

Plan: Plan 2 (Janssen 8/OH)
Created By: Seth Burstad Date: 11-2-2015

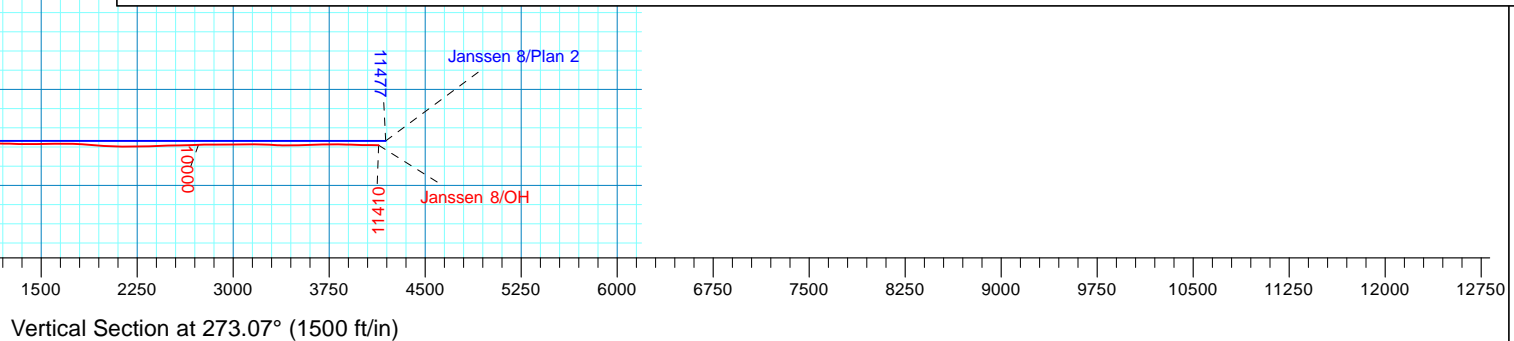
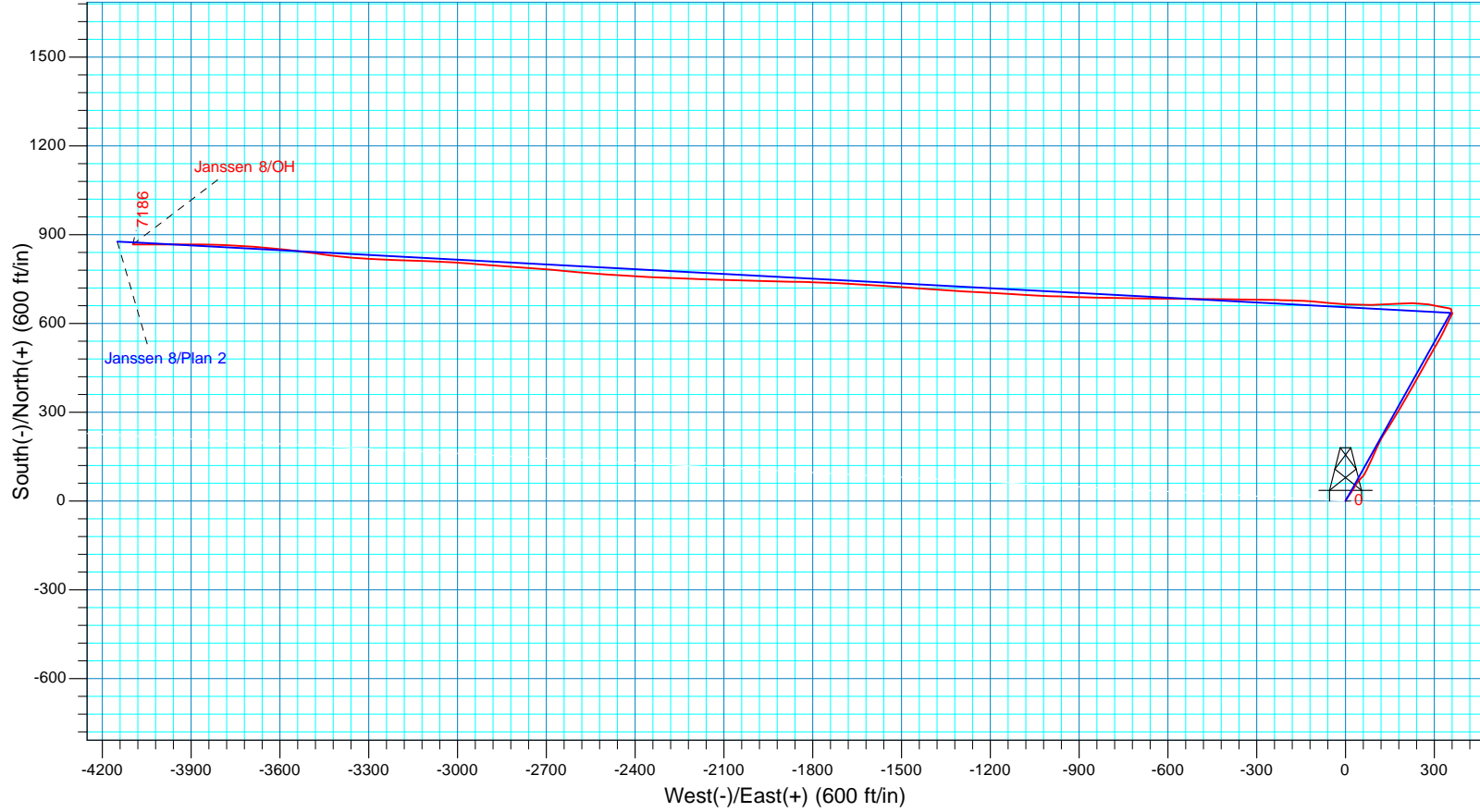
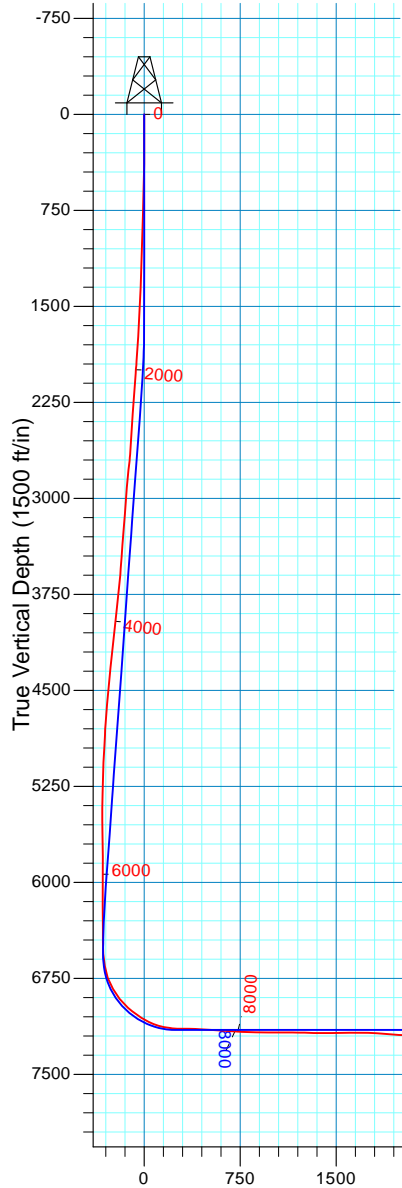
T **M**
 Azimuths to True North
 Magnetic North: 8.49°
 Magnetic Field
 Strength: 52644.4snT
 Dip Angle: 67.05°
 Date: 10/28/2015
 Model: BGGM2015

WELL DETAILS: Janssen 8

PROJECT DETAILS: Weld County, CO NAD 83

GL 4776' & KB 24.5' @ 4800.50ft (Patterson 346) 4776.00
 Northing Easting Latitude Longitude
 1427064.83 3225727.93 40° 30' 10.289 N 104° 41' 17.786 W

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





Extraction Oil & Gas

Weld County, CO NAD 83

Janssen

Janssen 8

OH

Design: OH

Standard Survey Report

23 November, 2015



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Janssen 8
Project:	Weld County, CO NAD 83	TVD Reference:	GL 4776' & KB 24.5' @ 4800.50ft (Patterson 346)
Site:	Janssen	MD Reference:	GL 4776' & KB 24.5' @ 4800.50ft (Patterson 346)
Well:	Janssen 8	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 8, 2315' FNL 2396' FWL Sec 8 T6N R65W					
Well Position	+N/-S	0.00 ft	Northing:	1,427,064.83 usft	Latitude:	40° 30' 10.289 N
	+E/-W	0.00 ft	Easting:	3,225,727.94 usft	Longitude:	104° 41' 17.786 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,776.00 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	273.07	

Survey Program	Date	11/23/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
204.00	1,486.00	Survey #1 - Surface (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,586.00	11,410.00	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	0.00
204.00	0.24	10.45	204.00	0.42	0.08	-0.05	0.12	0.12	0.00	
First SDI MWD Survey										
296.00	0.17	22.02	296.00	0.74	0.16	-0.12	0.09	-0.08	12.58	
388.00	1.12	31.80	387.99	1.63	0.69	-0.60	1.04	1.03	10.63	
480.00	2.66	24.97	479.94	4.33	2.06	-1.83	1.69	1.67	-7.42	
574.00	2.66	26.50	573.84	8.26	3.96	-3.51	0.08	0.00	1.63	
763.00	2.96	37.60	762.61	16.05	8.89	-8.02	0.33	0.16	5.87	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Janssen 8
Project:	Weld County, CO NAD 83	TVD Reference:	GL 4776' & KB 24.5' @ 4800.50ft (Patterson 346)
Site:	Janssen	MD Reference:	GL 4776' & KB 24.5' @ 4800.50ft (Patterson 346)
Well:	Janssen 8	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	3.38	38.00	856.47	20.15	12.08	-10.98	0.45	0.45	0.43
951.00	3.64	39.38	950.29	24.64	15.68	-14.34	0.29	0.28	1.47
1,046.00	3.92	34.56	1,045.08	29.65	19.43	-17.82	0.45	0.29	-5.07
1,140.00	4.28	31.78	1,138.84	35.28	23.10	-21.18	0.44	0.38	-2.96
1,234.00	4.60	32.11	1,232.56	41.45	26.95	-24.70	0.34	0.34	0.35
1,330.00	4.57	30.60	1,328.25	48.00	30.95	-28.33	0.13	-0.03	-1.57
1,425.00	4.71	31.33	1,422.94	54.59	34.90	-31.93	0.16	0.15	0.77
1,486.00	4.86	28.65	1,483.73	59.00	37.44	-34.23	0.44	0.25	-4.39
Last SDI MWD Surface Survey									
1,586.00	4.18	42.80	1,583.42	65.39	41.95	-38.39	1.30	-0.68	14.15
First SDI MWD Vertical Survey									
1,681.00	3.93	39.79	1,678.18	70.43	46.39	-42.55	0.35	-0.26	-3.17
1,775.00	6.28	44.05	1,771.81	76.60	52.02	-47.85	2.53	2.50	4.53
1,870.00	7.63	40.94	1,866.10	85.10	59.77	-55.13	1.47	1.42	-3.27
1,965.00	9.75	26.95	1,960.02	97.04	67.55	-62.26	3.14	2.23	-14.73
2,059.00	12.35	25.37	2,052.27	113.22	75.47	-69.29	2.78	2.77	-1.68
2,154.00	11.40	25.28	2,145.23	130.89	83.83	-76.70	1.00	-1.00	-0.09
2,249.00	10.43	24.23	2,238.52	147.22	91.37	-83.35	1.04	-1.02	-1.11
2,344.00	9.89	23.17	2,332.03	162.57	98.11	-89.26	0.60	-0.57	-1.12
2,439.00	9.42	23.68	2,425.68	177.19	104.44	-94.80	0.50	-0.49	0.54
2,535.00	9.92	26.80	2,520.32	191.76	111.32	-100.89	0.75	0.52	3.25
2,629.00	9.18	25.84	2,613.01	205.74	118.24	-107.05	0.81	-0.79	-1.02
2,723.00	12.16	32.68	2,705.38	220.82	126.86	-114.85	3.44	3.17	7.28
2,818.00	10.99	33.26	2,798.45	236.82	137.23	-124.35	1.24	-1.23	0.61
2,913.00	10.60	31.40	2,891.77	251.85	146.74	-133.05	0.55	-0.41	-1.96
3,009.00	10.30	30.16	2,986.17	266.80	155.66	-141.14	0.39	-0.31	-1.29
3,103.00	8.52	31.05	3,078.90	280.04	163.47	-148.24	1.90	-1.89	0.95
3,198.00	8.57	31.06	3,172.85	292.13	170.75	-154.86	0.05	0.05	0.01
3,294.00	9.62	34.28	3,267.64	304.89	178.96	-162.38	1.22	1.09	3.35
3,389.00	8.48	32.32	3,361.46	317.36	187.18	-169.91	1.24	-1.20	-2.06
3,484.00	9.18	27.63	3,455.33	330.00	194.44	-176.48	1.06	0.74	-4.94
3,579.00	9.51	29.85	3,549.07	343.52	201.86	-183.17	0.51	0.35	2.34
3,674.00	10.53	28.96	3,642.62	357.92	209.97	-190.50	1.09	1.07	-0.94
3,770.00	12.84	30.23	3,736.63	374.81	219.59	-199.20	2.42	2.41	1.32
3,865.00	14.41	29.74	3,828.95	394.20	230.77	-209.32	1.66	1.65	-0.52
3,960.00	14.68	29.69	3,920.91	414.92	242.59	-220.02	0.28	0.28	-0.05
4,056.00	15.22	29.52	4,013.66	436.45	254.83	-231.09	0.56	0.56	-0.18
4,150.00	14.58	28.64	4,104.49	457.58	266.58	-241.69	0.72	-0.68	-0.94
4,245.00	12.47	28.68	4,196.86	477.07	277.23	-251.28	2.22	-2.22	0.04
4,341.00	12.19	30.27	4,290.64	494.92	287.31	-260.40	0.46	-0.29	1.66
4,437.00	10.49	30.66	4,384.76	511.19	296.88	-269.08	1.77	-1.77	0.41
4,532.00	10.88	31.14	4,478.12	526.30	305.93	-277.30	0.42	0.41	0.51

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Janssen 8
Project:	Weld County, CO NAD 83	TVD Reference:	GL 4776' & KB 24.5' @ 4800.50ft (Patterson 346)
Site:	Janssen	MD Reference:	GL 4776' & KB 24.5' @ 4800.50ft (Patterson 346)
Well:	Janssen 8	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)	
4,626.00	11.64	29.37	4,570.31	542.16	315.17	-285.68	0.89	0.81	-1.88	
4,721.00	12.24	26.85	4,663.25	559.50	324.41	-293.98	0.84	0.63	-2.65	
4,816.00	9.69	25.75	4,756.51	575.68	332.44	-301.13	2.69	-2.68	-1.16	
4,910.00	7.84	24.65	4,849.41	588.64	338.55	-306.54	1.98	-1.97	-1.17	
5,005.00	7.33	28.03	4,943.58	599.88	344.10	-311.48	0.71	-0.54	3.56	
5,100.00	6.70	29.05	5,037.86	610.07	349.64	-316.46	0.68	-0.66	1.07	
5,195.00	5.92	24.90	5,132.29	619.36	354.39	-320.71	0.95	-0.82	-4.37	
5,290.00	4.23	17.95	5,226.91	627.14	357.53	-323.43	1.89	-1.78	-7.32	
5,385.00	3.02	23.31	5,321.72	632.77	359.60	-325.20	1.32	-1.27	5.64	
5,481.00	0.72	61.03	5,417.67	635.38	361.13	-326.59	2.59	-2.40	39.29	
5,576.00	0.62	205.90	5,512.66	635.21	361.43	-326.89	1.35	-0.11	152.49	
5,672.00	1.38	236.95	5,608.65	634.11	360.24	-325.76	0.94	0.79	32.34	
5,767.00	1.15	213.14	5,703.63	632.69	358.76	-324.36	0.60	-0.24	-25.06	
5,862.00	1.21	165.87	5,798.61	630.92	358.48	-324.18	1.00	0.06	-49.76	
5,957.00	0.53	10.02	5,893.60	630.38	358.80	-324.52	1.80	-0.72	-164.05	
6,051.00	1.55	9.10	5,987.59	632.06	359.08	-324.71	1.09	1.09	-0.98	
6,146.00	1.81	358.24	6,082.55	634.83	359.23	-324.72	0.43	0.27	-11.43	
6,241.00	1.85	344.91	6,177.50	637.81	358.79	-324.12	0.45	0.04	-14.03	
6,337.00	0.91	3.84	6,273.47	640.07	358.44	-323.64	1.08	-0.98	19.72	
6,432.00	2.65	347.56	6,368.42	642.96	358.01	-323.07	1.89	1.83	-17.14	
6,528.00	2.46	9.23	6,464.33	647.17	357.87	-322.69	1.02	-0.20	22.57	
6,623.00	4.37	282.63	6,559.20	649.97	354.66	-319.34	5.14	2.01	-91.16	
6,719.00	9.14	282.88	6,654.51	652.47	343.65	-308.21	4.97	4.97	0.26	
6,814.00	19.82	279.88	6,746.36	656.93	320.36	-284.72	11.27	11.24	-3.16	
6,910.00	31.01	280.66	6,832.93	664.32	279.90	-243.92	11.66	11.66	0.81	
7,005.00	37.13	269.39	6,911.67	668.55	227.07	-190.94	9.23	6.44	-11.86	
7,100.00	48.70	266.46	6,981.13	666.03	162.56	-126.66	12.36	12.18	-3.08	
7,195.00	56.37	268.54	7,038.88	662.82	87.29	-51.67	8.26	8.07	2.19	
7,291.00	62.10	273.89	7,087.99	664.68	4.90	30.71	7.65	5.97	5.57	
7,386.00	75.19	275.54	7,122.51	671.99	-83.08	118.95	13.87	13.78	1.74	
7,481.00	83.71	271.77	7,139.89	677.90	-176.18	212.23	9.78	8.97	-3.97	
7,576.00	90.17	270.53	7,144.96	679.80	-270.97	306.99	6.92	6.80	-1.31	
7,670.00	88.45	270.84	7,146.09	680.92	-364.96	400.90	1.86	-1.83	0.33	
7,765.00	85.83	271.17	7,150.83	682.58	-459.82	495.71	2.78	-2.76	0.35	
7,860.00	85.40	270.74	7,158.10	684.16	-554.52	590.37	0.64	-0.45	-0.45	
7,955.00	86.95	269.56	7,164.43	684.41	-649.31	685.03	2.05	1.63	-1.24	
8,050.00	88.49	271.74	7,168.21	685.49	-744.22	779.86	2.81	1.62	2.29	
8,145.00	88.45	271.46	7,170.75	688.14	-839.15	874.80	0.30	-0.04	-0.29	
8,240.00	88.89	271.29	7,172.96	690.42	-934.09	969.73	0.50	0.46	-0.18	
8,334.00	90.37	272.77	7,173.56	693.75	-1,028.03	1,063.71	2.23	1.57	1.57	
8,429.00	89.83	273.82	7,173.40	699.21	-1,122.87	1,158.70	1.24	-0.57	1.11	
8,523.00	88.56	273.22	7,174.72	704.98	-1,216.68	1,252.69	1.49	-1.35	-0.64	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Janssen 8
Project:	Weld County, CO NAD 83	TVD Reference:	GL 4776' & KB 24.5' @ 4800.50ft (Patterson 346)
Site:	Janssen	MD Reference:	GL 4776' & KB 24.5' @ 4800.50ft (Patterson 346)
Well:	Janssen 8	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)	
8,617.00	88.66	273.04	7,177.00	710.11	-1,310.51	1,346.66	0.22	0.11	-0.19	
8,712.00	90.60	274.23	7,177.61	716.13	-1,405.31	1,441.65	2.40	2.04	1.25	
8,807.00	91.38	274.09	7,175.97	723.02	-1,500.05	1,536.62	0.83	0.82	-0.15	
8,902.00	89.60	273.62	7,175.16	729.41	-1,594.83	1,631.60	1.94	-1.87	-0.49	
8,997.00	89.16	273.08	7,176.19	734.96	-1,689.66	1,726.59	0.73	-0.46	-0.57	
9,091.00	86.51	271.90	7,179.74	739.04	-1,783.49	1,820.51	3.09	-2.82	-1.26	
9,187.00	85.33	270.89	7,186.57	741.37	-1,879.22	1,916.22	1.62	-1.23	-1.05	
9,281.00	87.07	271.34	7,192.80	743.20	-1,972.99	2,009.96	1.91	1.85	0.48	
9,377.00	87.68	271.81	7,197.19	745.84	-2,068.85	2,105.83	0.80	0.64	0.49	
9,473.00	90.77	272.64	7,198.49	749.56	-2,164.76	2,201.79	3.33	3.22	0.86	
9,568.00	92.09	271.51	7,196.12	753.00	-2,259.66	2,296.75	1.83	1.39	-1.19	
9,663.00	92.29	272.95	7,192.49	756.69	-2,354.52	2,391.66	1.53	0.21	1.52	
9,759.00	91.08	274.17	7,189.67	762.65	-2,450.29	2,487.62	1.79	-1.26	1.27	
9,854.00	91.34	274.46	7,187.66	769.80	-2,545.00	2,582.57	0.41	0.27	0.31	
9,949.00	91.98	275.33	7,184.91	777.90	-2,639.61	2,677.48	1.14	0.67	0.92	
10,045.00	90.67	274.15	7,182.69	785.83	-2,735.25	2,773.41	1.84	-1.36	-1.23	
10,140.00	90.13	274.20	7,182.03	792.75	-2,830.00	2,868.39	0.57	-0.57	0.05	
10,236.00	90.37	274.02	7,181.61	799.63	-2,925.75	2,964.37	0.31	0.25	-0.19	
10,331.00	91.08	273.75	7,180.41	806.06	-3,020.52	3,059.36	0.80	0.75	-0.28	
10,426.00	90.34	272.53	7,179.23	811.27	-3,115.37	3,154.35	1.50	-0.78	-1.28	
10,521.00	86.58	271.74	7,181.78	814.81	-3,210.25	3,249.28	4.04	-3.96	-0.83	
10,616.00	87.75	272.87	7,186.48	818.62	-3,305.06	3,344.15	1.71	1.23	1.19	
10,711.00	90.20	276.60	7,188.18	826.46	-3,399.69	3,439.07	4.70	2.58	3.93	
10,806.00	91.95	277.81	7,186.40	838.37	-3,493.92	3,533.81	2.24	1.84	1.27	
10,901.00	92.68	276.55	7,182.56	850.24	-3,588.10	3,628.48	1.53	0.77	-1.33	
10,997.00	90.03	273.69	7,180.29	858.80	-3,683.67	3,724.37	4.06	-2.76	-2.98	
11,092.00	89.46	273.04	7,180.71	864.38	-3,778.50	3,819.37	0.91	-0.60	-0.68	
11,187.00	88.39	270.37	7,182.49	867.20	-3,873.43	3,914.32	3.03	-1.13	-2.81	
11,280.00	88.96	269.90	7,184.65	867.42	-3,966.41	4,007.17	0.79	0.61	-0.51	
11,350.00	89.56	270.09	7,185.55	867.41	-4,036.40	4,077.06	0.90	0.86	0.27	
Last SDI MWD Survey										
11,410.00	89.56	270.09	7,186.01	867.51	-4,096.40	4,136.98	0.00	0.00	0.00	
Projection to TD										

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Janssen 8
Project:	Weld County, CO NAD 83	TVD Reference:	GL 4776' & KB 24.5' @ 4800.50ft (Patterson 346)
Site:	Janssen	MD Reference:	GL 4776' & KB 24.5' @ 4800.50ft (Patterson 346)
Well:	Janssen 8	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)		
204.00	204.00	0.42	0.08	First SDI MWD Survey	
1,486.00	1,483.73	59.00	37.44	Last SDI MWD Surface Survey	
1,586.00	1,583.42	65.39	41.95	First SDI MWD Vertical Survey	
11,350.00	7,185.55	867.41	-4,036.40	Last SDI MWD Survey	
11,410.00	7,186.01	867.51	-4,096.40	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____