



Project: Weld County, CO NAD 83

Site: Janssen

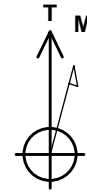
Well: Janssen 11

Wellbore: OH

Design: Plan 2

Plan: Plan 2 (Janssen 11/OH)

Created By: Seth Burstad Date: 11-2-2015



Azimuths to True North
Magnetic North: 8.49°

Magnetic Field
Strength: 52644.3snT
Dip Angle: 67.05°
Date: 10/28/2015
Model: BGGM2015

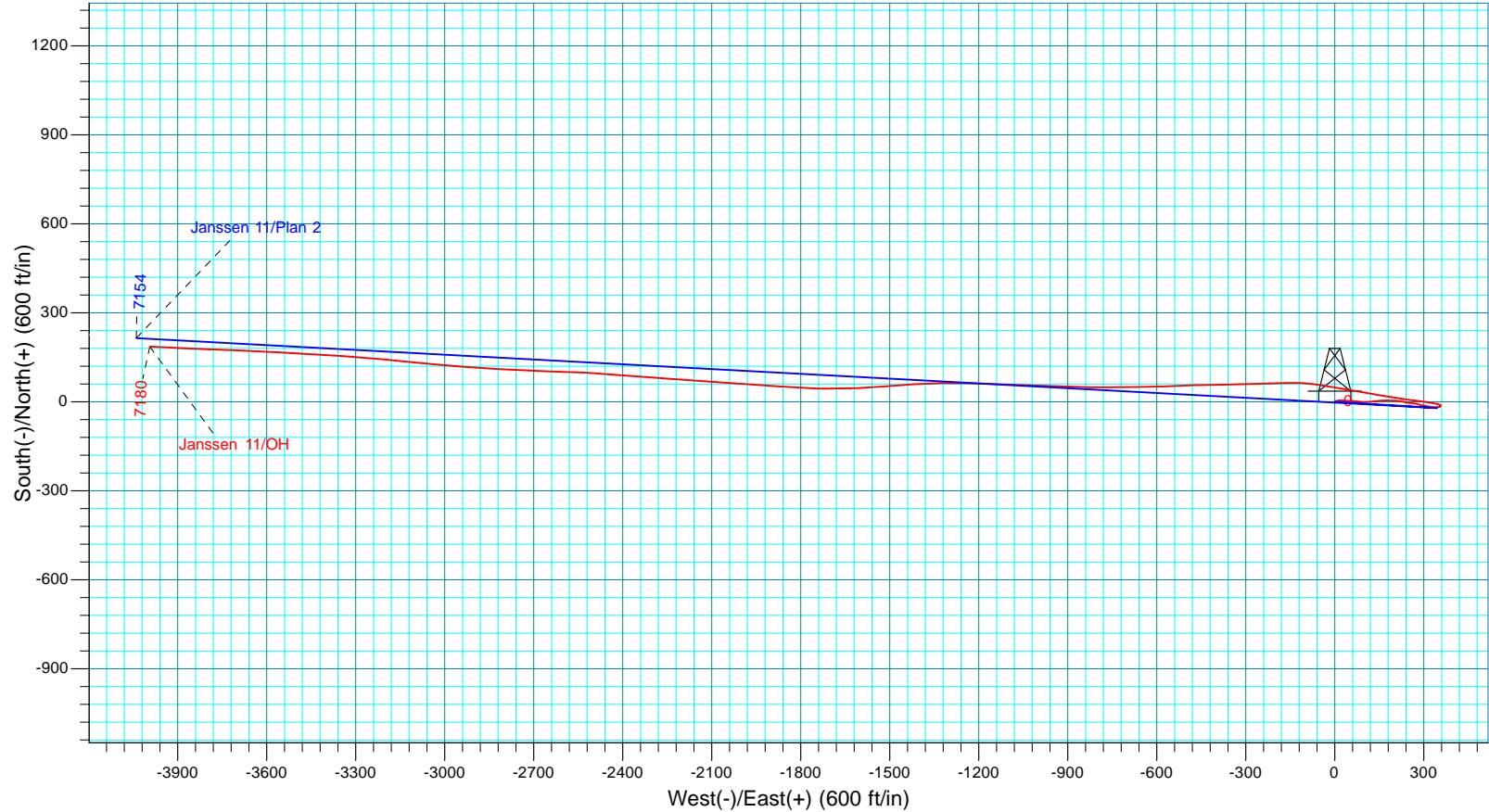
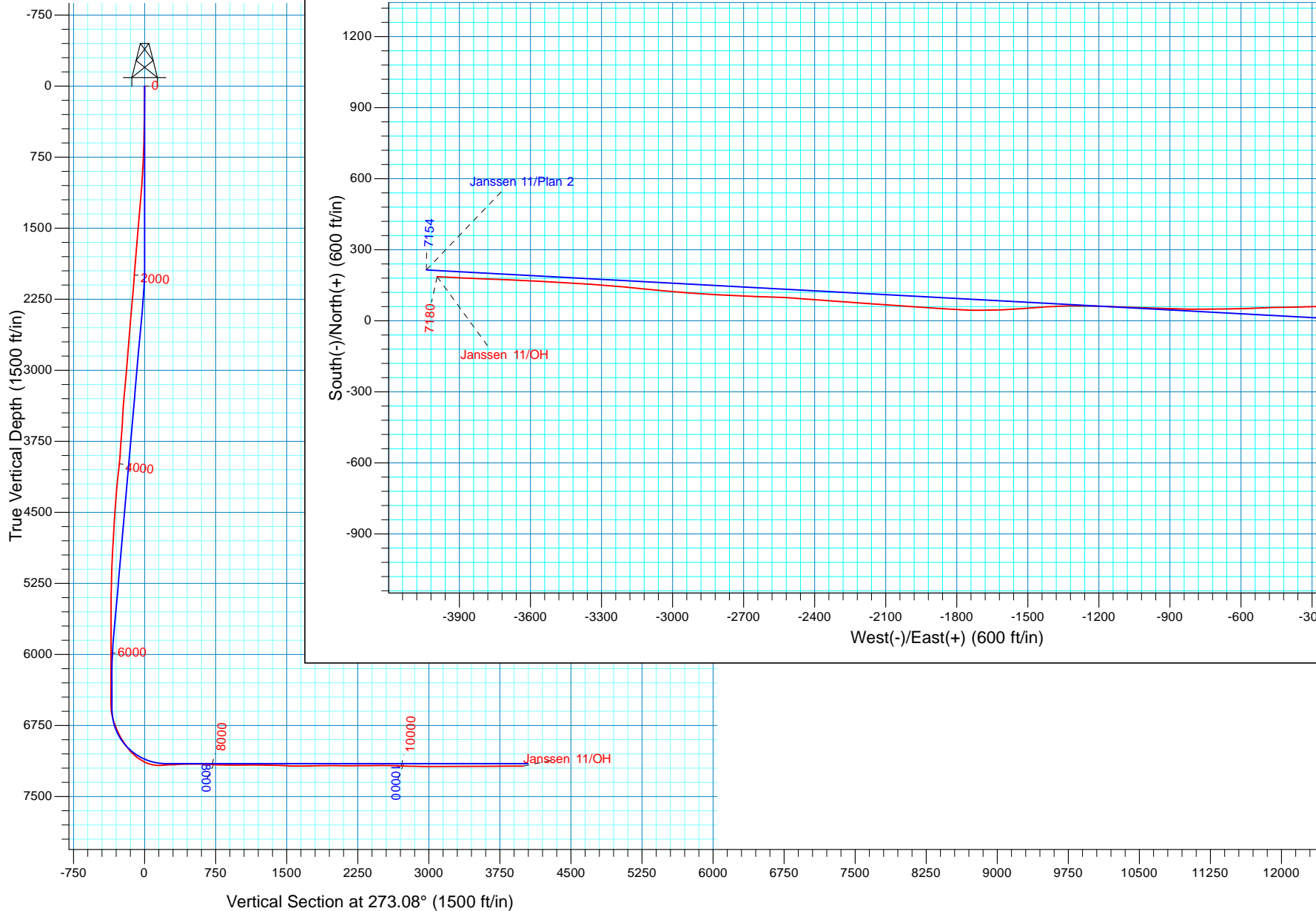
WELL DETAILS: Janssen 11

PROJECT DETAILS: Weld County, CO NAD 83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone

System Datum: Mean Sea Level
Local North: True

GL 4772' & KB 24.5' @ 4796.50ft (Patterson 346) 4772.00
Northing Easting Latitude Longitude
1426981.03 3225727.87 40° 30' 9.461 N 104° 41' 17.797 W





Extraction Oil & Gas

Weld County, CO NAD 83

Janssen

Janssen 11

OH

Design: OH

Standard Survey Report

03 December, 2015



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Janssen 11
Project:	Weld County, CO NAD 83	TVD Reference:	GL 4772' & KB 24.5' @ 4796.50ft (Patterson 346)
Site:	Janssen	MD Reference:	GL 4772' & KB 24.5' @ 4796.50ft (Patterson 346)
Well:	Janssen 11	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 11, 2399' FNL 2396' FWL Sec 8 T6N R65W					
Well Position	+N/-S	0.00 ft	Northing:	1,426,981.04 usft	Latitude:	40° 30' 9.461 N
	+E/-W	0.00 ft	Easting:	3,225,727.87 usft	Longitude:	104° 41' 17.797 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,772.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	10/28/2015	8.49	67.05	52,644

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		273.08

Survey Program	Date	12/3/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
234.00	1,486.00	Survey #1 - Surface (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,681.00	11,290.00	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	
234.00	0.64	65.18	234.00	0.55	1.19	-1.15	0.27	0.27	0.00	
First SDI MWD Survey										
326.00	1.07	55.85	325.98	1.25	2.36	-2.29	0.49	0.47	-10.14	
510.00	1.27	67.74	509.95	2.98	5.67	-5.50	0.17	0.11	6.46	
604.00	1.48	76.40	603.92	3.66	7.82	-7.61	0.31	0.22	9.21	
699.00	1.76	81.97	698.88	4.16	10.45	-10.21	0.34	0.29	5.86	
793.00	3.02	90.90	792.80	4.32	14.36	-14.11	1.39	1.34	9.50	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Janssen 11
Project:	Weld County, CO NAD 83	TVD Reference:	GL 4772' & KB 24.5' @ 4796.50ft (Patterson 346)
Site:	Janssen	MD Reference:	GL 4772' & KB 24.5' @ 4796.50ft (Patterson 346)
Well:	Janssen 11	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)
857.00	3.75	87.81	856.69	4.37	18.14	-17.87	1.18	1.14	-4.83
951.00	3.86	92.22	950.48	4.37	24.37	-24.10	0.33	0.12	4.69
1,046.00	4.01	95.82	1,045.26	3.91	30.87	-30.61	0.30	0.16	3.79
1,140.00	4.10	93.00	1,139.02	3.40	37.49	-37.26	0.23	0.10	-3.00
1,234.00	4.25	94.16	1,232.77	2.97	44.32	-44.10	0.18	0.16	1.23
1,330.00	4.65	90.87	1,328.48	2.65	51.76	-51.55	0.49	0.42	-3.43
1,425.00	4.92	94.37	1,423.15	2.28	59.68	-59.47	0.42	0.28	3.68
1,486.00	5.36	92.34	1,483.90	1.97	65.13	-64.93	0.78	0.72	-3.33
Last SDI MWD Surface Survey									
1,681.00	5.33	98.26	1,678.06	0.29	83.19	-83.06	0.28	-0.02	3.04
1,775.00	4.87	95.71	1,771.69	-0.73	91.48	-91.39	0.55	-0.49	-2.71
1,870.00	4.26	92.76	1,866.38	-1.30	99.02	-98.95	0.69	-0.64	-3.11
1,965.00	4.21	89.75	1,961.13	-1.46	106.03	-105.96	0.24	-0.05	-3.17
2,059.00	3.98	83.08	2,054.89	-1.05	112.72	-112.62	0.56	-0.24	-7.10
2,154.00	4.01	75.96	2,149.66	0.15	119.22	-119.04	0.52	0.03	-7.49
2,248.00	5.88	86.36	2,243.30	1.26	127.21	-126.96	2.20	1.99	11.06
2,344.00	5.41	85.95	2,338.84	1.89	136.63	-136.33	0.49	-0.49	-0.43
2,439.00	5.25	85.26	2,433.43	2.57	145.43	-145.08	0.18	-0.17	-0.73
2,535.00	5.08	83.75	2,529.04	3.39	154.03	-153.63	0.23	-0.18	-1.57
2,629.00	5.04	87.45	2,622.67	4.03	162.30	-161.85	0.35	-0.04	3.94
2,723.00	4.44	88.19	2,716.35	4.33	170.06	-169.58	0.64	-0.64	0.79
2,818.00	4.33	91.30	2,811.07	4.36	177.32	-176.83	0.28	-0.12	3.27
2,913.00	3.98	92.48	2,905.82	4.14	184.20	-183.71	0.38	-0.37	1.24
3,009.00	4.13	86.85	3,001.58	4.18	190.98	-190.48	0.44	0.16	-5.86
3,103.00	6.12	96.09	3,095.20	3.84	199.34	-198.85	2.29	2.12	9.83
3,198.00	5.66	93.85	3,189.70	2.99	209.05	-208.59	0.54	-0.48	-2.36
3,294.00	4.99	96.24	3,285.29	2.21	217.92	-217.49	0.74	-0.70	2.49
3,389.00	3.63	98.57	3,380.01	1.32	225.01	-224.61	1.44	-1.43	2.45
3,484.00	3.52	105.15	3,474.83	0.11	230.79	-230.46	0.45	-0.12	6.93
3,579.00	3.23	106.79	3,569.67	-1.43	236.17	-235.91	0.32	-0.31	1.73
3,674.00	4.51	98.23	3,664.45	-2.74	242.43	-242.23	1.47	1.35	-9.01
3,770.00	4.33	98.91	3,760.16	-3.84	249.75	-249.59	0.20	-0.19	0.71
3,865.00	3.89	95.06	3,854.92	-4.68	256.50	-256.38	0.55	-0.46	-4.05
3,960.00	4.95	93.10	3,949.63	-5.18	263.80	-263.70	1.13	1.12	-2.06
4,055.00	6.65	106.17	4,044.15	-6.94	273.18	-273.16	2.26	1.79	13.76
4,150.00	6.18	104.47	4,138.55	-9.75	283.41	-283.53	0.53	-0.49	-1.79
4,245.00	5.17	99.53	4,233.09	-11.73	292.59	-292.79	1.18	-1.06	-5.20
4,341.00	4.66	99.93	4,328.73	-13.12	300.69	-300.96	0.53	-0.53	0.42
4,437.00	4.04	100.20	4,424.46	-14.39	307.86	-308.19	0.65	-0.65	0.28
4,532.00	3.19	100.25	4,519.27	-15.46	313.76	-314.14	0.89	-0.89	0.05
4,626.00	4.40	100.16	4,613.06	-16.56	319.88	-320.31	1.29	1.29	-0.10
4,721.00	3.24	101.99	4,707.85	-17.76	326.09	-326.58	1.23	-1.22	1.93

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Janssen 11
Project:	Weld County, CO NAD 83	TVD Reference:	GL 4772' & KB 24.5' @ 4796.50ft (Patterson 346)
Site:	Janssen	MD Reference:	GL 4772' & KB 24.5' @ 4796.50ft (Patterson 346)
Well:	Janssen 11	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)
4,816.00	2.91	97.90	4,802.71	-18.65	331.11	-331.63	0.42	-0.35	-4.31
4,910.00	3.29	87.80	4,896.57	-18.87	336.17	-336.70	0.71	0.40	-10.74
5,005.00	2.64	84.80	4,991.44	-18.57	341.07	-341.58	0.70	-0.68	-3.16
5,100.00	2.50	84.85	5,086.35	-18.19	345.31	-345.79	0.15	-0.15	0.05
5,195.00	1.65	79.24	5,181.29	-17.74	348.72	-349.17	0.92	-0.89	-5.91
5,290.00	1.42	90.68	5,276.25	-17.50	351.24	-351.67	0.40	-0.24	12.04
5,385.00	0.77	65.85	5,371.24	-17.26	353.00	-353.42	0.83	-0.68	-26.14
5,481.00	0.86	19.70	5,467.23	-16.31	353.83	-354.20	0.67	0.09	-48.07
5,576.00	0.72	2.65	5,562.22	-15.05	354.10	-354.40	0.29	-0.15	-17.95
5,672.00	0.42	61.87	5,658.21	-14.28	354.44	-354.69	0.65	-0.31	61.69
5,767.00	0.31	158.11	5,753.21	-14.35	354.84	-355.10	0.58	-0.12	101.31
5,862.00	0.53	196.20	5,848.21	-15.01	354.81	-355.11	0.36	0.23	40.09
5,957.00	0.03	77.86	5,943.21	-15.43	354.72	-355.03	0.57	-0.53	-124.57
6,051.00	0.43	164.06	6,037.21	-15.76	354.84	-355.17	0.46	0.43	91.70
6,146.00	0.51	89.67	6,132.20	-16.10	355.36	-355.71	0.60	0.08	-78.31
6,241.00	0.55	39.27	6,227.20	-15.75	356.07	-356.40	0.48	0.04	-53.05
6,337.00	0.64	35.02	6,323.20	-14.95	356.67	-356.96	0.10	0.09	-4.43
6,432.00	1.92	0.63	6,418.17	-12.93	356.99	-357.17	1.51	1.35	-36.20
6,528.00	0.78	11.12	6,514.14	-10.68	357.13	-357.19	1.21	-1.19	10.93
6,623.00	8.80	281.34	6,608.77	-8.61	350.12	-350.08	9.30	8.44	-94.51
6,719.00	17.78	280.35	6,702.10	-4.52	328.46	-328.23	9.36	9.35	-1.03
6,814.00	23.39	279.69	6,791.00	1.26	295.57	-295.08	5.91	5.91	-0.69
6,909.00	29.42	273.47	6,876.07	5.85	253.65	-252.97	6.98	6.35	-6.55
7,005.00	34.22	282.54	6,957.66	13.15	203.71	-202.71	7.05	5.00	9.45
7,100.00	43.46	278.52	7,031.59	23.81	145.18	-143.69	10.08	9.73	-4.23
7,195.00	54.26	280.24	7,094.00	35.54	74.72	-72.70	11.45	11.37	1.81
7,291.00	65.90	279.00	7,141.80	49.37	-7.18	9.82	12.18	12.13	-1.29
7,386.00	77.04	277.96	7,163.70	58.99	-71.79	74.86	16.21	16.14	-1.51
7,449.00	91.81	268.23	7,172.34	63.65	-159.89	163.08	19.83	16.60	-10.93
7,576.00	94.10	268.21	7,165.79	59.71	-286.65	289.45	1.80	1.80	-0.02
7,670.00	92.28	269.19	7,160.56	57.59	-380.48	383.02	2.20	-1.94	1.04
7,765.00	90.37	268.16	7,158.37	55.39	-475.42	477.71	2.28	-2.01	-1.08
7,860.00	88.93	267.82	7,158.95	52.06	-570.36	572.33	1.56	-1.52	-0.36
7,955.00	87.35	269.57	7,162.03	49.90	-665.28	667.00	2.48	-1.66	1.84
8,050.00	87.75	269.29	7,166.09	48.95	-760.19	761.72	0.51	0.42	-0.29
8,145.00	88.96	271.81	7,168.82	49.86	-855.13	856.58	2.94	1.27	2.65
8,240.00	90.20	271.83	7,169.51	52.88	-950.08	951.55	1.31	1.31	0.02
8,334.00	91.01	271.85	7,168.52	55.90	-1,044.03	1,045.52	0.86	0.86	0.02
8,429.00	89.63	272.16	7,167.99	59.22	-1,138.96	1,140.50	1.49	-1.45	0.33
8,523.00	89.53	271.67	7,168.68	62.36	-1,232.91	1,234.48	0.53	-0.11	-0.52
8,617.00	88.89	269.07	7,169.98	62.97	-1,326.89	1,328.36	2.85	-0.68	-2.77
8,712.00	87.75	266.03	7,172.76	58.91	-1,421.75	1,422.86	3.42	-1.20	-3.20

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Site:	Janssen	MD Reference:	GL 4772' & KB 24.5' @ 4796.50ft (Patterson 346)
Well:	Janssen 11	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)	
8,807.00	87.82	265.46	7,176.43	51.87	-1,516.42	1,517.01	0.60	0.07	-0.60	
8,902.00	89.87	267.47	7,178.35	46.01	-1,611.21	1,611.35	3.02	2.16	2.12	
8,997.00	90.77	270.24	7,177.82	44.12	-1,706.18	1,706.08	3.07	0.95	2.92	
9,091.00	91.18	273.31	7,176.22	47.03	-1,800.11	1,800.03	3.29	0.44	3.27	
9,187.00	89.83	274.17	7,175.37	53.29	-1,895.89	1,896.02	1.67	-1.41	0.90	
9,281.00	89.63	274.07	7,175.82	60.04	-1,989.65	1,990.00	0.24	-0.21	-0.11	
9,377.00	89.93	273.88	7,176.18	66.70	-2,085.42	2,085.99	0.37	0.31	-0.20	
9,473.00	90.34	273.78	7,175.96	73.11	-2,181.20	2,181.98	0.44	0.43	-0.10	
9,568.00	90.27	274.15	7,175.45	79.68	-2,275.97	2,276.97	0.40	-0.07	0.39	
9,663.00	91.01	274.52	7,174.39	86.86	-2,370.70	2,371.94	0.87	0.78	0.39	
9,759.00	90.81	274.18	7,172.87	94.14	-2,466.41	2,467.90	0.41	-0.21	-0.35	
9,854.00	88.46	272.49	7,173.47	99.66	-2,561.23	2,562.89	3.05	-2.47	-1.78	
9,949.00	87.88	271.72	7,176.50	103.15	-2,656.12	2,657.83	1.01	-0.61	-0.81	
10,045.00	88.76	272.44	7,179.32	106.63	-2,752.01	2,753.77	1.18	0.92	0.75	
10,140.00	88.76	274.04	7,181.38	112.00	-2,846.84	2,848.74	1.68	0.00	1.68	
10,236.00	88.79	274.06	7,183.43	118.78	-2,942.58	2,944.71	0.04	0.03	0.02	
10,331.00	89.73	275.14	7,184.65	126.40	-3,037.26	3,039.66	1.51	0.99	1.14	
10,426.00	90.47	275.65	7,184.49	135.33	-3,131.84	3,134.59	0.95	0.78	0.54	
10,521.00	90.47	275.19	7,183.71	144.30	-3,226.41	3,229.50	0.48	0.00	-0.48	
10,616.00	90.64	274.15	7,182.79	152.04	-3,321.09	3,324.46	1.11	0.18	-1.09	
10,711.00	90.10	273.26	7,182.18	158.18	-3,415.89	3,419.45	1.10	-0.57	-0.94	
10,806.00	90.47	273.45	7,181.70	163.74	-3,510.72	3,514.45	0.44	0.39	0.20	
10,901.00	90.44	272.71	7,180.95	168.84	-3,605.58	3,609.45	0.78	-0.03	-0.78	
10,997.00	90.27	272.23	7,180.35	172.98	-3,701.49	3,705.44	0.53	-0.18	-0.50	
11,092.00	89.80	272.30	7,180.30	176.73	-3,796.42	3,800.43	0.50	-0.49	0.07	
11,187.00	90.57	273.18	7,179.99	181.27	-3,891.30	3,895.42	1.23	0.81	0.93	
11,230.00	89.96	272.25	7,179.79	183.31	-3,934.26	3,938.42	2.59	-1.42	-2.16	
Last SDI MWD Survey										
11,290.00	89.96	272.25	7,179.83	185.67	-3,994.21	3,998.42	0.00	0.00	0.00	
Projection to TD										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
234.00	234.00	0.55	1.19	First SDI MWD Survey	
1,486.00	1,483.90	1.97	65.13	Last SDI MWD Surface Survey	
11,230.00	7,179.79	183.31	-3,934.26	Last SDI MWD Survey	
11,290.00	7,179.83	185.67	-3,994.21	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____