



Extraction Oil & Gas

Weld County, CO NAD 83

Janssen

Janssen 2

OH

Design: OH

Standard Survey Report

16 December, 2015



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Janssen 2
Project:	Weld County, CO NAD 83	TVD Reference:	GL 4779' & KB 24.5' @ 4803.50ft (Patterson 346)
Site:	Janssen	MD Reference:	GL 4779' & KB 24.5' @ 4803.50ft (Patterson 346)
Well:	Janssen 2	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Project	Weld County, CO NAD 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	Janssen, Site Center : Janssen 7				
Site Position:		Northing:	1,427,092.90 usft	Latitude:	40° 30' 10.566 N
From:	Lat/Long	Easting:	3,225,727.96 usft	Longitude:	104° 41' 17.783 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.52 °

Well	Janssen 2, 2147' FNL 2397' FWL Sec 8 T6N R65W					
Well Position	+N/-S	0.00 ft	Northing:	1,427,232.78 usft	Latitude:	40° 30' 11.948 N
	+E/-W	0.00 ft	Easting:	3,225,727.79 usft	Longitude:	104° 41' 17.768 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,779.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	10/28/2015	8.49	67.05	52,645

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	273.03	

Survey Program	Date	12/16/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
203.00	1,539.00	Survey #1 - Surface (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,678.00	11,945.00	Survey #2 - Vertical / Curve / Lateral (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
203.00	0.64	338.84	203.00	1.06	-0.41	0.46	0.32	0.32	0.00	
First SDI MWD Survey										
295.00	1.37	0.65	294.98	2.64	-0.58	0.72	0.88	0.79	23.71	
387.00	2.28	358.72	386.93	5.57	-0.61	0.90	0.99	0.99	-2.10	
479.00	4.65	10.30	478.76	11.07	0.02	0.57	2.67	2.58	12.59	
573.00	6.70	9.35	572.29	20.23	1.59	-0.52	2.18	2.18	-1.01	
668.00	8.51	8.00	666.45	32.66	3.47	-1.74	1.91	1.91	-1.42	

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Well:	Janssen 2	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
762.00	9.63	11.32	759.28	47.25	5.98	-3.47	1.31	1.19	3.53
856.00	11.68	12.51	851.65	64.25	9.58	-6.17	2.19	2.18	1.27
950.00	13.64	13.30	943.36	84.33	14.19	-9.72	2.09	2.09	0.84
1,045.00	15.62	12.01	1,035.28	107.74	19.43	-13.71	2.11	2.08	-1.36
1,139.00	17.05	10.30	1,125.48	133.68	24.53	-17.43	1.60	1.52	-1.82
1,234.00	17.75	11.27	1,216.14	161.59	29.85	-21.27	0.80	0.74	1.02
1,329.00	17.46	8.38	1,306.69	189.89	34.76	-24.67	0.97	-0.31	-3.04
1,424.00	17.32	9.08	1,397.35	217.95	39.07	-27.49	0.26	-0.15	0.74
1,519.00	17.54	8.41	1,487.98	246.08	43.39	-30.32	0.31	0.23	-0.71
1,539.00	17.59	8.83	1,507.05	252.05	44.30	-30.91	0.68	0.25	2.10
Last SDI MWD Surface Survey									
1,678.00	17.14	8.03	1,639.72	293.08	50.38	-34.82	0.37	-0.32	-0.58
1,772.00	16.49	6.98	1,729.70	320.04	53.94	-36.95	0.76	-0.69	-1.12
1,866.00	17.83	14.72	1,819.52	347.20	59.22	-40.78	2.81	1.43	8.23
1,961.00	19.64	15.68	1,909.48	376.65	67.23	-47.22	1.93	1.91	1.01
2,056.00	22.37	13.72	1,998.16	409.58	75.83	-54.08	2.97	2.87	-2.06
2,150.00	23.90	12.64	2,084.60	445.54	84.24	-60.57	1.69	1.63	-1.15
2,245.00	23.45	12.67	2,171.61	482.76	92.60	-66.95	0.47	-0.47	0.03
2,340.00	23.03	11.23	2,258.90	519.43	100.36	-72.77	0.74	-0.44	-1.52
2,435.00	23.12	11.62	2,346.30	555.93	107.74	-78.20	0.19	0.09	0.41
2,530.00	22.98	10.58	2,433.71	592.43	114.90	-83.43	0.45	-0.15	-1.09
2,626.00	24.38	11.18	2,521.63	630.29	122.18	-88.70	1.48	1.46	0.63
2,720.00	25.83	12.08	2,606.75	669.35	130.23	-94.67	1.60	1.54	0.96
2,814.00	24.84	12.30	2,691.71	708.67	138.72	-101.07	1.06	-1.05	0.23
2,909.00	26.58	10.38	2,777.30	749.07	146.80	-107.00	2.03	1.83	-2.02
3,004.00	25.46	10.79	2,862.67	790.04	154.46	-112.48	1.19	-1.18	0.43
3,100.00	25.61	10.55	2,949.29	830.70	162.12	-117.98	0.19	0.16	-0.25
3,194.00	26.72	11.66	3,033.66	871.37	170.11	-123.81	1.29	1.18	1.18
3,290.00	24.94	12.47	3,120.06	912.28	178.84	-130.37	1.89	-1.85	0.84
3,385.00	25.16	12.95	3,206.13	951.51	187.69	-137.14	0.32	0.23	0.51
3,480.00	24.87	12.14	3,292.22	990.72	196.42	-143.78	0.47	-0.31	-0.85
3,575.00	23.35	12.85	3,378.93	1,028.61	204.81	-150.15	1.63	-1.60	0.75
3,670.00	22.06	14.91	3,466.56	1,064.21	213.59	-157.04	1.59	-1.36	2.17
3,765.00	20.83	15.88	3,554.99	1,097.70	222.80	-164.46	1.35	-1.29	1.02
3,861.00	21.39	10.75	3,644.55	1,131.31	230.74	-170.61	2.01	0.58	-5.34
3,956.00	22.92	11.40	3,732.53	1,166.47	237.62	-175.63	1.63	1.61	0.68
4,051.00	25.52	12.93	3,819.17	1,204.56	245.86	-181.85	2.82	2.74	1.61
4,147.00	26.65	13.11	3,905.39	1,245.68	255.37	-189.17	1.18	1.18	0.19
4,241.00	28.47	14.92	3,988.72	1,287.87	265.92	-197.48	2.13	1.94	1.93
4,336.00	29.37	14.83	4,071.87	1,332.27	277.72	-206.91	0.95	0.95	-0.09
4,432.00	27.30	15.22	4,156.36	1,376.27	289.52	-216.37	2.16	-2.16	0.41
4,528.00	24.86	15.85	4,242.58	1,416.93	300.81	-225.50	2.56	-2.54	0.66

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,623.00	25.43	14.99	4,328.58	1,455.85	311.54	-234.15	0.71	0.60	-0.91	
4,717.00	24.17	15.28	4,413.91	1,493.91	321.84	-242.42	1.35	-1.34	0.31	
4,812.00	23.41	15.35	4,500.84	1,530.87	331.96	-250.57	0.80	-0.80	0.07	
4,907.00	24.37	12.42	4,587.70	1,568.21	341.17	-257.80	1.61	1.01	-3.08	
5,001.00	24.90	11.41	4,673.14	1,606.55	349.26	-263.85	0.72	0.56	-1.07	
5,096.00	24.50	8.88	4,759.45	1,645.62	356.25	-268.77	1.19	-0.42	-2.66	
5,191.00	22.58	8.05	4,846.54	1,683.14	361.85	-272.37	2.05	-2.02	-0.87	
5,286.00	21.33	12.03	4,934.66	1,718.10	368.00	-276.67	2.04	-1.32	4.19	
5,381.00	21.01	11.76	5,023.25	1,751.67	375.08	-281.96	0.35	-0.34	-0.28	
5,476.00	22.53	8.27	5,111.47	1,786.36	381.17	-286.21	2.10	1.60	-3.67	
5,572.00	19.15	2.65	5,201.19	1,820.30	384.54	-287.78	4.09	-3.52	-5.85	
5,667.00	15.48	354.82	5,291.88	1,848.51	384.12	-285.87	4.57	-3.86	-8.24	
5,763.00	14.17	353.19	5,384.68	1,872.94	381.57	-282.03	1.43	-1.36	-1.70	
5,858.00	11.93	359.82	5,477.23	1,894.30	380.16	-279.49	2.83	-2.36	6.98	
5,953.00	11.01	6.26	5,570.33	1,913.14	381.11	-279.45	1.66	-0.97	6.78	
6,048.00	11.20	13.75	5,663.56	1,931.12	384.30	-281.68	1.53	0.20	7.88	
6,142.00	9.21	19.48	5,756.07	1,947.08	388.98	-285.51	2.37	-2.12	6.10	
6,237.00	6.00	27.73	5,850.23	1,958.65	393.82	-289.74	3.56	-3.38	8.68	
6,332.00	4.02	33.97	5,944.86	1,965.81	397.99	-293.53	2.16	-2.08	6.57	
6,428.00	1.81	40.22	6,040.73	1,969.76	400.85	-296.17	2.32	-2.30	6.51	
6,523.00	0.72	107.14	6,135.71	1,970.72	402.39	-297.66	1.75	-1.15	70.44	
6,619.00	0.94	112.29	6,231.70	1,970.25	403.70	-298.99	0.24	0.23	5.36	
6,714.00	0.53	126.58	6,326.69	1,969.69	404.77	-300.09	0.47	-0.43	15.04	
6,810.00	0.51	97.48	6,422.69	1,969.37	405.55	-300.89	0.27	-0.02	-30.31	
6,905.00	7.36	264.24	6,517.44	1,968.70	399.91	-295.29	8.27	7.21	175.54	
7,001.00	17.67	276.97	6,611.05	1,969.86	379.27	-274.61	11.05	10.74	13.26	
7,096.00	27.11	281.19	6,698.79	1,975.82	343.64	-238.72	10.07	9.94	4.44	
7,191.00	35.91	274.45	6,779.73	1,982.20	294.52	-189.33	9.96	9.26	-7.09	
7,286.00	39.72	271.17	6,854.77	1,984.98	236.37	-131.11	4.53	4.01	-3.45	
7,382.00	45.47	268.71	6,925.42	1,984.84	171.43	-66.28	6.23	5.99	-2.56	
7,477.00	53.17	269.35	6,987.30	1,983.64	99.45	5.54	8.12	8.11	0.67	
7,572.00	59.13	269.20	7,040.19	1,982.64	20.60	84.23	6.28	6.27	-0.16	
7,667.00	59.74	269.93	7,088.50	1,982.02	-61.20	165.88	0.92	0.64	0.77	
7,761.00	71.23	270.63	7,127.44	1,982.46	-146.58	251.17	12.24	12.22	0.74	
7,856.00	77.07	271.96	7,153.38	1,984.54	-237.90	342.47	6.29	6.15	1.40	
7,952.00	88.96	270.34	7,165.03	1,986.43	-333.00	437.53	12.50	12.39	-1.69	
8,046.00	87.75	269.74	7,167.73	1,986.50	-426.96	531.36	1.44	-1.29	-0.64	
8,141.00	87.31	271.80	7,171.82	1,987.77	-521.85	626.20	2.22	-0.46	2.17	
8,236.00	87.21	271.81	7,176.36	1,990.76	-616.70	721.07	0.11	-0.11	0.01	
8,331.00	86.44	271.96	7,181.63	1,993.88	-711.50	815.90	0.83	-0.81	0.16	
8,425.00	87.58	273.00	7,186.53	1,997.95	-805.28	909.77	1.64	1.21	1.11	
8,520.00	89.93	272.73	7,188.59	2,002.69	-900.13	1,004.74	2.49	2.47	-0.28	

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,614.00	89.09	272.31	7,189.40	2,006.83	-994.04	1,098.73	1.00	-0.89	-0.45	
8,708.00	88.89	272.70	7,191.05	2,010.93	-1,087.93	1,192.71	0.47	-0.21	0.41	
8,803.00	90.77	274.60	7,191.34	2,016.98	-1,182.73	1,287.69	2.81	1.98	2.00	
8,898.00	89.83	273.79	7,190.84	2,023.93	-1,277.47	1,382.67	1.31	-0.99	-0.85	
8,993.00	89.16	273.20	7,191.68	2,029.72	-1,372.29	1,477.66	0.94	-0.71	-0.62	
9,088.00	91.28	274.43	7,191.31	2,036.04	-1,467.07	1,572.65	2.58	2.23	1.29	
9,182.00	92.76	275.89	7,188.00	2,044.49	-1,560.63	1,666.52	2.21	1.57	1.55	
9,278.00	88.72	273.91	7,186.76	2,052.69	-1,656.25	1,762.43	4.69	-4.21	-2.06	
9,372.00	89.50	274.42	7,188.22	2,059.51	-1,749.99	1,856.40	0.99	0.83	0.54	
9,468.00	89.87	274.11	7,188.75	2,066.65	-1,845.72	1,952.38	0.50	0.39	-0.32	
9,564.00	89.53	273.34	7,189.25	2,072.89	-1,941.51	2,048.37	0.88	-0.35	-0.80	
9,659.00	90.64	273.21	7,189.11	2,078.32	-2,036.36	2,143.37	1.18	1.17	-0.14	
9,755.00	90.97	272.88	7,187.76	2,083.41	-2,132.21	2,239.36	0.49	0.34	-0.34	
9,850.00	91.95	273.02	7,185.34	2,088.30	-2,227.05	2,334.33	1.04	1.03	0.15	
9,945.00	89.19	273.53	7,184.39	2,093.73	-2,321.88	2,429.31	2.95	-2.91	0.54	
10,040.00	88.19	274.03	7,186.57	2,099.99	-2,416.65	2,524.28	1.18	-1.05	0.53	
10,136.00	86.37	274.64	7,191.12	2,107.24	-2,512.27	2,620.14	2.00	-1.90	0.64	
10,231.00	87.58	273.77	7,196.13	2,114.19	-2,606.87	2,714.98	1.57	1.27	-0.92	
10,327.00	89.36	272.56	7,198.70	2,119.49	-2,702.69	2,810.94	2.24	1.85	-1.26	
10,422.00	90.03	271.91	7,199.20	2,123.19	-2,797.61	2,905.93	0.98	0.71	-0.68	
10,517.00	89.06	270.46	7,199.96	2,125.16	-2,892.59	3,000.88	1.84	-1.02	-1.53	
10,612.00	89.77	269.38	7,200.93	2,125.03	-2,987.58	3,095.73	1.36	0.75	-1.14	
10,707.00	90.27	270.34	7,200.89	2,124.79	-3,082.58	3,190.58	1.14	0.53	1.01	
10,802.00	90.07	271.12	7,200.61	2,126.00	-3,177.57	3,285.50	0.85	-0.21	0.82	
10,897.00	91.64	271.94	7,199.19	2,128.54	-3,272.52	3,380.46	1.86	1.65	0.86	
10,992.00	88.59	270.79	7,199.00	2,130.80	-3,367.48	3,475.40	3.43	-3.21	-1.21	
11,088.00	86.53	270.29	7,203.09	2,131.71	-3,463.38	3,571.22	2.21	-2.15	-0.52	
11,183.00	87.21	272.42	7,208.28	2,133.95	-3,558.21	3,666.03	2.35	0.72	2.24	
11,279.00	89.93	274.30	7,210.67	2,139.58	-3,654.00	3,761.99	3.44	2.83	1.96	
11,374.00	87.62	274.12	7,212.71	2,146.55	-3,748.72	3,856.94	2.44	-2.43	-0.19	
11,469.00	86.71	273.31	7,217.40	2,152.70	-3,843.40	3,951.82	1.28	-0.96	-0.85	
11,564.00	89.93	273.63	7,220.19	2,158.44	-3,938.17	4,046.76	3.41	3.39	0.34	
11,659.00	89.06	273.15	7,221.03	2,164.06	-4,033.00	4,141.75	1.05	-0.92	-0.51	
11,754.00	91.04	272.33	7,220.94	2,168.60	-4,127.89	4,236.75	2.26	2.08	-0.86	
11,849.00	92.95	271.89	7,217.64	2,172.10	-4,222.76	4,331.67	2.06	2.01	-0.46	
Last SDI MWD Survey										
11,945.00	92.95	271.89	7,212.70	2,175.26	-4,318.58	4,427.53	0.00	0.00	0.00	
Projection to TD										

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Janssen 2
Project:	Weld County, CO NAD 83	TVD Reference:	GL 4779' & KB 24.5' @ 4803.50ft (Patterson 346)
Site:	Janssen	MD Reference:	GL 4779' & KB 24.5' @ 4803.50ft (Patterson 346)
Well:	Janssen 2	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
203.00	203.00	1.06	-0.41	First SDI MWD Survey
1,539.00	1,507.05	252.05	44.30	Last SDI MWD Surface Survey
11,849.00	7,217.64	2,172.10	-4,222.76	Last SDI MWD Survey
11,945.00	7,212.70	2,175.26	-4,318.58	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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