 E: 3144400.2	

Checked By: _____	Approved By: _____	Date: _____
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